



**ARCHITECTURAL PROJECT OF REHABILITATION:
ARCHITECTURE FACULTY WITH STUDENTS' CREATIVITY
CENTER IN FORMER TEXTILE FACTORY IN COVILHÃ**

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**ARCHITECTURAL PROJECT OF REHABILITATION:
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FORMER TEXTILE FACTORY IN**

ABSTRACT

I bring out in this dissertation project a few significant issues like history of the city Covilha, located in the middle Portugal, which developed with textile industry, experienced high times thanks to it and suffered economical and social fall in the Industrial Revolution Times. Despite problematic times, the city managed to raise again from the crisis by finding new concept for city function, which nowadays is the symbol of the city – Universidade da Beira Interior. The subject is very interesting because of the fact that Covilha build itself again putting the University Faculties into former factory buildings showing that way its pride of the factor which ruined the city and respecting the left heritage.

I would like to follow this experience by adapting former factory into Students' Creativity Center with Architecture to show that the post-industrial heritage has a lot of potential and it's highly re-designable for any function we can imagine.

Keywords: Industrial heritage, architecture, rehabilitation

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1. INTRODUCTION

City of Covilha is located in very rich landscape and has rich history, including the rise and fall of the wool industry. Because of this it is crucial to learn everything what is needed to understand the actual situation and reality of City Covilha before starting the project. First I would like to present in my work historical situation of the city Covilha in Central Portugal, which from the beginning was functioning thanks to the textile industry and survived a crisis in the times of industry fall. Despite the facts that many problems have appeared and which were caused by the crisis, Covilha has found solutions to get out from this situation.

The term “Industry” according to Wikipedia is “a material production branch, in which the extractation of natural resources and their adaptation to the peoples' needs has taken place in a big scale, on basis of work division and use of machines. Industry development decides on level and speed of city economical development.” The ground conditioning and availability of resources develop the industry and industry develops the city. There are many real examples, including port cities, mine cities, cities specializing in production of machines, textiles and other products. The city which is prosperous thanks to the industry starts to be totally dependent on it what creates a danger of city's fall once the industry is falling.

2. LOCATION OF THE CITY OF COVILHÃ

Covilhã is a small mountain city, located in one of the seven districts of continental Portugal – Beira Interior and its agglomeration is situated between 450 and 800 meters above the sea level.

Covilhã is a city with an area of 555,6 square meters and population reaching 36.723 inhabitants. Despite the fact that it is a small city, it's location under the Portugal highest mountain range Serra da Estrela and fact that there is only 20km from the highest mountain makes that Covilhã became a sort of a gate to the

Portuguese geographic heritage and is an important point on a map of the whole country.

The textile industry, which started already in XII century and expanded at the beginning of XIX century has got the bigger influence on Covilhã development. It was obviously the key factor which created the city . The city was developing together with the industry , lived of it and fell together within. It would seem that such a small post-industrial



Picture 1 - Location of city Covilhã

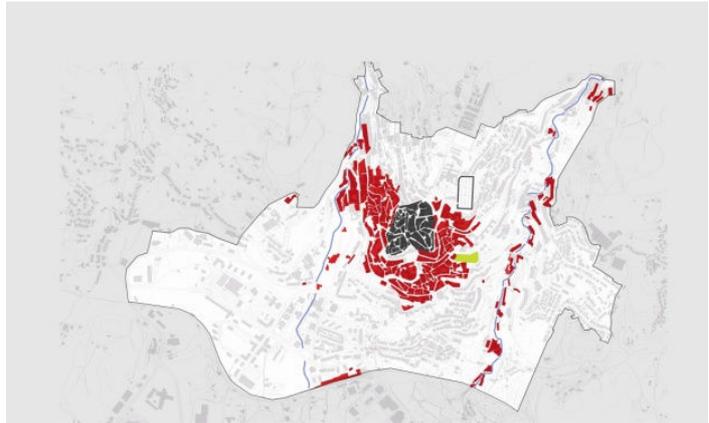
city would have no chance for reactivation but at the beginning of XX century a plan was made which totally changed previous city profile and stopped the peoples' emigration. It helped by attracting new population by raising new city economy what has resulted in Covilhã's 14th place in ranking of quality of life of Portuguese cities, according to newspaper EXPRESS.

3. HISTORY OF THE CITY

Covilhã is placed on the slopes of a valley Cova da Beira, which created enormous potential for the city located above. Simultaneously settling the colony on the “height of eagle nest” gave the population big defensive potential. There was everything needed for settlement of people – defensive hills, plains for cattle graze and landscape variety enabling agriculture works, hunting, fishing, so means self-sufficiency of the colony.

The city Covilhã has got its beginning in the ancient times, when it was a place where many roads and roman tracks were crossing, what may be still seen by the remains of Roman roads and bridges. High developed shepherding and gaining the wool brought enormous profits to the city and prestige in the region, what on the other hand caused a lot of conflicts between Covilhã and other colonies.

The establishment of the Industrial School in 1864 was a result of enormous importance of the textile industry for Covilhã. The School was the cradle for the nowadays University da Beira Interior.



Picture 4 – Map showing locating of factories along two rivers

Creation of railway in 1891 helped to develop the industry and export on a bigger scale, thanks to which Covilhã became the main center of textile production of the whole country.

But at the end of XIX century numerous trade unions were formed, which were defending the rights of worker class complaining about the difficult conditions for existence and starting first strikes and demonstrations. This whole sociological, economical and political process has put the working class on the pedestal in the city history. For the first time in the history of Covilhã, the city started to develop for their habitants. The first evidence is establishment of Teatro Cine da Covilhã, which met the needs of Covilhans for leisure and cultural development.

In the 40-ties of XX century, industry in Covilhã fabricated 60% of the wool in the country and in 1986 reached its highest development level. But the recession was coming unavoidably. The development of the industry in the region and its technological development eventually created an irreversible crisis in Covilhã industry.

Many factories were definitely closed and the production of textiles was dramatically decreased, leaving vast post-industrial areas of the city empty and abandoned.

4. CITY PROFILE

4.1. FALL OF INDUSTRIAL CITY

Together with the industrial crisis the whole city collapsed, both socially and economically. The city which was called “Portuguese Manchester” was forced to close majority of factories.

The valleys of Covilhã Rivers – Goldra and Carpinteira, became abandoned with all the factories, without any hope to restart the wool production. Only few factories still produce textiles nowadays, supporting such known companies like Hugo Boss, Armani or Christian Dior.

4.2. BIRTH OF UNIVERSITY CAMPUS

Historical city Covilhã faced a difficult mission of getting up after the crisis. City not only deteriorated economically but also started to depopulate. Citizens, having no perspectives for better life were leaving the city to look for living sources. Also the students, youth which was the core of the society of Covilhã and it's only hope was leaving the city in order to get education, what in most cases was a one way trip. The population was aging, what bad prospective for the city future.

The only rescue for the fallen, still getting down post industrial city appeared by creation of the Polytechnic Institute in the former factory “Real” in 1973.

It was an idea of a group of officials responsible for Regional Planning. The idea was to set up a high education institution in Covilhã in order to offer the citizens easy access to education thus reducing the emigration in that matter to other parts of the country. It was the only idea how to stop depopulation problem.

In the first year Instituto Polytechnic da Covilhã took 143 students on the Textile Engineering faculty and Management and Accounting.

After six years from the start the Institute changed into the University Beira Interior.

5. REACTIVATION OF THE FALLEN CITY

5.1. ADAPTATING DEACTIVATED FACTORY BUILDINGS FOR UNIVERISTY FUNCTIONS

The next problem was the unsecured, deteriorated industrial heritage alongside both rivers. Ruins and huge halls with unused potential were abandoned, waiting until the time will ruin them completely. As a result Covilhã was full of completely empty public areas (See picture 5 and 6).

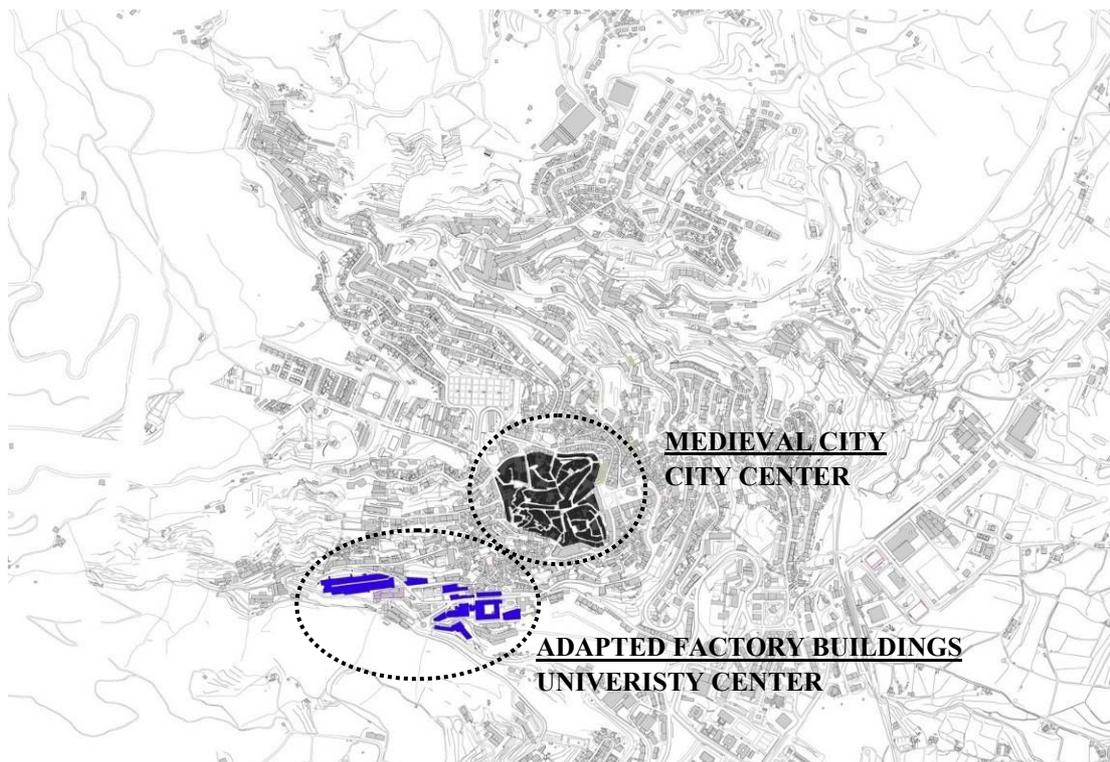


Picture 5 - Archival photography of factories along river Goldra



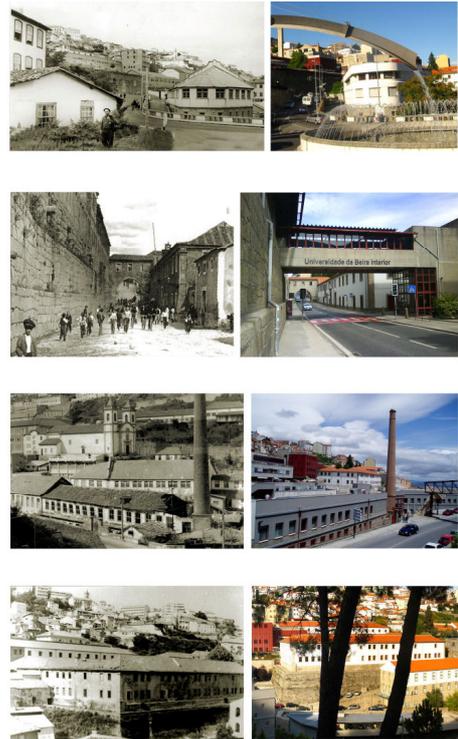
Picture 6 - Archival photography of factories along river Goldra

On the area of whole city started the process of adapting the unused buildings. The University Main Building was located in the buildings of high historical, cultural and architectural value, same as University library which is located in adapted for this specific purpose the residence of Mendes Veiga family or Rector office which is now on the hill in the Santo Antonio cluster.



Picture 7 - Map showing formation of two city centers

Another example of city's reactivation idea was the transformation of old factories into the educational facilities (See picture 7). The adaptation of post-factory buildings for the teaching purposes in southern part of city of Covilhã was the reaction on still proceeding development of the University, which had to recover the city economically. It was also a logical solution for improvement of city planning quality and environment, since in such way the problem of preservation of the ruins was settled, very often being not only the industrial but also architectural and cultural heritage and what considerable raised the University value (See picture 8).



Picture 8 - Adaptation of former factories to University Facilities

In such a way on the plan of city Covilhã a specific university center was formed, with a huge number of faculties in densely located post-factory buildings, very often linked with connecting structures, to avoid problem of the streets between the buildings.

In the 90-ties city took care for the northern part of Covilhã, means the valley of river Carpinteira, where the factories were adapted for Economy Faculty and student houses. It was the beginning of the activities leading to reactivation of valley of Carpinteira, where are still a lot of empty factories, very often rented by the small companies or serving as workshops.

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5.2. FOUNDATION OF THE MUSEUM

City has decided to destinate the factories also for purposes other than those bound directly with students' education. One of the projects is adaptation of the factory into the Museum of Wool, which is bound with the University by its didactics function. Museum is located among University buildings as a memorial of industrial époque and textile industry. All these activities aiming at post-industrial city reactivation gave the city Covilhã place just in the center of “Arqueotex³” project.

In the year 1996, after two archeological campaigns and after finishing of all research studies the Museum of Wool was opened, located also in old factory alongside river Goldra.

Motto of the project Arqueotex states „weaving the future with the threads of the past”. Project is supported by use of modern machineries and informatics technology. Apart from certifying the industry heritage the project has an aim to direct the attention on numerous commonly bound branches: textile hand making, pattern designing, protection and maintenance of relics.

The Museum of Wool, being the specially equipped documentation center showed by this project a good direction for elaboration of tourism and culture program, connected with textile industry and called “European Wool Track”. The partners to the project, whose leader is this small mountain city, are cities which faced similar textile industry crises - in Catalonia in Spain, Provence -Alps- Cote d'Azur in France, Cork region in Ireland and West Midlands in Great Britain.

The Museum and “European Wool Track” is a splendid idea for reactivation of the city by aiming the spirit of fallen industry. The city, despite change of its profile, is not cutting definitely it's industrial roots but makes use of its heritage and promote these roots on the international scene.

³ *Arqueotex* is an over national pilotage Project, which main goal is to establish the European information net on heritage of textile industry of Old Worlds.

5.3. TECHNOLOGY PARK – PARKURBIS

In the lower part of the city it was also created the Science and Technology Park “ParkUrbis⁴”, acting on the basis of Polish development incubator programs. ParkUrbis should reach an area of 100/200 hectares in the near future and concentrate not only on development of innovations but on support of recreation by establishing restaurants, tennis courts, jogging ways, crèches, centers for biologic restoration, gyms, heated swimming pool.

Program is devoted mainly for the Beira Interior University students, who are invited to co-operate in research studies and encourage for start of activities supporting the development.

5.4. CREATION OF PUBLIC SPACES FROM POST-INDUSTRIAL ZONES



Picture 9 - Archival photography of industrial zone



Picture 10 - Public square re-designed from industrial zone

Apart from creation of University and Museum mean adaptation and renovation of post industrial buildings activity was made in restoring the city life in a sense of public one. The factory areas were severe, empty – dead (See picture 9). The public spaces in the city have enormous importance for interpersonal contacts, gathering the people – they are places for recreation and meetings. City cannot be

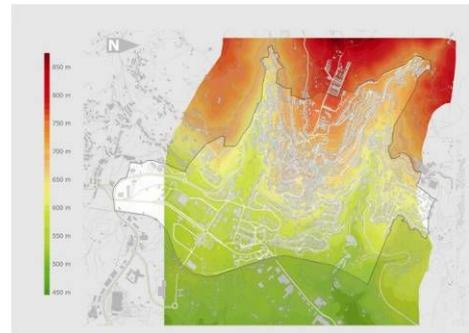
⁴ *ParkUrbis* is a technology park established by *ParkUrbisCompany*, which has a goal to create the conditions for attracting and retain companies contributing to the development of innovations and technology in the whole community.

fully reactivated without providing these kinds of spaces for people to spend their free time.

The best example is the public square, where a special competition for its utilization was published. The project's goal was creating a living space between empty factories around located on Goldra River (See picture 10).

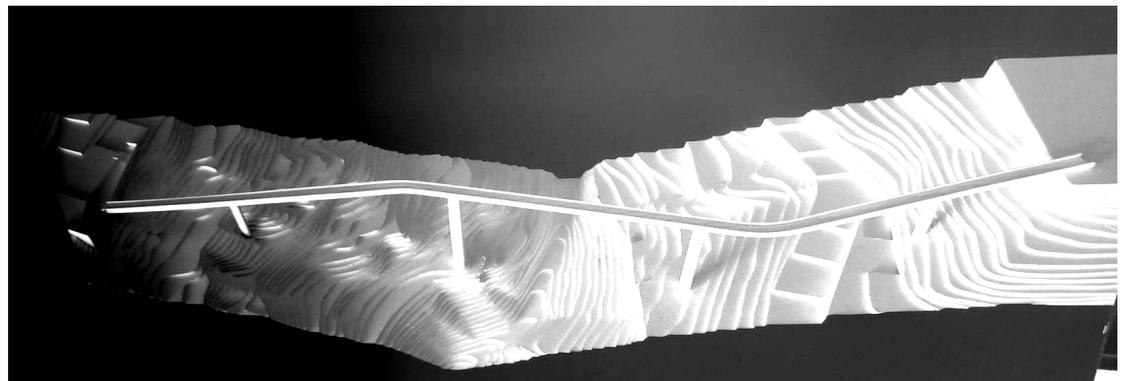
5.5. REINTEGRATING THE SPACES OF THE CITY

The city lately executed also many ambitious projects related to the urban space. Due to the terrain shape (See picture 11), on which the city was developed, town planning and access to various parts of the city is complicated. Almost impossible was crossing the valleys which resulted in necessity of its bypassing around. People used that option only



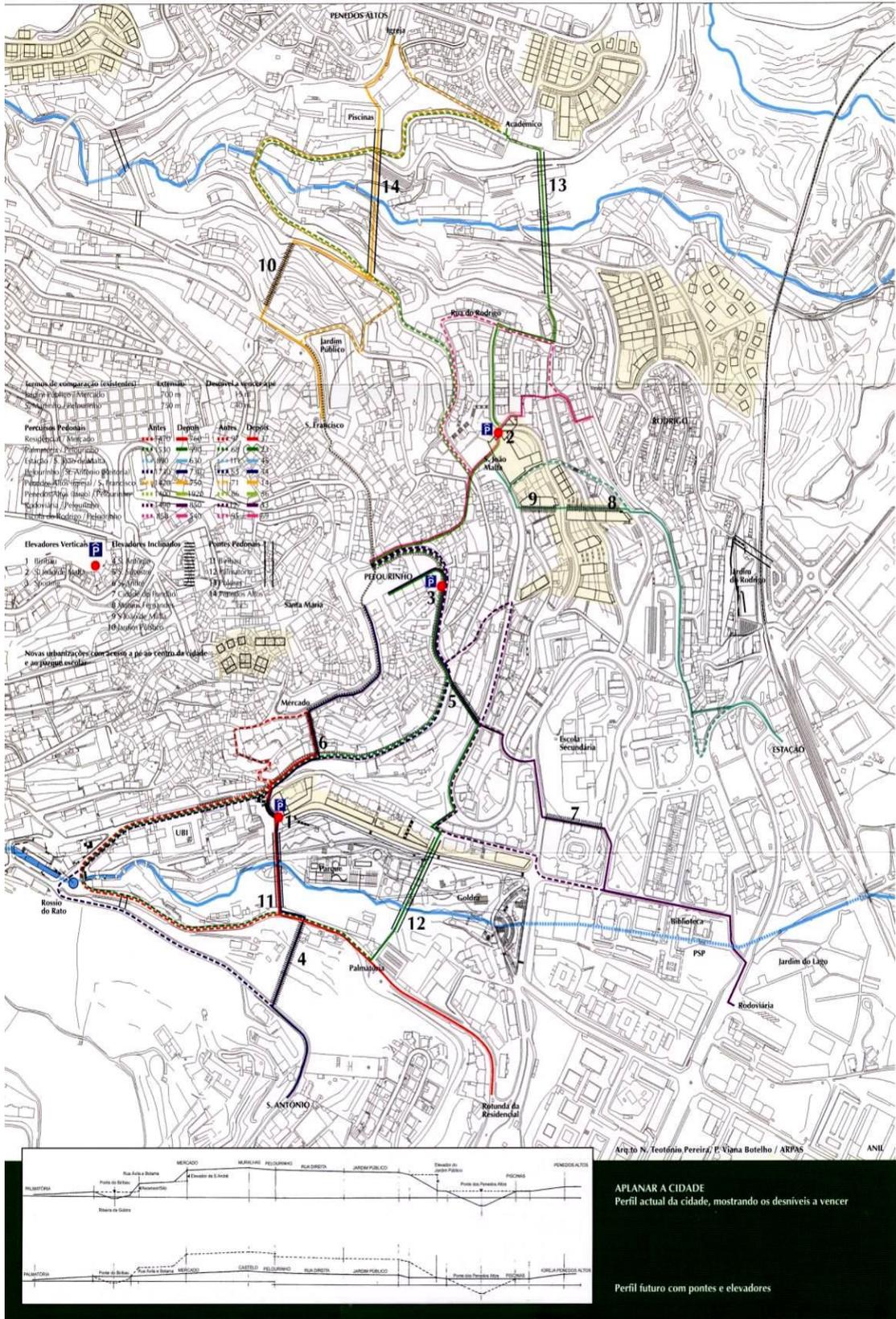
Picture 11 - Map presenting hypsometry of the city

when they were forced so and the functions such as public swimming pool were available only for the people having cars.



Picture 12 - Model showing the pedestrian bridge over river Carpinteira valley

Para uma cidade saudável e sustentável reduzindo a dependência do automóvel
PLANO DE MOBILIDADE PEDONAL



Picture 13 - Plan of pedestrian mobility - project of the City Hall

In the previous year 2009 a project was executed which solved the real problem of northern part of river Carpinteira valley. It was made an additional on foot passage in a form of a bridge, which thanks to its broken shape refers to the look of meandered streets on the mountain ground (See picture 13).

It is known also that the native inhabitants, who stay constantly in the city are the old people. In some places the ground slope between the parallel streets reach 17% what creates a big problem for the movement in the city. Therefore in 2008 the construction of the lift together with the stairs has started, which connects now two parallel streets easing movement in the city (See picture 14).

There are more such projects planned for the future, aiming at connection of city fragmented by the forms of terrain (See picture 12). A new lift shall be constructed above the Goldra valley connecting the new established recreation park at the Museum of Wool with the street which leads to different connection - the ways to the University and student houses.

As a result thereof the city of Covilhã is tectonically miscellaneous place, being a conglomerate of seemingly separated parts of the city, gradually linked with the hanging footbridges, passages, lifts and bridges, easing the movement of the pedestrians through the city – without any limitations.

It is wonderful example for adapting the post-industrial city into landscape-communication utopia, where it was learned how to eliminate collision appeared it that way and creating interesting city space for willingfull time consuming.



Picture 14 - Lift and stair connecting two parallel streets

6. GAPS IN RESOLVING THE PROBLEM OF INDUSTRY COLLAPSE

6.1. PROBLEM OF SEASONAL DEPOPULATION OF THE CITY OF COVILHÃ

Despite the fact that the city of Covilhã managed with the crises and fall of industry, giving the city totally different city creative factor, it has not finally managed with all the problems. Today the University is a main source for employment, attracting pedagogic bodies from whole Portugal, Spain and Poland, and students from the whole country, islands and from lot of previous Portugal colonies in Africa and even from Brazil. But this branch well prospers only during the academic year.

The lack of industry does not create good earning possibilities and therefore the people consider Covilhã as a bedroom city and finally emigrate to bigger cities looking for jobs, what in consequence creates space for the incoming students. At the beginning the city was alive during the academic year, means from September to June and the vacation period was bound with depopulation of the city where only old, native inhabitants are remaining.

Now, taking into account development of public transportation and number of students possessing cars the problems appear each weekend. Despite the costs which the students have to bear travelling each weekend to their home cities it is sometimes for them a compulsion, if they wish to continue their hobbies and develop them, what is not possible in Covilhã.

6.2. CULTURAL CENTER AS A PROPOSAL OF RESOLVING THE PROBLEM

According to public opinion poll among the “city development drive” – students described what would make them stay in Covilhã after the academic year and during the weekends. Part of them draw the attention to the possibility of getting work, part for culture development places because despite the fact that Covilhã was transformed from post industrial city into a university city it does not fully meets the students’ expectations. City does not offer artistic development – only the sport one.

After overcoming one problem which was the collapse of the industry it faces a new one of the seasonal depopulation of the city, which after the study times is full of empty houses and closed coffee houses.

I believe that the solution would be to continue the city reactivation. Covilhã has got a lot of factories which could be adapted for the offices or new places for work, if the city would correctly promote itself in the country.

Also in the city interest is creation of Students' Cultural Center which would give young people the possibility to their artistic development thus creating very good conditions to stay in the city. Center would attract musicians and artistic groups developing culture and regional art.

XX century was full of post-industrial buildings transformations what was stopped in XXI century. The only planned investment is the creation of Architecture Faculty building, for which the city intends to buy post industrial object close to mentioned earlier public space. It is also planned an investment in a form of culture center building, constructed as a new one what according to my opinion is a total waste of post industrial heritage potential and will distract the students from self made students center, pushing them into the typical living district.

Therefore as a diploma project I have decided to make an adaptation of the post factory buildings into an Architecture Faculty Building in connection with the Culture Center thus creating certain sort of Creativity Center, fulfilling needs and filling the gap in the Covilhã transformation from post-industrial city into a university city.

7. CHARTS AND DOCUMENTS ABOUT INDUSTRIAL HERITAGE

There are several charters describing maintenance and conservation of monuments. Although the term of "industrial heritage" is quite new, the Tagil Charter states the unofficial law how to deal with objects which were created in times of Industrial Revolution – times which in the most level affected human population, their life and life of whole planet until today.

The Tagil Charter⁵ underlines the right approach towards industrial heritage such as remains of machinery, buildings, factories, workshops, mills, mines and many others objects defined in the document, and names it together as a valuable integral part of cultural heritage. The stress is put on gathering material evidence of the object such as archive documents, photos, videos and even peoples' memories - everything which is needed to preserve the values of the industrial monument and provide proper conservation of machinery, site and buildings avoiding any loss of valuable factors. The conservation process requires knowledge of the site and processes which took place in the area and dependently on the situation should maintain the historic characteristics as far as possible. If the object is valuable in a historic way it's highly recommended even to preserve original function to maintain the authenticity of industrial site.

Recommendation no. r (90) 20 of the committee of ministers to member states on the protection and conservation of the industrial, technical and civil engineering heritage in Europe is another document describing the matter of industrial heritage, focusing on promoting public knowledge, organizing campaigns to make people aware of the value around them and teaching how to deal with this type of heritage.

ICOMOS⁶ Charter points out the main principles for the analysis, conservation and structural restoration of architectural heritage. It describes the importance of research, diagnostics and measures as a part of heritage value and the base for evaluation of the significance of the object.

Like all the charts according to industrial and cultural heritage, it states that the interventions should be introduced with the least harm to the existing object due to compatibility with the site. It doesn't insist on preserving the past function and techniques but gives a flexibility in a choice between "traditional" and "innovate" which should be made separately and individually in each case due to preserve heritage values.

⁵ *Tagil Charter* - TICCIH - is the world organization representing industrial heritage and is special adviser to ICOMOS on industrial heritage. This charter was originated by TICCIH and will be presented to ICOMOS for ratification and for eventual approval by UNESCO.

⁶ *ICOMOS (International Council on Monuments and Sites)* is an international non-governmental organization of professionals, dedicated to the conservation of the world's historic monuments and sites.

Taking all these charts under consideration I made the needed photo documentation and searched for archive documents and archive photos to know the site history and characteristics of the object. On the basis of all my research I started the design process, which I will explain in the further paragraphs.

8. MASTER THESIS PROJECT

8.1. SITE OF THE PROJECT

The former factory which I re-design is situated inside the area of UBI⁷ campus, and it forms an urban wall of highly esthetical and modern public square, which is a place of students' meetings and leisure.

The mentioned before public square was built as an effect of a competition. The winning project treated the river which supplied factories in energy as the recreation center, what changed approach and way of thinking on this natural industry drive. Simultaneously the ground was linked by foot bridges with old dye-work workshop factory, where the art gallery "Tinturaria" is now located. Tectonically rich public square leads alongside the river



Picture 15 - Traffic circle with the fountain and the view from underground

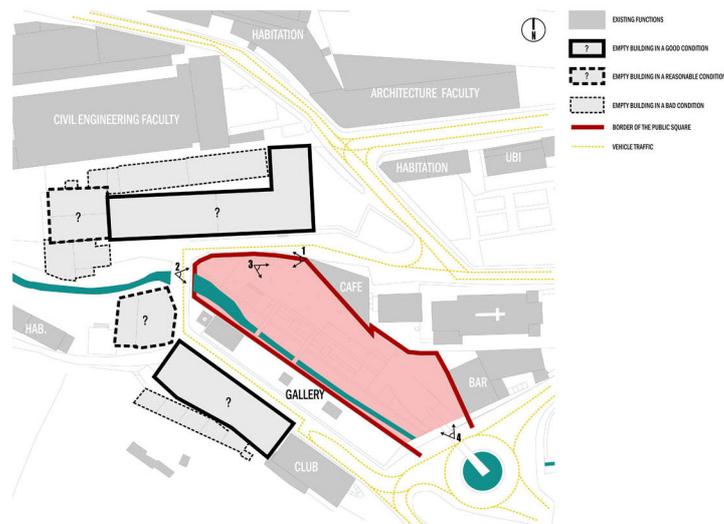
beneath the roundabout, from where water fountain could be admired (See picture 15).

Place is important since it links two parts of the University separated by the main road and traffic circle. It's enabling the students' movement from one side to the other one without collision. At the square there was constructed a modern coffee house and restaurant "Soda" form contrasting with the nearby situated post industry

⁷ UBI states for *Universidade da Beira Interior*.

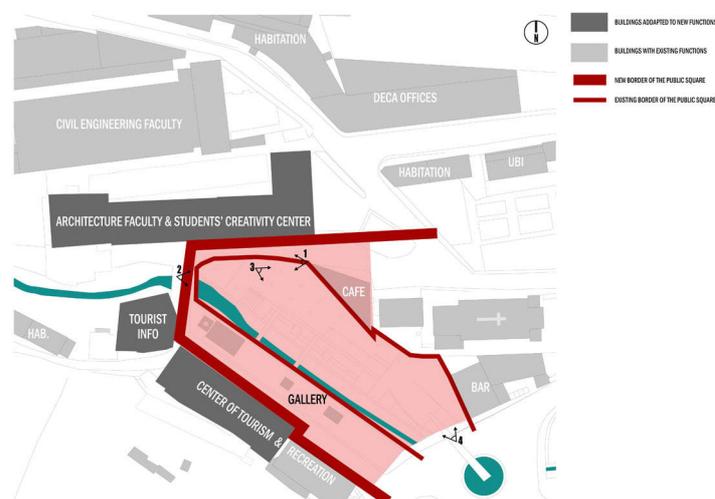
buildings, which attracts the students to this post industrial space, creating out of previously dead space a certain specific students center full of life.

Talking about the composition of the public square it is seen that the nearest borders are created by the triangular coffee house and restaurant “Soda” and the Art Gallery “Tinturaria” on the other side. These two buildings are connected together in one composition by continuous high wall which creates the other border of the square (See picture 16).



Picture 16 – Scheme of public square – existing border.

Nevertheless, looking at the square from the point where the fountain is situated, we can see another layer of urban wall, which is created with empty former factory building which I re-design and the other three neighbor factory buildings what together makes the borders of the square move further and bound the composition of the square together with its surrounding (See picture 17).



Picture 17 - Scheme of public square - new functions with new border.

8.2. HISTORY OF FACTORY

The mentioned factory exists in the identification as *Leitao & Quintella / Francisco Mendes Alcada* (Ultimacao Estrela). It was built in the middle of XVII century in armed concrete frame construction by its owner Francesco Mendes Alcada and had a function of weaving and dye-workshops complex in the area. The factor which made it different from all the other factories was the fact that it had a perpendicular offices part with different levels' division than the production halls, and unusual front façade containing rhythmical sets of three high windows and a division in the middle shown by material and different roof covers.



Picture 18 - Existing factory with surrounding

While searching for the archival documents I found that this building had some modifications in the history, like elevating half of the factory one level up, and changing the roof shape over the offices part of the building and changing completely the back part of the west side of the building, what shows the diametrical difference between existing situation (See picture 18) and its state in the archival documents.

Unfortunately none of the machines and technical equipment inside was preserve. Most of the machinery used in textile factories were moved to Museum of Wool situated near the University.

However the construction of factory is considered to be valuable and treated as an engineering masterpiece. The maintenance of structure is in a good state, also

the external walls and the roof. Only the west part of the factory, which has its own structure shows some cracks in the walls, which in the opinion specialists doesn't mean the necessity of demolition, but can be repaired by adequate strengthening treatments.

8.3. THE AIM OF THE PROJECT

In my opinion such a good development was encouraged by the fact, that Covilhã is relatively a small city but also people who acting creatively introduced complexed changes: adjustment of the city to the students needs, adaptation of many factories, rationalization of movement between troubled from the altitude point of view regions, consolidation of hills and valleys in one part. Covilhã is not afraid of innovative projects, and still has a lot of them waiting for realization.

The problem of depopulation which Covilhã is facing now is definitely a serious one but to its settlement there are no big resources needed but the creative activity by a proper group.

In my opinion same as change of the city profile for the University City was the solution for the nowadays problem of fall of industry, the artistic and cultural development of the city might be the answer and solution for seasonal depopulation problem.

This is why I chose as my master thesis to design the Architecture Faculty and Student's Creativity Center in Covilhã, which should support local artistic activities, culture and traditions of the region. It also should enlarge the number of cultural events in the city, encouraging the outside artists to visit Covilhã and take part in its cultural development. The connection of the two functions has its explanation in fact that these two functions lives along with students, who besides education need artistic progress.

Cultural places are only provided for the old part of town and far from the university center in forms of little theaters and cinema situated in Serra Shopping⁸. The city was desperately searching for a proper place for Cultural Center and finally had an idea to put it between multi-housing areas on the new down part of the city, which contains mostly motorized and native inhabitants, for whom getting from one place to another is not a problem.

In my opinion the better place for Cultural Center is students' city center, which already has a function of student's campus (See picture). Although there is traffic separating some of the buildings, the number of above pedestrian bridges and staircases lower the problem to minimum level. The localization near the main building of UBI, the center building of university, makes the Cultural Center accessible for all not motorized students, which for them "accessible" means easy to use in time and above transportation problems.

Following the Covilhã's experience, I chose to place my master thesis project in former factory building which was one of fabrics' dye-workshops, because creating new structure in city where there are a lot of empty post-industrial buildings is not a sustainable approach. It leads to aim the new projects on the empty areas of Covilhã, without putting attention on post-industrial constructions, which happen to be the regional heritage. Also the strong structure of all of these buildings makes them highly changeable, re-designable, and ready to take any program and function which is needed now and in the future, so not appreciating and in fact underestimating their potential is a great loss for the city.

According to Tagil Charter " Sympathetic adaptation and re-use may be an appropriate and a cost-effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants."⁹

⁸ *Serra Shopping* is the biggest shopping complex in Covilhã, situated In the down city, containing the hipermarket Continente, retail shops, a number of restaurants and cinema.

⁹ *The Nizhny Tagil Charter for the Industrial Heritage*, The International Committee for the Conservation of the Industrial Heritage (TICCIH) , 17 July, 2003

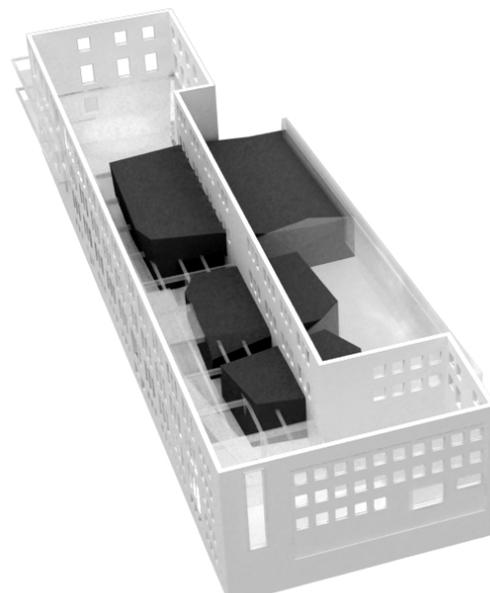
Also, considering the situation of bigger European cities, where the old historic part of town is the center of commercial activities and the heritage is highly appreciated, it is important to remember that Covilhã as a post-industrial city has two main heritage centers to be appreciated. One in the old upper part of the city, with Jewish district and main City Hall Square and Castle with traditional housing, and the second center as a remains of industrial phase, which is mostly considered to be the university area. Both of them have a great importance in functioning of the city of Covilhã and my aim is not to distract peoples' attention by putting another new center in the down part of the city.

8.4. MAIN IDEA

While designing a cultural development place, it is crucial to think through some topics about the identity of designed object and its specific function as a link with the site identity and its history. Without any doubt, the space of artistic improvement takes the more part in social education but also in sensing of esthetics and environment, this is why it's so important to provide as much integrity between the building and its surrounding as it's possible.

The aim of the project is to create a modern space, in which people could spend their time in a creative way, fulfilling their passions, developing ideas and initiatives in the field of broadly defined culture, artistic activities, knowledge and recreation.

The main idea of the project was to create completely new, tectonic structure passing through existing regular spaces being formed by walls of former factory (See picture 19).



Picture 19 - Main idea

As the site of the project is a part of an irregular mountain city of Covilhã, on every step we can see different types, forms and dimensions of deformations (See picture 20). It's seen in different widths and curves of the streets and pedestrian paths, variety of angles meeting each other in every type of space. Even walking along each street we can see broken lines of facades and surpassing of some of them over the obvious line of the buildings. Looking up the sky we are surprised by variety of heights of the houses. Houses are full of little misalignments in facades which peoples' brains subconsciously simplifies to a regular, repeatable systems and many others accents we don't even understand but can sense while being the audience of these spaces. "Theory of dialogic design, and its recognition of deformation¹⁰ being the medium of Identity" which is the main strategy for my project was introduced to me along Project IV course on UBI by Jacek Dominiczak.

In such surrounding the regular form of the box with its perpendiculars and simplicity surprisingly seem to be considered as deformed within its neighborhood.

The form of the box is a prototypical form in architecture, it's stiff, harmonic - a symbol of simplicity and easily understandable space. This is why I decided to emphasize the sensing of the space by standing in contrast with completely different forms and create an event of "both-way-comparison" to understand the dialog between them and appreciate their



Picture 20 - Fragment of the city plan - deformations.

¹⁰ Deformation is a non-prototypical spatial situation within urban space which is defined by a particular prototype.
· In analytical drawings, the deformation emerges as the result of comparing the reality of existing spaces or their elements with the prototype . This process is analogous to the mental process of recognition. Deformations, as kind of "urban DNA", carry the Identity Code; *Local Identity Code for Central Fremantle Source and Design Code*, Jacek Dominiczak and Monika Zawadzka in cooperation with Agnieszka Kiera, 2007-2008

forms even deeper. Using the experience of the city I managed to apply the same scheme of space meeting to underline the differences in shapes and forms. As the city points out the regularities on the background of all kinds of deformations, I use the harmonic parallels and perpendiculars of the box to emphasize the differing main structures of the artistic space and their positions and misalignments from so called regularity.

8.5. DESCRIPTION OF BUILDING'S FUNCTIONS

FLOOR	FUNCTION
1.01	PARKING
1.02	LOBBY
1.03	CLOAKROOM
1.04	TECHNICAL ROOMS
1.05	TECHNICAL ROOM
1.06	TECHNICAL ROOM
2.01	FOYER
2.02	CAFEE
2.03	BAR
2.04	STORAGE
2.05	P.HALL'S STORAGE
2.06	TOILETS
2.07	CONFERENCE ROOM
2.08	STORAGE
2.09	CONFERENCE ROOM
2.10	STORAGE
2.11	PERFORMANCE HALL
2.12	BACKSTAGE
2.13	TOILETS
2.14	LOUNGE

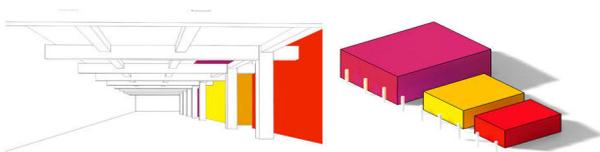
2.15	ENTRANCE
2.16	OFFICES
2.17	TERRACE
3.01	REHERASAL ROOM
3.02	REHEARSAL ROOM
3.03	REHEARSAL ROOM
3.04	STORAGE
3.05	STORAGE
3.06	DRESSING ROOM
3.07	DRESSING ROOM
3.08	TOILETS
3.09	ELECTROACOUSTICS
3.10	PROJECTION CABIN
3.11	LIGHTING CABIN
3.12	OFFICES
3.13	OFFICES
3.14	LOUNGE
3.15	TOILETS
4.01	TOILETS
4.02	LECTURE ROOM
4.03	LECTURE ROOM
4.04	MINI AUDITORIUM
4.05	LECTURE ROOM
4.06	LECTURE ROOM
4.07	LECTURE ROOM
4.08	OFFICES
4.09	OFFICES
4.10	LOUNGE
4.11	SMOKING ZONE
5.01	TOILETS
5.02	WORKSHOP
5.03	SCULPTURE WORKSHOP
5.04	PAINTING WORKSHOP

5.05	DRAWING WORKSHOP
5.06	LOUNGE
5.07	STUDYING SPACE
5.08	NAUBI OFFICE

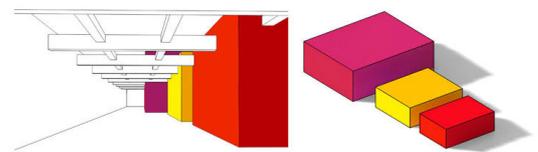
8.5.1. PERFORMANCE HALL AND CONFERENCE ROOMS

Performance hall and 2 conference rooms/lecture halls are the answer for the main idea of the projects. They create 3 main forms breaking through the factory but in the same way giving it the support and base, like granite rocks of Serra da Estrela landscape. They are wild and not easy to define by simple geometric ways, contrary to rigid walls of the factory. They are introducing to the inside the deformed character of interiors of the city, creating Covilhã-type spaces not to understand - but to sense.

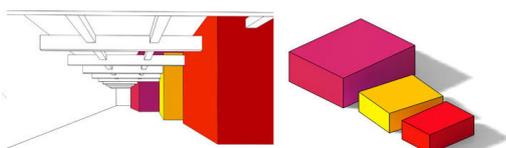
GEOMETRIC IMPLICATIONS: The interior of the factory creates a relatively narrow space, which seen in long perspective is cut in half by parallel visually formed plane generated by numerous pillars in the interior. (see picture 21) The situation of putting the additional form behind this visual plane makes them disappear in the space. Hiding pillars into new forms (performance hall and lecture/conference rooms), which are the most important accent in the building make them actually appear in the space (see picture 22).



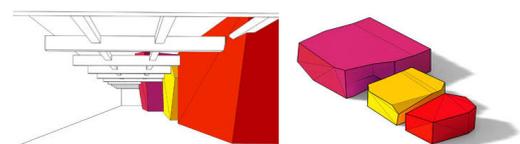
Picture 21 – Forms behind the pillars



Picture 22 – Pillars hidden in parallel forms

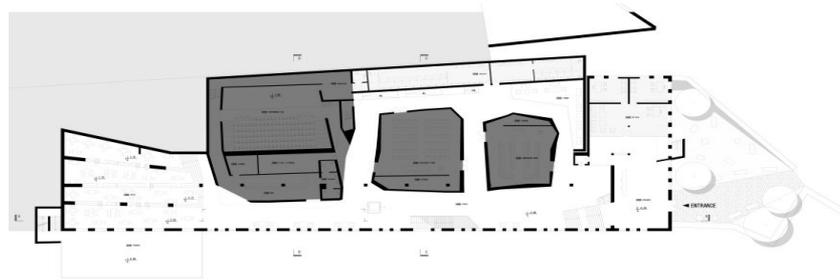


Picture 23 - Forms rotated with 1-5 degree angles



Picture 24 - Forms with three dimensional deformations

DEFORMATIONS: The 3d analysis helped me to realize that the big, obvious angle doesn't make the feeling of deformation but the conscious divisions of space and certain composition. Only the little rotations from the parallel gives a feeling of deformation, and push the senses to analyze these little differences and their together relations (See picture 23). Although the three form composition have some kind of relation with the external wall of the factory, they exist inside being somewhere between parallel and angular, there exists a strong relation between the forms followed by deformation, binding them in one massive composition (see picture 25). The system of deformations is based on relations of irregular city blocks, which are cut and bend according to other existing spaces around them. Besides deformations in plan, they appear also in the third dimension by broken and inclined vertical walls of the forms creating the mystic, intimate passages (See picture 24). This is one of design strategy developed within the system of "Dialogic architecture" which was also the theme of UBI Projecto IV course.



Picture 25 - Forms' geometric relations

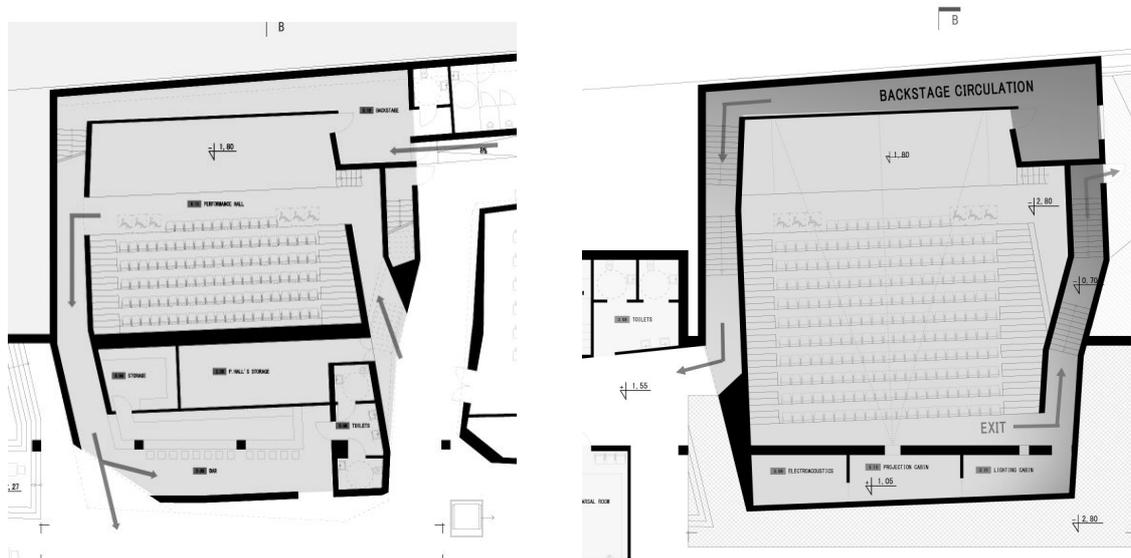
SURPASSING: The three main halls are the dominant forms in the interior, shown not only by their geometry but also by their independent height, not trying to get equal with the existing floors. The forms are breaking through existing walls and levels to show their importance and independence. This way they are easily visible also from the upper level (+2), which in the most part also belongs to them. This level has a form of the passage from which we can admire these majestic sculptures or even be tempted by looking at them and be persuaded to dare to get onto the surface of one and spend some quiet time in lounge space with an interesting look down. The opening in the second level not only shows the freedom of the forms but also creates a game of lights from up, emphasizing their height.

INDEPENDENT CONSTRUCTION: Although all of three forms exist inside the factory, they have their own independent structure, which will be described in Paragraph 9, dedicated to Structure.

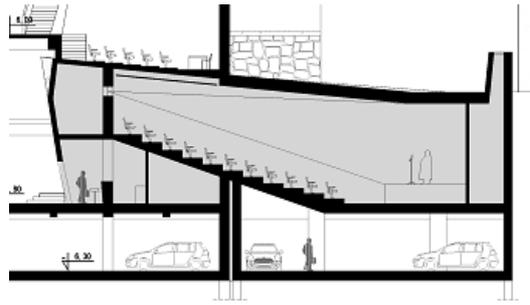
8.5.2. PERFORMANCE HALL

The performance hall besides its obvious inclination of audience has also vertical connections. First one is in the evacuation way from the upper seats in a form of stairs hidden from the outside. The tectonics formed by me gives the opportunity to hide the evacuation corridor in the thickness of the wall. The evacuation way is not only the line of stairs but in the most part it happens to be an accent hanging over the entrance to the hall.

The other vertical connection leads from the back stage to the private stairs hanging over one of the evacuation way, and leading to the upper floor (+2), where are the change rooms and rehearsal rooms are situated. While big performances it's possible to cut the access to the second floor to use it as a backstage if needed.



Picture 26 – Performance hall plan



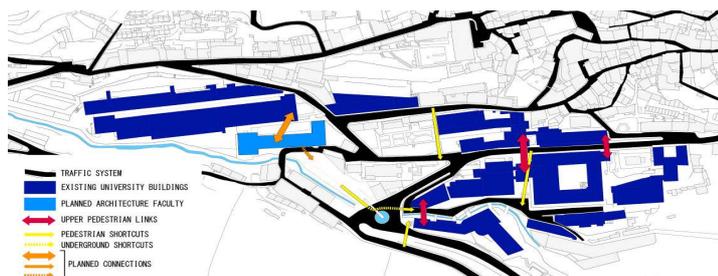
Picture 27- Section of Performance Hall

8.5.3. ENTRANCES

As the building has to integrate the university site with the public square, it cannot be seen anymore as an obstacle between these two functions. It's important to bring life inside, to invite people by proposing them an easy access, possibility to pass throughout the whole building.

This kind of thinking is not new for university buildings in Covilhã. The highly developed complex of structures has a lot of pedestrian links and multiplied entrances giving us possibility to go outside wherever we want without need to pass around an obstacle form. Analyzing the main building of the University it's hard to recognize where it starts and ends (see picture 28). The system of links and entrances makes the areas of the buildings together very big, but what is the most important - it doesn't bring in any way problems to the traffic or pedestrian passing. Moreover, this system creates a lot of straight shortcuts through the city, what makes the building highly transparent in an urban way.

I use this finding in my project by bringing this transparency to the building. It's shown by number of easily accessible entrances almost from every reachable level. There is one entrance from the level +2,5 which is in between +2 and +3, also



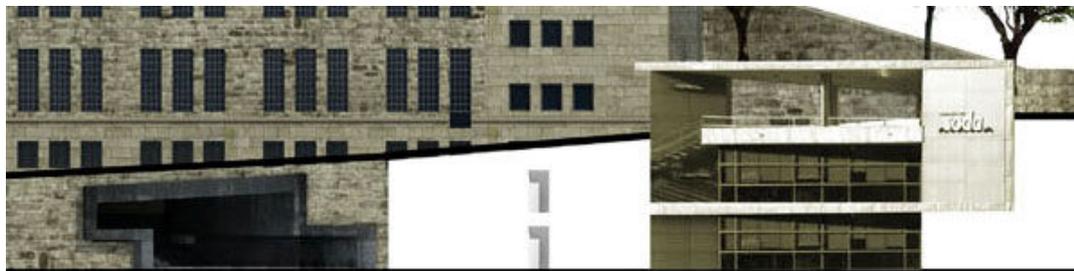
Picture 28 - Analysis of UBI urban transparency

a pedestrian link on level +4 from civil engineering faculty building to make the faster connection between these two

faculties, there exists also a car access to the parking on ground level, and the most significant entrance from the public square going under the functioning street.

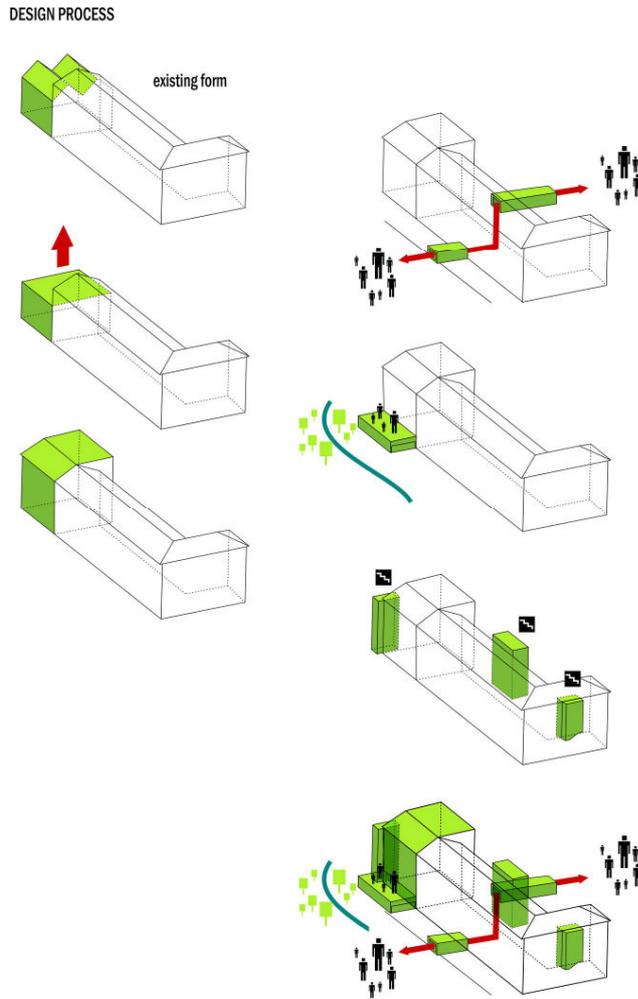
As I mentioned before, I put the most stress at the entrance from the public space as it will be in my opinion the mostly used entrance. After analyzing the composition of the square I appreciated the high wall surrounding it. The wall, besides the tectonics of the leisure space, has a very big impact on sensing the space. The wall is the base for triangular form of coffee house and restaurant, it's a support of the steel stairs going up from the square, and it's the element to pass through while going into the triangular Soda Coffee House. The composition of surrounding walls is even emphasized by constructing an urban wall on the Art Gallery, the wall which closes the composition to make a finished masterpiece.

It was very important for me not to destroy this feeling by demolishing big part of the wall. I decided not to put a foreign form sticking out of the wall but to create a "puzzle" formed opening, making an integrated part with the structure of the stones. (See picture 29). This entrance has also a function of road bridge not to disturb the transportation system.



Picture 29 - Entrance from the public square

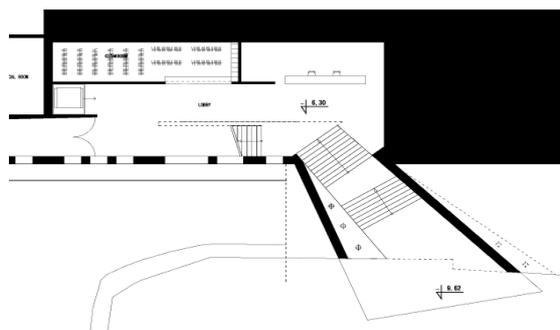
The overall design process supported by the urban transparency analysis is presented by schemes. (See picture 30).



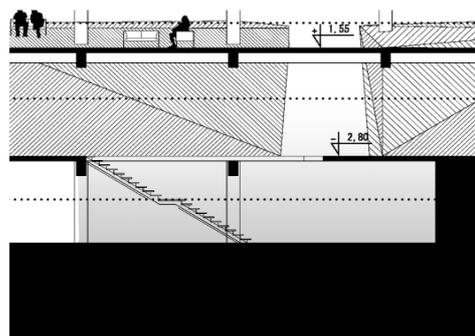
Picture 300 – Design process

8.5.4. LOBBY

The central space of entrance part is lobby (See picture 31). It's the space having connection with three different spaces: the destination space from the link with the public square, the inviting space for people coming from parking lots – the pre-entrance space leading us up to the main floor (+1) of the Cultural Center with three tectonic hall forms. The space is an interior fulfilled with light thanks to high windows and the opening in the ceiling to the main floor (See picture 32). It is to make a significant difference when coming from the parking and underground link.



Picture 32 – Lobby plan



Picture 31 – Lobby section

8.5.5. PARKING

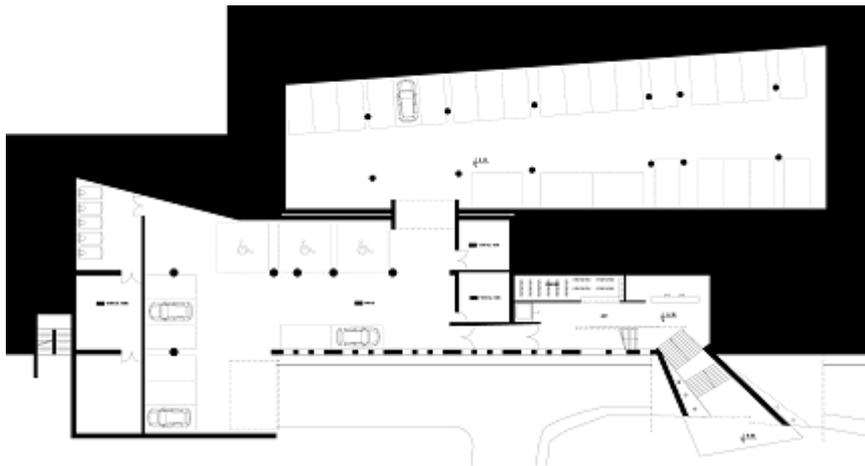
Parking lots in upper old part of Covilhã is a really big problem. The city didn't manage to provide the sufficient number of parking around the most visited places.

According to PDM¹¹, which states the main local urban law in each region in Portugal, when creating a new object with a specific function, there is a necessity to provide sufficient number of parking lots, which for University Buildings is 1/25m².

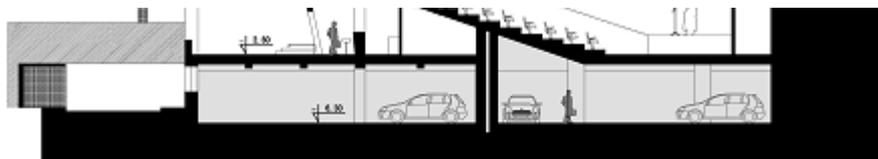
Because my Cultural Center is considered to be a supportive function for the University and Architecture Faculty, I resolve the problem of parking places by the fact, that UBI has already made a big parking structure next to Engineering Faculty, which is to provide parking lots for all the users of this and also Architecture Faculty. Though, I decided to put a parking space inside my building to support the overall parking problem near the public square.

The subject of parking made a big influence on my project. As I wrote before, the interior of factory, because of its narrowness, is not easy to be redesigned especially to parking space. That is why I used all available space between the factory and Engineering Faculty to create there an underground structure connected with the existing interior (see picture 33 and 34).

¹¹ PDM (*Plano Director Municipal*) sets out the strategy for regional development, the municipal policy and urban planning and other urban policies, articulates and integrates the guidelines established by the instruments of territorial management of national and regional level and establishing a model of spatial organization of the municipal area.



Picture 33 - Parking plan

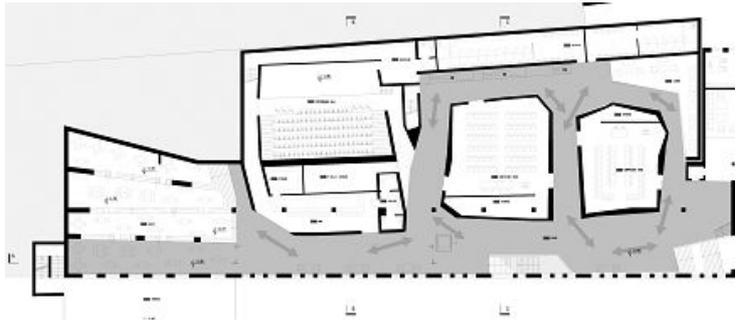


Picture 34 - Parking section

The new structure has its own foundations and is going parallel to the existing one. I try to underline this by showing the two widths of the walls while passing from one structure to another.

8.5.6. FOYER

Foyer was created on the same basis as the parking space. Although is one level up from it, it stays underground, in and out of the factory borders. It has the circulating form, passing around three main forms, and is deformed by them, being various, interesting passages with Covilhã's character (Seep, picture 35). The Foyer can also live as a temporary gallery.



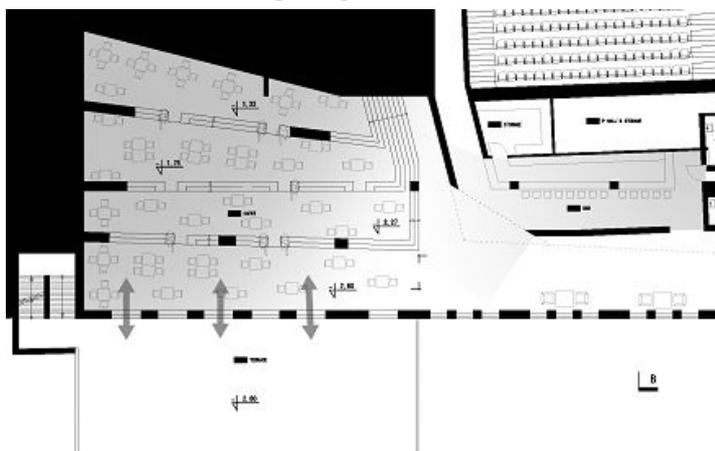
Picture 35 - Foyer

8.5.7. CAFÉ

Near the main Performance Hall the Café space is situated with connection with the bar created under the overhanging mass of the performance hall. The bar is a part of the Performance Hall. People choosing one of the exits can be dragged into it and persuaded to stay in the “under” space.

The café area is considered to be irregular by divisions of the walls inside it. They are a symbol of strong construction of the factory but also the intimacy of their potential of separating from the crowd. So the space gives us a choice – to sit on special stair-tables and be seen from every site or to use a shadow of the wall and stay unseen (See picture 36).

The stair-form café space is an amphitheater with the view on the terrace and the river Goldra through big windows.

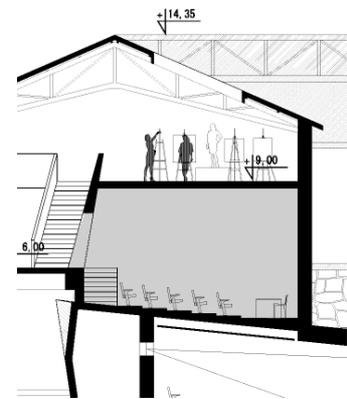


Picture 36 - Cafe with Bar

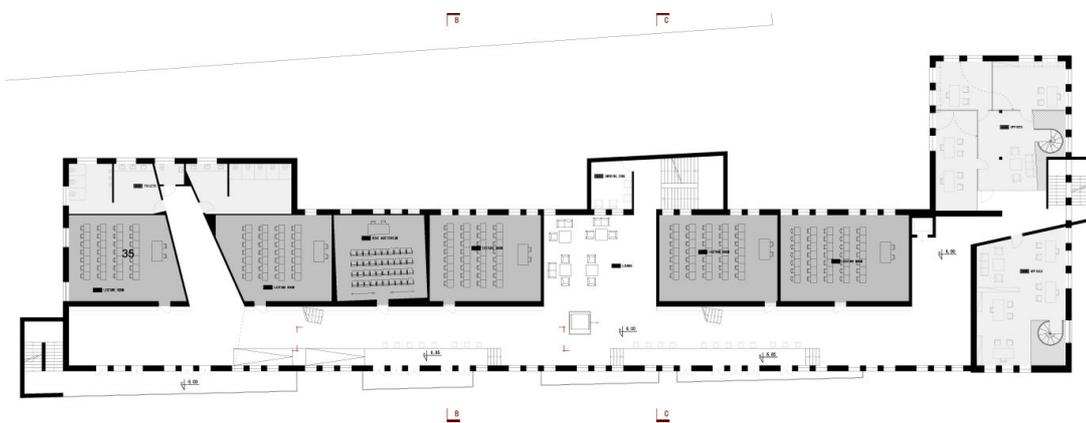
8.5.8. LECTURE ROOMS

Lecture Rooms are situated above the performance space of culture center. They are situated on the +4 floor (See picture 37). This Floor originally didn't have any pillars inside because the roof was supported on the lattice hanging on external walls. Not to close this wide open space I decided to deform vertically the main wall separating the lecture rooms from the bright public space outside, utilized as lounge spaces and places for work. Between all the rooms, there is one using the inclination of the Performance Hall below it. It's a little auditory room, rotated a little bit from the others, following the order from the first level, like a delicate response to the deformation below.

The inclined wall has also some openings which are irregular as a shadow of forms existing on the first level. The wall is the only deformed element on this floor, and it's also an element to be utilized (See picture 38). There are two pairs of stairs following the inclination of the wall leading us to the upper space of workshops.



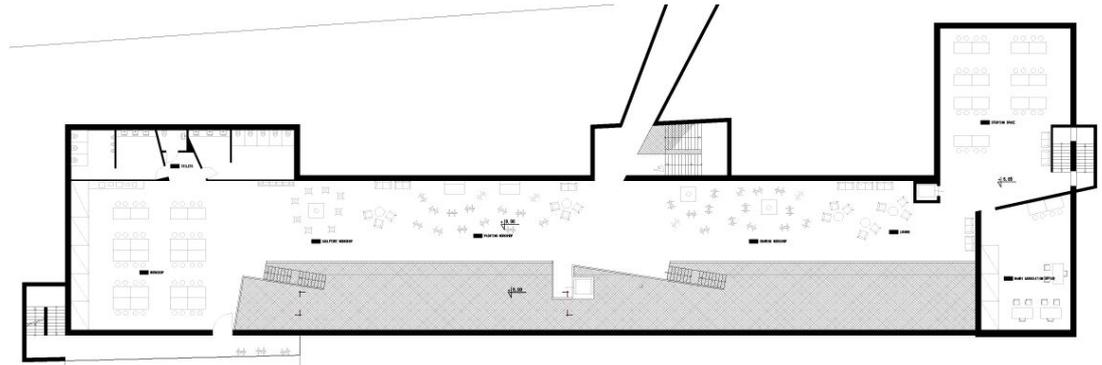
Picture 37 - Lecture room section



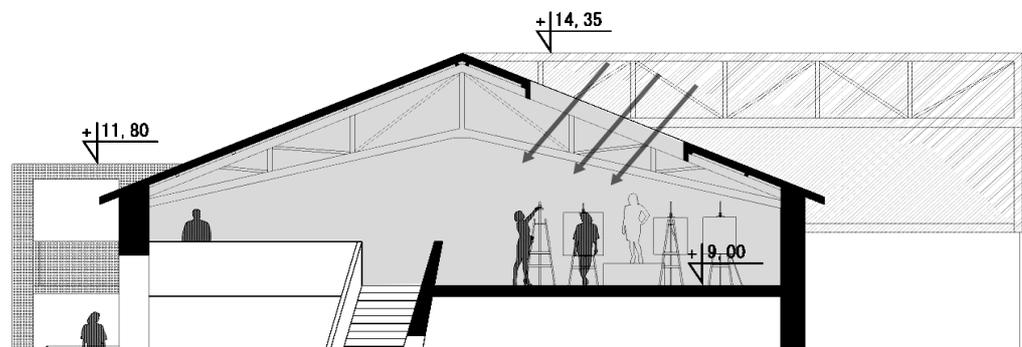
Picture 38 - Lecture rooms plan

1.1.1. WORKSHOPS

Workshops are located on the highest floor of the building (+5), under the roof (See picture 39 and 40). They only take half of the width of the factory to leave as many open bright space as it's possible. Moreover, to give more light necessary for artists, there are also windows in the roof, making the space completely transparent, but still with a big dose of shadow.



Picture 39 - Workshops plan



Picture 40 - Workshops section

8.5.9. STAIRCASES

As the Factory is a very long object, there have to appear evacuation staircases as well as vertical communication. I attached 3 additional stair-case forms to the facades: from the north, east and west. The walls of the stair cases are all made from steel profiles and glass, covered with perforated metal plates, what gives an effect of solid objects during the day, providing shadows to these spaces, and to make them

transparent during the evenings, and make delicate light effects seen from the public square. One of the staircase is considered to be the outside communication with connection to terraces, constructed from steel profiles, covered with perforated metal plates.

8.5.10. OFFICES

The office part stayed in a place where it used to be in a former factory – in the perpendicular part. On the +2,5 level there are offices connected with the Cultural part of the building. The following floors above belong to the Architecture Faculty where the professors' offices and office of students' organization NAUBI are located. The offices are two leveled, connected with each other by spiral stairs, which helps to communicate between the teachers without using the external communication. Also, the second type of the offices is a space with movable walls, easy to be rearranged in any possible way, dividing or connecting the working spaces, according to need. The office situated on the workshops floor is given to the students from architecture organization – NAUBI, to help it to gather and organize new events.

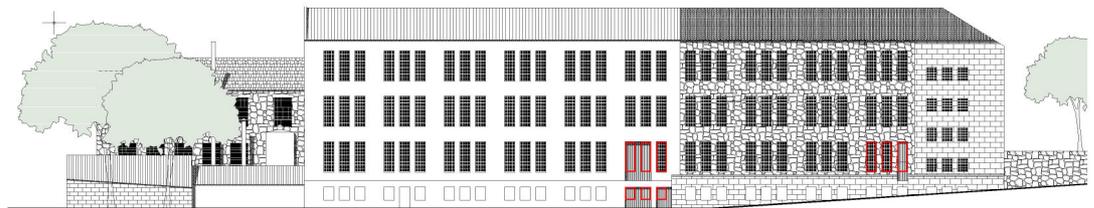
8.6. FACADES

The re-designed factory is considered to be a dominant symbol of the place, right after the high brick factory smokestack next to it. The rhythmical sets of 3 windows made the aesthetics of the factory on a high level. That is why it's so important to retain the rhythm and used materials not to blur the remains of the past, which surprisingly good attach itself to the new reality.

Going back to the urban transparency mentioned in a paragraph devoted to entrances, I decided to use it also in the issue of facades. Not in a meaning of windows, but about the ability of passing through the wall. I wanted to make a living façade, letting the people use it and open it more for the public square. I decided only to add little accents on this highly recognizable wall. There are 3 terraces, aligned to

one direction rotated with a little angle from the façade, to show a little dose of irregularity in seemingly straight and simple system. The access onto the terraces is provided by two-function platforms, which have sufficient width for a space to work on and also to pass through it in the same moment of utilization.

As I mentioned before, the rhythmical sets of the windows are the dominant characteristics of the façade. It is proved by the fact that even after a long time of knowing the building, although there are little misalignments in the rhythm (See picture 41), the brain subconsciously simplifies the façade to the system of three windows, and make the differences stay unseen. I would like to show this misalignments of windows by putting surfaces of glass, making them appear on the façade, and show that this regular pattern have some imperfections making it real.



Picture 41 - Misalignments in the facade

I also put some light to the ground floor, which is partially underground. Nowadays, all the windows are covered with concrete, what makes them disappear visually. Because I designed the parking place on the ground floor, I cover the openings only with perforated metal plates, to provide to the interior fresh air and an interesting visual lighting effects, which in the night are seen from the outside.

I used the perforated metal plates to bound the composition of post-industrial design. They have a function of covering of the staircases and pedestrian link, the shutters of the windows, and the borders of the terraces. They are materially connected with visible steel beams on the facades, used as a wall-roof connections, terraces and the border between old and new structure in the west part of the factory.

9. CONSTRUCTION PROCESS

9.1. PREPARATORY WORK AND DEMOLITION

Due to bad condition, it is needed to remove all the roofs, existing internal reinforced concrete stairs and walls and existing power and water installations.

Also due to non historical or architectural value the one-leveled temporary buildings attached to the west building are to be demolished.

9.2. PRESERVED ELEMENTS

Because of architectural and cultural value, all the external reinforced concrete and stone walls have to be preserved.

All the existing window frames with industrial divisions are to be mounted after necessary renovation.

10. STRUCTURE

10.1. FOUNDATIONS

Existing foundations are constructed in reinforced-concrete technology on stone granit ground.

The new structure of parking is situated between the foundation walls of existing factory and Civil Engineering Faculty building. The new structure is not in a contact with existing ones, it's dilatated from them to prevent the effect of different subsidence.

10.2. STRUCTURE SCHEME

There exist frame structure consisting of system of reinforced pillars and beams with middle beams. Structure modules 795cm x 580cm and 550cm x 580cm.

Analyzing the structure archive documents, it's possible to use the middle beam as a support for the walls above with sufficient strengthening of the beam. This situation occurs on the +4 floor, where to build the inclined wall, with the set of two steel beams joined in a rigid way by an angle of 100 degrees. The beam is supported vertically by the horizontal concrete beam in the external wall and horizontally on the strengthened middle beam below.

To place the 3 main hall forms in the middle of the external wall I used 3 steel frames with 1,0m of height to support the load of external wall. This way it is possible to put 3 forms under the frame with independent structure made of multiplied smaller steel frames and concrete, covered with the dark gray Cor-Ten steel. The load of 3 main halls are supported by beams below and pillars in the parking space on the ground level.

10.3. EXTERNAL WALLS

All the external walls are to be preserved due to their architectural and cultural value. The external walls of the west building has to be strengthen due to its reasonable condition. The west part of factory is being increased with one floor. The top of the stone walls are strengthened by steel beam running along the walls, and supporting the new structure above together with a number of steel lattice making a structure for glass roof.

10.4. CEILINGS

Monolithic ceilings.

10.5. FLAT ROOFS

Flat roof is to be constructed between the factory and Civil Engineering Faculty and is to be a green extensive roof covered with low grass, to create public green space.

10.6. ROOFS

The roof of the main factory is provided by steel lattice supported on strong existing walls and it's covered with ceramic tiles. It also has roof windows with a system of shutters.

Roof on the west building is provided by steel lattice covered with spectrally selective glazing with adequate solar heat transmission properties and system of roof shutters to provide the shadow, preventing loss of interior heat in winter, and allowing occupants to reduce electric lighting use by making maximum use of daylight.

10.7. STAIRS

Interior evacuation staircases constructed in reinforced-concrete system with adequate fire resistance due to fire safety law. Staircase is equipped with installations removing smoke.

External evacuation staircase on the north façade is constructed in steel structure, such as supporting steel beams and textured steel plates for the steps. The structure of the staircase is independent form the structure of the building. They are covered with curtain walls made of spectrally selective glazing with a possibility to ventilate the staircase by opening the windows. The staircase is covered with perforated metal plates. Staircase is equipped with installations removing smoke.

External evacuation staircase on west façade constructed also in steel structure, covered with perforated metal plates, providing natural ventilation.

Interior stairs in different technogies: supported in wall, on the central beam and also slab supported between the floors.

10.8. PEDESTRIAN LINK

The pedestrian link is constructed from metal beams lattice supported by external walls of both buildings. The link is also covered with a glass curtain wall and perforated metal plates to fit the aesthetics of the staircases.

10.9. TERRACES

The terraces visible on the main facade are made of steel beams connected with the external walls.

11. BUILDING COMPONENTS

11.1. INTERIOR WALLS

Interior walls made from plasterboards with adequate acoustic insulation.

11.2. FLOORS

Exterior paving made from granite cubes.

Interior floors made from wooden panels covered with a resin layer to provide high durability.

11.3. INSTALLATIONS

The building is equipped in:

- cold/hot water installations,
- fire installation,
- electrical installations,
- sanitary installations,
- rain-water harvesting system with rain-water collectors
- heating installation,
- air conditioning,

- lightning protection

The installations needed to ventilate the halls are put inside the walls, in places of bigger thickness than needed. There is also provided a place for internal ventilation in a space of hanging ceilings.

In the west staircase there is a vertical service space connected with the technical rooms on the ground level. The vertical service space provides all the necessary installations on every level of the building. It is constructed in reinforced concrete system with adequate fire resistance due to fire safety law.

12. SUSTAINABILITY

Considering the issue of sustainability, I decided to develop the matter of daylighting, by opening as much space, and providing as much day light as it's possible. I sustained the heights of windows providing brightness to the interiors and created glass roof, and windows with a system of shutters to operate the day light accordingly to the needs.

Because in Portugal, especially in winter, there are a lot of rain days, I decided to install the water gaining system with tanks and filters situated on the groundfloor, to cut the costs of cooling and water supply.

Moreover, there is a possibility to install solar panels on the roof, to gain as much energy from the nature as possible.

13. ACCESSIBILITY

Although the building has a variety of level heights, its highly accessible for handicapped people, especially for those on wheelchairs. All the interiors mentioned are highly available for disabled people and people with limited mobility, what is provided by two elevators available in the building.

14. CONCLUSION

This project shows, that post-industrial heritage is easy to be re-designed to adapt new general programs and specific functions and the limit exists only in structural solutions. This is very important thing to remember, that it's possible to bring the obstacle post-industrial structures into life, giving them an opportunity to exist as a full mean of heritage instead of leaving them to demolish with the passing time.

In my opinion the rehabilitated buildings with their history have more to offer and have more potential and value than new-made structures trying to imitate the ambient of the city site. Post-industrial buildings and spaces already have this ambient inside, and the only effort to sustain it is to reactivate empty places to make them serve for all the inhabitants and proudly stand for a symbol of the city with history and traditions, which are too important to be forgotten.

BIBLIOGRAPHY

Professor Helder Pereira de Oliveira (not published). *Habitação Social em Covilhã*: doctoral work at Department of Civil Engineering and Architecture.

Malgorzata Żurowska (not published). *Future of City Covilhã*: master thesis work at Department of Civil Engineering and Architecture, Covilhã.

Elisa Caledo Pinheiro (2009). *Rota de La Translana*. Covilhã: Museum de Lanifícios do Universidade da Beira Interior.

Waldemar Affelt (2009). *Dziedzictwo techniki, jego różnorodność i wartości*: Kurier Konserwatorski

Andrew W. Charleson (2005). *Structure as architecture, a source book for architects and structural engineers*: ISBN 0 7506 6527 0

Câmara Municipal da Covilhã (1999). *Resolução do Conselho de Ministros n.º 124/99; SUMÁRIO - Ratifica o Plano Director Municipal da Covilhã*

Jacek Dominiczak and Monika Zawadzka in cooperation with Agnieszka Kiera (2007-2008). *Local Identity Code for Central Fremantle Source and Design Code*.

Committee of Ministers to Member States (1990). *Council of Europe Recommendation R (90) 20 On the protection and conservation of the Industrial and Civil Engineering heritage in Europe*
< <http://wcd.coe.int/com.instranet.InstranetImage.vlet?command=com.instranet.CmdBlobGet&InstranetImage=570715&SecMode=1&DocId=592694&Usage=2>>

ICOMOS (2005). *Xi'an Declaration on the Conservation of the Setting of Heritage Structures: Sites and Areas* < <http://www.international.ocomos.org/xian2005/xian-declaration.Htm>>

The International Committee for the Conservation of the Industrial Heritage (TICCIH) (2003). *The Nizhny Tagil Charter for the Industrial Heritage*
< www.mnactec.cat/ticcih/pdf/NTagilCharter.pdf>

UNESCO (2008). *Operational Guidelines for the Implementation of the World Heritage Convention*
< <http://whc.unesco.org/archive/opguide08-en.pdf>>

Council of Europe (2005) *Framework Convention on the Value of Cultural Heritage for Society* : Faro
< <http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?NT=199&CM=8&CL=ENG>>

Connected Cities Meeting (2006). *Mobility problems in Mountain Cities – the case of Covilhã, Portugal*: European Community Interregio III C

Wrocław University of Technology (2001) . *Fundusze strukturalne Unii Europejskiej. Prezentacja projektów w ramach Celu 1 : Tempus EU-PULA*
< <http://www.wcss.wroc.pl/tempus/eupula/obj.ppt>>

Wikipedia the free encyclopedia. Covilhã
< <http://pt.wikipedia.org/wiki/Covilha>>

Official Site Museu de Lanifícios da Universidade da Beira Interior
< <http://www.museu.ubi.pt/>>

Paulo Jesus. Blog - Covilhã cidade neve
< <http://cidadedacovilha.blogs.sapo.pt/2711.html>>

Official Site of Universidade da Beira Interior <www.ubi.pt>

Official Site of Science and Technology Park Parkurbis <www.parkurbis.pt>

Information leaflets of Covilhã City Council

ANNEXES

A. Urban model.

B. Rendering of 1st floor.

C. Renderings of interiors.

01. Site plan, scale 1:500.

02. Ground floor, scale 1:200.

03. 1st floor, scale 1:200.

04. 2nd floor, scale 1:200.

05. 3rd floor, scale 1:200.

06. 4th floor, scale 1:200.

07. Section A-A, scale 1:200.

08. Section B-B, C-C, scale 1:200.

09. Existing facades, scale 1:200.

10. Facades' proposal, scale 1:200.