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CONTENT

COMPLETING THE LANDSCAPE – ARCHITECTURE IN NATURAL SITE

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Abstract

There is a need to develop the architectural object in relation to the historical, climatic, cultural and esthetic elements that define the site that is to be improved through this insertion. The elements can dominate or be subordinated to the environment. The way they relate to each other is determined not only by these traits of the site but also by the message they must send, by the identity and functions proposed.

Keywords: *architecture, landscape, architectural dialogue*

Chapter 1. Argument

„Architecture has its own realm. It has a special physical relationship with life. I do not think of it primarily as either a message or a symbol, but as an envelope and background for life which goes on in and around it, a sensitive container for the rhythm of footsteps on the floor, for the concentration of work, for the silence of sleep."[1]

„In its final, constructed form, architecture has its place in the concrete world. This is where it exists. This is where it makes its statement."[2]

„Buildings are artificial constructions. They consist of single parts which must be joined together. To a large degree, the quality of the finished object is determined by the quality of the joins. In sculpture, there is a tradition which minimizes the expression of the joints and joins between the single parts in favour of the overall form. [...] There is no interruption of the overall impression by small parts which have nothing to do with the object's statement. Our perception of the whole is not distracted by inessential details. Every touch, every join, every joint is there in order to reinforce the idea of the quiet presence of the work. [...] The architect must look for rational construction and forms for edges and joints, for the points where surfaces intersect and different materials meet.

These formal details determine the sensitive transitions within the larger proportions of the buildings. The details establish the formal rhythm; the building's finely fractionated scale. Details express what the basic idea of the design requires at the relevant point in the object: belonging or separation, tension or lightness, friction, solidity, fragility... Details, when they are successful, are not mere decoration. They do not distract or entertain. They lead to an understanding of the whole of which they are in inherent part."[3]

Architectural objects can bring value, inspire, create an environment that sustains an activity, or, on the contrary, destroy it- through their own presence or the misinterpretation of the necessities and the potential of the site where they are developed. Their development and the way they affirm themselves in relation to the environment was an intensely discussed subject, going from the denial of the need for an

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intervention, to the denial of any past, nowadays reaching the point where the site is studied, current relationships are interpreted and potential ones are evaluated before making a decision regarding the identity and character of the architectural object to be developed in that area.

Chapter 2. Aspects of the context

a. Existential

The concrete reality that man faces in daily life.[4] The architect is supposed to create significant places, to understand the spirit of the place. The existential context does not have any connections to the socio-economic factors, which simply define a certain period of time.

When speaking of existential structures, Heidegger refers to them as functions of construction and inhabitation. The existential dimension manifests itself throughout history, but surpasses the historical significance. History has its own meaning, showing how the existential dimension manifests itself in agreement with the form and the technology.

The place is that part of the truth which belongs to architecture, the palpable manifestation of living, proper to the man and the identity of the place depends on the appurtenance to the place. In general, it is defined by its character and atmosphere, as a phenomenon that cannot be reduced to any of its features without losing its complete and concrete nature.

In "Existence, space and architecture" C. Norberg Schulz speaks of the existential space, referring to the basic, fundamental relations that exist between the man and the environment he lives in and defining architecture as an embodiment of the existential space. ("There is no man on one side and space on the other, but man in space").[5]

The existential space is the image of a system made up of spatial relationships between objects meaningful for its existence. The existential space, in contrast to the perceived space which is continuously changing, is relatively stable, it is the reference area for transient perceptions, helping transform them into experience.

The spirit of the place defines people's character, essence, it proves something exists or needs to exist. Genius loci is a reality throughout history, even if it is found under several names or concepts. On numerous occasions artists have related to this spirit for inspiration, referring to landscape and context. Modern man considered that science and technique freed him from a straight dependence to the place. This has proven to be false by pollution and chaos.

The man lives in the space and is exposed to an environment. They must be able to guide themselves, to know where they are and to identify with the environment. The space must be structured on landmarks, focal points, it must be divided into regions and connected by paths that remain in memory.

Fear of loss comes from the necessity of orientation. Loss is the opposite of inhabitation.

Each place needs a particular response, taking into account its nature - history, ambience, and being original and new, at the same time. In modern society, the focus is almost exclusively on the practical function of orientation, leaving aside the identity, replacing genuine housing with alienation. Identification and orientation are primary aspects of the feeling of being in the world, embodying a membership and becoming a part of nature.

Genius loci is not a static concept but a way of living, changing and creating architecture is based on the understanding of the spirit of the place.

b. Cultural

It is the sum of overlapping aspirations, religious and philosophical concepts, collective memory. It can establish continuity with history, it comes as a response to the needs of ideological, religious and practical needs; creation of new models in response to the socio-cultural and technical development.

Architecture operates within a cultural system. The operation of a building is a requirement that cannot meet all the residents' needs. It is necessary to develop links with the subject of architecture, to adapt to the human needs and aspirations. Besides utility, the building must have personality, even character, which will encourage users to appropriate it.[6]

The cultural context includes shared values, philosophical ideas, moral codes, religious beliefs, aspirations, beliefs, desires, which are transmitted regardless of the social context.[7]

Each person interprets the surrounding information in their own way, but developing some common identification elements underlies communication, a verbal, visual, cultural dialogue. The place that is created must have a clear identity in order to remain in memory, to draw attention, create a landmark in time as well as in space.

Creating a relationship with the environment determines psychological identity and linking these phenomena is a key element of a project, creating a feeling of continuity and consistency, two important elements in one's intellectual and emotional life. Architecture, as an art form, uses specific means of expression to generate spaces belonging to a regional culture.

Archetypes that characterize a national specific, offering a distinction, not only expressing specific cultural identity, are those used to define a cultural object. So culture is not about chance, about the styling, it means a matrix created from the human existential model, while considering its condition.

The essential elements of a design concept of a people or a culture and sometimes even their simplest plans can often be understood only by knowing the underlying philosophical orientation. In terms of memory, architecture turns into a biographical space, layers of concepts and ideas that are strung to certify the changes that an area underwent.

c. Physical

– Artificial

One of the essential problems of architecture is reporting to the existing structures, to the relationships with all the elements of the city, of the area, because they have already contributed greatly to the character and specificity of the place.

The public image of a city is overtaken by many individual images. Kevin Lynch distinguishes five types of elements representing natural forms that make up the image of a city: paths, boundaries, areas, units and turning points. These are items that the observer interacts with within the city.[8]

The way we perceive space is influenced by the quality, diversity and quantity of the experience it provides. The quality of the perceived space is at the interaction between the form and the observer. The elements can coincide or contradict. An important part of the design process is the organic quality of the

form that is acquired from perception, helping the receiver to create a coherent, meaningful and dynamic image.

In relation to the mechanisms of perception, Kevin Lynch distinguishes two notions: orientation and readability. Orientation is the use and logical organization of sensory indications offered by the environment, which is a characteristic process of every living being, fundamental to effectiveness and survival. Guidance is based on both immediate sensations and the memories of past experiences. Readability refers to the ease with which we can identify and organize elements in a coherent scheme.

In his book, "From form to place", Pierre Von Meiss promotes the idea of developing methods of readability for the site. These methods refer to the identification of the typo-morphological, structural characteristics of groups and subgroups but also to the analysis of the historical process that influenced their formation, to the analysis of materials and their characteristics in point of shape, texture and colour.

But the most important part is discovering the latent opportunities of the site.

-Natural

Geography and climate of a place have multiple implications which should be understood in all their complexity. The natural environment plays an important role in shaping the expression of any "spirit of place". So it is one of the major determinants of architecture.

From the historical point of view, the natural environment is a factor that comes with different ratios depending on the development level of the society. But development was at first subordinate to the possibilities that nature offers itself: climate, heat, pluviometric system, air circulation and landforms. A project involves a complete analysis of the geo-climatic factors that influence the image of the architecture and of the way in which these factors will influence a construction and the relationship created by such influences.

- Climate (temperature variation, wind and rainfall regime, the characteristics of solar radiation), heading towards large areas of water or rivers;

Topography

The need to dominate made people destroy, level, not take topography into consideration in order to show the man's supremacy over nature. But these "landscapes" do not have identity, personality; they do not give the feeling of belonging or security. They are dull. Flat sites have been considered the best for building since they do not generate any economic and technical problems or challenges, which have led to the total denial of a place's specific nature.

The way in which a building is erected on the site has several meanings, as the ability to explain the site's prehistory, its archaeological past, subsequent cultivation and transformation over time. So it is imperative to study the history, origin, formal structures and meanings that we find; they are the strongest stimulants and material for design: geometric lines, fragments of nature and human efforts. Specific culture of the region, its history, understood both in the sense of geology and agriculture will be related to the insertion.

Reshaping the terrain can be applied where natural relief is not enough to produce the optimal effect. Major remodelations must be carefully made, since they can have a negative impact on the landscape and the overall image if they do not fit in the existing elements.

The characteristics of a terrain are very important when developing a settlement; these have not been created by chance, but have always been in correspondence with their needs and the particularities of the field.

Climate and light

The way light is used differs from region to region, as well as climate control and expresses a specific place and its climate variations.

Climate variations also determine the full-empty ratio, not so noticeable under the current conditions, as indoor climate technology enables the development of an interior climate completely different from the exterior. Although in some cases this is desirable, local climatic conditions, seasonal variations do not have the ability to express a specific place and reflect the local culture.

Light floods the space, giving it "life", creating an indoor-outdoor, public –private connection or on the contrary, it is used as an element that highlights the lack of these connections, isolation, using shade as the main element – the lack of light is one of the elements that give personality to an architectural object if well thought, not just as a purely functional study but also in intensity, accents of elements, spaces, relationships, creating points of interest and activity centers, places that tell a story by the presence / lack / type of light.

Chapter 3. Interventions in nature

Are those interventions developed in a natural site, with no architectural objects nearby.

Architecture and landscape are in a state of reciprocity, with a variety of approaches to the problem.

In his work, "Landscape and aesthetics", Rosario Assunto argues the landscape as space issue. The fact that the landscape is not a part of the space but space itself is the first issue debated, representing "an aesthetic experience, a subject of aesthetic judgment."[9]

I.O. Simonds develops in "Landscape Architecture" the idea that nature must be discovered by a new generation, returning to the approach of nature interpretation in peasant architecture, proving a full understanding and awareness of the importance of natural forces, forms and features, reacting to them in his own interest, but also understanding its protection.[10]

Frank Lloyd Right said: "Let's build houses that bring the life-giving elements of nature near man and lead the horizons. This means an architecture that comes from the nature of the site and equates the first step towards ensuring a dignified architecture, for in the consistency of a house with the land we feel there is a match that we call beauty."

Architecture in natural site can be seen as part of the natural landscape, in perfect balance or as an intruder.

The architectural space must be developed in connection to the view – the scene that is observed from a vantage point, creating an important element in choosing a site. The relation developed is that of continuity of nature within the interior space, which creates a connection between natural and artificial. This matter of developing the view is a subtle side of the design, a series of analyses and studies, so that it will be outlined in the most artistic, dramatic way, creating a special charm and achieving great potential.

The activities taking place within the architectural object can be linked to different views - "framed" by the gaps in the surfaces of the object, that arouse emotions beneficial to stimulate or to rest the eyes, thus influencing the behavior of the people in that space and the activities that they undertake. Landscape images can be uniform, gradually discovered with the completion of a defined route or can be faceted, divided into consisting frames, discovered and interpreted separately, but still perceived as a whole.

The perception of a view is important in the design method, so that the moment the view appears completely is intensified, the human mind preparing for that moment, observing each detail. The place is also very important, so that the landscape presents its most interesting aspects, most impressive images, revealing it little by little, avoiding a violent contact with the natural sighting, which would so lose its importance.[11]

The idea that man created the concept of shelter and housing within nature, relating to its smallest detail leads to the idea that there is still a close connection between the landscape and the object of architecture, connection which is very deep, subconscious, referring to the primordial side, becoming one with the natural element. So through architecture, the man tries to go back to nature, to landscape.

In order to live in a place, this must be humanized by developing an interdependence relationship between landscape, man and architecture, all being a part of the cultural landscape. Since it is an interference with the natural landscape, a combination of artificial elements, we are talking about creating a new landscape, ordered by a new reference system with a harmonious order.

The purpose of architecture and landscape is to accommodate activities for relaxation, mental rehabilitation, recreation, leisure, taking part in a series of activities that help individuals dedicate themselves to rest or entertain or focus on performing professional obligations. Therefore, it must respond to a whole range of emotions and induce viewers / occupants emotions, causing human beings to be participants, not just viewers by smoothly combining the transition from inside to outside, accompanied by environmental factors or composition, location of trees, stones, water, leading ultimately to resolving the technical problems, but also to impressing the observer and drawing attention to the quality of the final result – the created space.

The variety of forms, functions, and atmosphere has resulted in shaping the landscape differently from test to test, sometimes making improvements to the landscape through these interventions, arranged sensitively, creating a link between the service and site and other times destroying the site's harmonious and beneficial features.

Ormsbee talks about "the essence of the territorial planning for each project: 1. Find the most convenient site.2.Let the site guide the plan forms. 3. Use the full potential of the site."[12]

Interventions in nature are grouped into three types, as it shows below.

A. In accordance with the context

These are the interventions that take into their volumetry, materials used, relations / full-empty ratios, interior-exterior relationship, features found around them in the landscape.

They aesthetically, plastically create a composition harmonizing through the recognition of a module and its use in a non-aggressive manner, so that there isn't a strong contrast between the existing and the intervention, even though each has its own personality.

For example: Taking the contour, shape of the landscape - mountains, hills, in the volumetry or the section to preserve the contextual character in the architectural intervention. Taking reports, scales, textures, materials and their mild interpretation in a manner which allows viewing the relationship between the two elements.

For example:

1.*Wellness Orhidelia*
Architects: Enota
Location: Podčetrtek**,** Slovenia

It is a treatment centre that takes on the roof, in a simplified manner, the contours of the land where it is located, the building being conceived as a continuation of the landscape, not very evident than from small distance or some specially chosen perspectives, where it powerfully asserts it's identity by textures, colours and deployment areas.

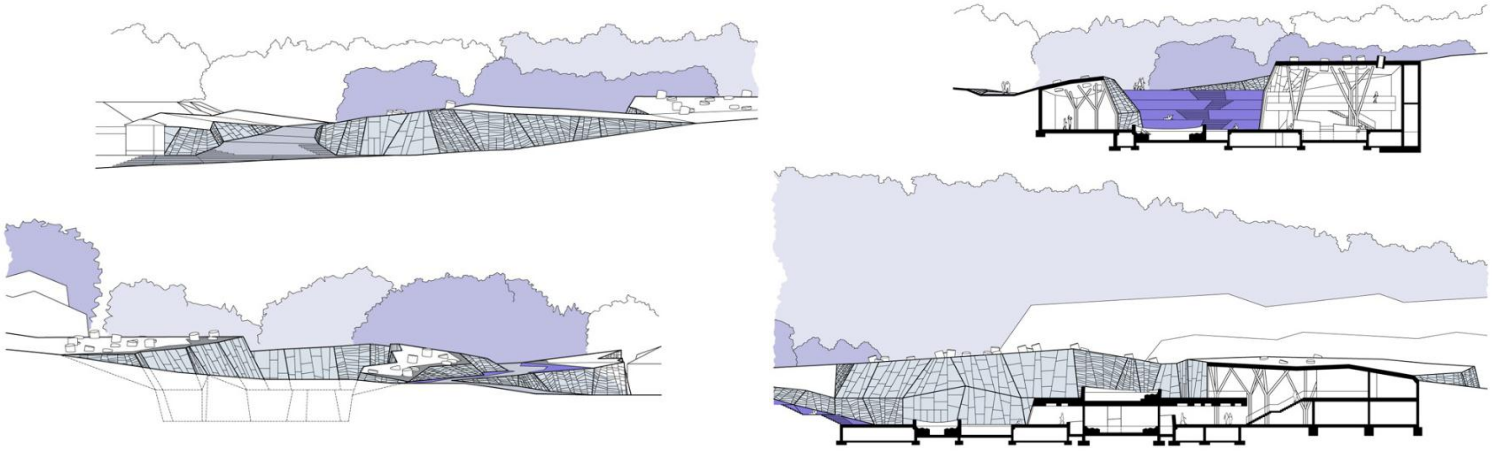

Image 1: Wellness Orhidelia, arch.: Enota; location: Podčetrtek, Slovenia
(Source: http://www.archdaily.com/62814/orhidelia-wellness-enota/)

From public space we pass to the semi-private space through a series of terraces that decrease towards the focus point, the outdoor pools, strongly coloured at night, as the whole complex. Its transparency helps to highlight the landscape through large glazed surfaces that hide the inside during the day, straight surfaces which reflect the landscape and at night let the light out and expose a tree-like structure that supports the roof. It is at the ground level, submerged along within the patio, clearly separated by the surrounding elements. It creates a boundary through height and the materials used.

The plan form of the building is irregular, like the naturally created shapes. The roof height increases and decreases depending on the rooms close to becoming a landscape element. It is an interpretation of its characteristics, which leads to a close connection between the building and the context and pass gradually, smoothly from one to another, from outside to inside.

Image 2
(Source: http://www.archdaily.com)

Image 3
(Source: http://www.archdaily.com/62814/orhidelia-wellness-enota/orhidelia-11/)

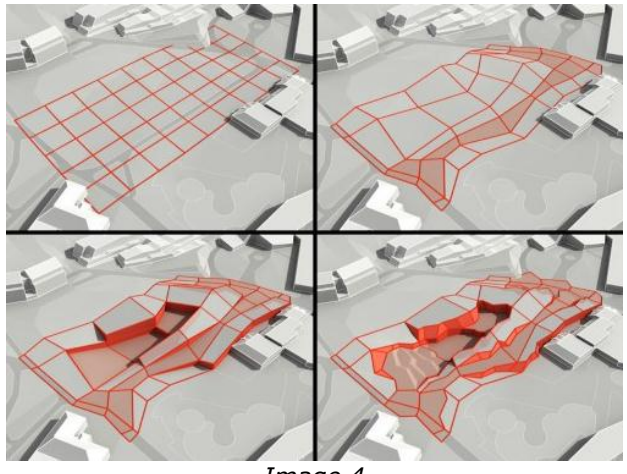

Image 4
(Source: http://www.archdaily.com/62814/orhidelia-wellness-enota/orhidelia-02-10/)

Image 5
(Source: http://www.archdaily.com/62814/orhidelia-wellness-enota/orhidelia-07/)

Creating a tree-like structure for the inner resistance structure underlines the intention of creating this harmony between the natural and the artificial. Although not immediately apparent, this gives a rhythm to the structure, an organic "texture" which belongs to that space, creates a pleasant atmosphere at a human scale, so the new environment is consistent, comfortable, easy to identify and provides clear benchmarks in terms of spaces.

However the building asserts its personality through straight lines, which although follow a natural development model, create straight edges, of sharp glass and metal, subordinated only to the level of visual concept development to the landscape where it is located. Beveled roofs are less aggressive and create a clear delineation of the influence of the building on the environment - it stops at ground level.

The splitting glass styling reminds us of contours simplification, the transparency which reveals the support structure reminds us of the stacked layers of vegetation, while the concrete and metal complement the independent identity of the complex.

B. Neutral

There are interventions that enable the focal point to remain on buildings / existing space, so they are in the "foreground" and the new object appears as a non-aggressive filling in the space. This is achieved by using transparent materials that do not attract attention through colour, texture, reflection. Compositionally, they are distinguished by clear, easily identifiable forms that complement the existing compositional agglomeration as a calm and uniform background that highlights the decorative element, a plan that supports a sequence of elements, a neutral colour (natural or not) that by its own intensity showcases any colour, texture, which supports the visual and textural compositional existing modules as a background colour that although has personality does not impose as the centre of interest.

Another method is the „concealment „of the new construction in the land, covered by natural elements, developed inside them to minimize the impact of a new/artificial element in the area.

For example:

1. Chichu Art Museum
Location: Naoshima, Japan
Architect: Tadao Ando

Image 6: Chichu Art Museum; arch.: Tadao Ando; location: Naoshima, Japan
(Source: http://www.benesse-artsite.jp/en/chichu/)

The translation is "museum in the ground". The construction does not alter the landscape, being completely covered in hills. Access is at the base of the hill, leading through galleries to zenithally lit areas, courtyards that open at ground level into geometric forms, visible only from a height greater than that of the hill.

The indoor - outdoor ration is achieved by light courts penetrating the earth, giving the museum air and sunlight, emphasizing the relationship of subordination achieved between the natural site and the construction.

It recalls us of a cubist composition, some forms that create tensions with their directions, indicating a service, yet not visible at the eye level. The only landmarks are the access road and the entrances.

Here the landscape is allowed to dictate the architectural form, to hide it such as to prevail. Seeing the water is not limited by any building, foreign material is observed quietly, pointing to the interior construction of the hill, where it runs a route with points of interest highlighted with light, opening the delimitation of outer space and of the landscape – the sky. This solution also allows for the court view to not be blocked by any items, making a stronger connection between the indoor and the natural spaces, allowing it to breathe, to have the maximum amount of light in the created conditions and also to have privacy.

The natural landscape develops without encountering any obstacles, as if there are no buildings, no unnatural interventions. Both reach their maximum potential without compromising the natural.

Image 7
(Source: http://mimoa.eu/projects/Japan/Naoshima/Chichu%20Art%20Museum)

Image 8
(Source: www.mimoa.eu)

The way the view appears determines the type of approach and the main planimetric development axes. The main axis leading from the basic access to the water, the main point of interest in the landscape, can be seen from the best observation point offered by the natural form, a small promontory towards the water, but also towards the other point of access to the structure.

2. Langreo – Sports and Leisure Center
Location: Langreo, Asturia, Spain
Architect: Javier Pérez Uribarri

Image 9: Langreo – Sports and Leisure Center; arch.: Javier Pérez Uribarri; location: Langreo, Asturia, Spain (Source: http://www.archdaily.com)

Image 10 (Source: http://www.archdaily.com/7391/sports-facilities-for-colegio-vizcaya-acxt/1729118631_ext-0007/)

Volumetry takes natural forms, which it imitates in order to not overcrowd the area and to bring an extra green space. The center is designed as a series of hills acquiring the height of the space inside the building and disposed along a curved line, creating a landform instead of a building site. This way of masking architecture is practical in areas with an agglomeration of styles, functions and buildings and insufficient green space. This creates artificial parks, which are not hidden in the ground, but create a plot to hide them.

The materials used for the facades are semi-transparent, underlying the fact that we are dealing with a building, but are covered by artificial grass to mask from certain viewpoints the existence of another building in the area.

Transparency allows linking the exterior with the interior, transmitting the momentum that is given by human motion, by the energy released inside the building. The natural hill form calms and balances and becomes a stable element in a very busy environment. The building makes a statement through its atypical volume. Even if it is an imitation or an interpretation of the shape of the surrounding hills, it's obviously a much clearer and well finished version, which draws attention by its partial opacity. It is a shell that covers a metal structure with translucent sides. Clearly an intervention not hidden by other tricks. The interpretation of nature is here a very simple, non-aggressive intervention.

The concept started with the transformation and regeneration of former mining areas, which meant creating a symbol to mark a turning point in the lives of local people. The general impression is that the city lacks space, open land. The space is occupied by mountains, the industrial area and the homes of those who worked there. This led to the idea of proposing a new landscape instead of erecting a new building. Curves, waves, were created; the roof was designed as a folded ground and was covered with grass. Proposed areas can be extended to create squares and gardens in the neighborhoods that are currently occupied by buildings in very bad conditions.

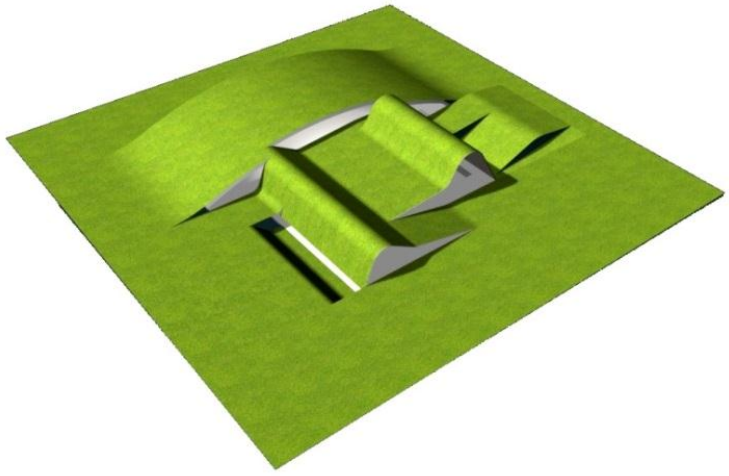

Image 11
(Source: http://ad009cdnb.archdaily.net/wp-content/uploads/2008/10/252353719_langreo-concurso-02.jpg)

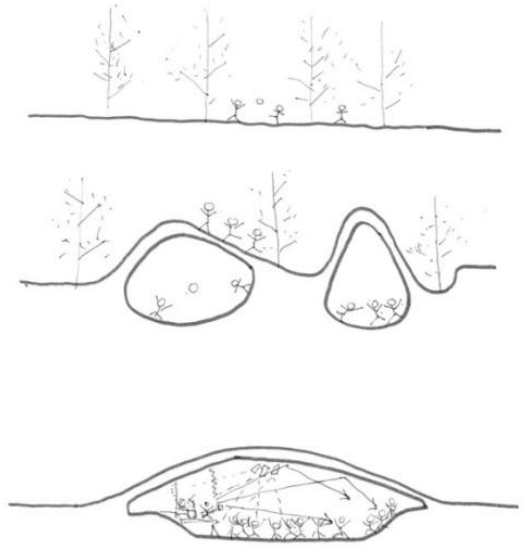

Image 12
(Source: http://www.archdaily.com/7391/sports-facilities-for-colegio-vizcaya-acxt/221492584_scheme/)

To resume the mining theme again, the volumetric settlement of offices is "building within a building", a walkway connects the pools and the entry, folds are present in the stands as angled spaces.

As inside the mines, the interior is rough, with contrasting colours, but the outside has curved features, which don’t reveal the interior elements, but hide them.

C. In antinomy to the context

Interventions which through shape, colour, material, scale, functionality - sequence of spaces, indoor-outdoor ratio, contradict the environment and create a visual and spatial tension with the context. These interventions underline the contrast created by both the site and its own specific features, capitalizing both ideas.

Some of these interventions can use existing elements - for example some full-empty ratios, but reinterpreted and created by other materials that subtly connect the two bodies, but maintain the distinct character of each.

They can also use local materials, but for unnatural elements with distinct character, making a connection between the two completely different elements. The importance created by this contrast is bringing to attention both the building and the site. They are complementary by volume and create a subordination relationship that is partially rejected by natural elements, but they are highlighted and power is conferred to them by the very presence of the architectural object. Therefore elements need contrast to be highlighted.

2. Matsunoyama natural science museum
Architects: Tezuka Architects + Masahiro Ikeda Co.
Location: Niigata, Japan

Image 13: Matsunoyama natural science museum; arch.: Tezuka Architects + Masahiro Ikeda Co.; location: Niigata, Japan (Source: http://www.architecturenewsplus.com/project-images/17696)

Image 14 (Source: http://www.architecturenewsplus.com/project-images/17690)

It is situated near a forest - gross volume, industrial finishes, unrelated to the environment in which it is located. It creates a signal element not only with its observation tower, but also with the reddish metal that has no relation with the environment. The contrast created is harmonized if we consider the reasons for which it was created. It is designed as a structure that extends over the ground (it does not dominate it in height), which doesn't have large glass areas, but rather contains all necessary information, protecting it from the wild. The tower is not only a signal element, but also practical in winter, when used as a point of observation, the only part of the museum that remains above the snow and offers a view over the area. Switching to this view is made through semi-darkness to highlight the effect obtained in the end. The shapes are rectangular both in plan and volume, not taking any inspiration from nature.

It is a clear statement of independence from the environment in which it is located, still exploiting the most important aspects of it. Landscapes offered, the enumeration of organic shapes and colours. The body of the museum blocks the access to the forest, bars it to take over the ascent of the land and amplify it through the tower. The land in front of it is covered with concrete, amplifying the identity of this insertion, of foreign object. However, the roof pitch, adapted to winter conditions, takes the angle from the nearby slope.

These identifiers create a nice, sincere presence, which gradually reveals its qualities, drawing the viewer towards the light flooded inside, despite the weakly glazed facade.

In plan, the body of the building arches to cover all functions in the most convenient arrangement, while taking a level curve, which gives it a certain fluidity and organicity, however, contradicted by the industrial treatment of the facade. Nevertheless, the body is treated with cold, as an appendage of the site, with the clear function of being an added item and not to be confused with the existing.

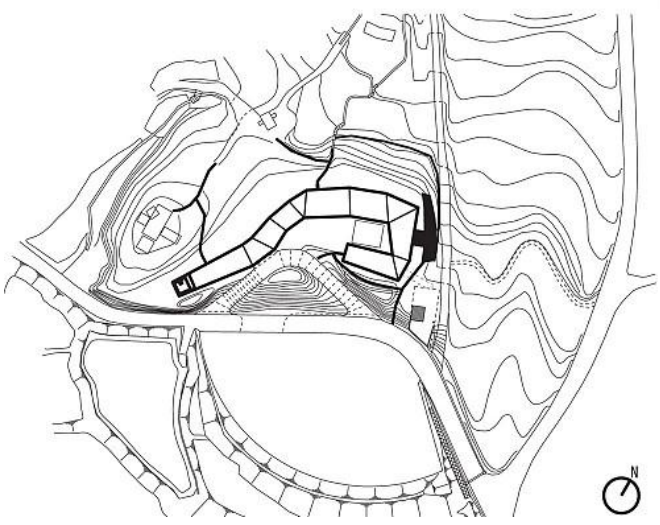

Image 15
(Source: http://www.architecturenewsplus.com/project-images/17845)

Image 16
(Source: http://www.architecturenewsplus.com/cdn/images/o/n/u/4/nu440ok.jpg)

Red, rusty harmonizes with the green of the forest; although complementary, their shades - reds more towards orange, greens that are bluish, allow their harmonization in terms of colour.

Moreover, the glazed parts of the museum seem to be cutouts that allow linking the sky and the body of the building, which are interwoven, being flooded with light.

On the main axis of access, the museum offers its longest display flanking the forest. However it provides balance through the tower looming in the sky, contrasting with the mountain that rises on the opposite side.

Chapter 4. The term "contextualism"

Contextualism appeared as a term in architectural theory and criticism following a negative attitude towards the site and the context, created by the modern movement whose urban theory and applications tended to devalue the traditional town.

In 1970, the "Contextualism. Urban Ideals + Deformations " article was published; it described the fight of Thomas L. Schumacher and Rowe's students at Cornell University against the destruction of the town centers in order to achieve new construction and their alternative strategy called contextualism. (Original term contextualism = context + texture - Steven Hurt, Stuart Cohen in Contextualism).[13]

They were showing interest in the urban shape and not in the style, trying to reconcile modern urbanism with the traditional town, considering the inadequacy of modern architecture style is urban rather than stylistic.

One of the most important ideas is that both urban solids (built masses) and gaps (green spaces and squares) are figural forms. The significance of public space in the form of city character creation is very important. A second component of the theory is the idea of *differentiated contextual building,* due to Robert Venturi in his work "Complexity and Contradiction", in which the idea that a building has to face difficult conditions without being conciliatory on accommodation is developed. Differentiated construction synthesizes the ideal and the circumstantial. Distorting the conditions of the site and accommodating the many pressures without losing the content.

Contextualism provides a middle ground between a rigid past which allows no further development and the innovations of urbanism which ignore the urban fabric.

Chapter 5. Effects of interventions in nature - Conclusions

The landscape will exist and change continuously regardless of the presence or absence of architectural interventions. Even if an addition to the landscape is made, it will be modified and will be the result of the action of space and time itself. The landscape project will exist with or without the architect, with its own dynamics, its own rules. Architecture complements this development and has to mold on it. We need to understand the framework before proposing something, so that we don't reach the point where too much is proposed.

If the landscape has positive values before the erection of a building, then it will be subordinated to it as ratio. A landscape approach of the architecture project will be the premise of a type of space reminiscent in its eminently natural frame of vernacular architecture.

By allowing the normal evolution of the landscaping process not only do we reach visual harmony but also gain some functional and technical benefits. A green roof can provide climatic control of the interior spaces, air currents can be used to ventilate the building and adjust temperature and humidity, excessive solar irradiance can be avoided by a simple study of the area and by using existing elements for a more efficient design of the house.

Nature has overwhelming force when it manifests itself, so it is better to take over the necessary elements and adapt them than to argue with them.

The natural landscape is an area that has become increasingly damaged. Whether it is about the neighborhood of a city or the remote countryside of one, there will be changes over time. The proposed solution must cause the least damage to the site ambience and keep respect for unadulterated space. However, the development of a decent house generally involves classical solutions that destroy the environment. So the best solution is that which adapts to the characteristics of the site.

The architectural composition elements must create a dialogue, convey a message - identity, landmark, service, appurtenance for the viewer. In order to do these things, we need to understand each element and the way in which it is perceived both individually and in relation to other elements, defining a set of basic human reactions that help initiate this dialogue.

The significance of the colors, the rhythm intensity, a natural or on the contrary, an industrial texture, an aggressive, geometric shape that breaks a classic plan of a facade, an organic form that reminds us of the natural development, the different scale of objects create certain feelings and reactions to human characters, who, although perceive these things differently, at a basic level, subconsciously relate to them in a relatively similar way.

Surface also plays an important role in the perception of the space, not only visually, but at tactile level as well. It can give a feeling of stable, unstable, brittle, depending on the position and the material, as well as on the degree of transparency and on the way it reflects light or the shadows that fall on it, creating a feeling of calm, anxiety, according to the plan approach (straight, angled, narrow, high, very low, such as a low ceiling in a large room - which develops a connection between the viewer and the created space through the tensions and relationships created - this results in identifying a benchmark for the space.

Volume conditions, through its surfaces, the states expressed, but also the accommodated functions, their relationship with the outside, the reports related to the immediate environment. It may be indoors or outdoors, it may be a connection between the outer environment and the inner volume, the acquisition or continuity of a volume ratio in the composition, in a concept developed by volumes. The volume of the walls, the gaps present in these volumes, their placement, the volume itself placed in the urban or natural environment, the type of volume - aggressive, passive - in accordance with the environment; the volume as a module used in architectural composition, all lead to establishing a relationship with the environment, creating a report which determines our attitude towards the place by means of which we identify it.

One must also consider the influence that an intervention will have on a natural site, the capitalization of the area, by covering key elements of landscape in an architectural route, identifying

them and guiding people to areas where they can be observed, thus highlighting the natural elements through architecture.

The development direction is creating an area of economic sustainability and tourism potential, which simultaneously draws attention to nature conservation through an intervention that capitalizes it, which not only outlines the existing and pleasant ambience but it also makes it more accessible.

Proposing pedestrian walkways, headlands or points of view presents the most important points of the landscape that need to be observed. From the building, the view is "cut" so that strips, rolls that propose different views are obtained. This way, the viewer is led to the key points of the landscape, prepared by a trail to observe these special items and enjoy them both outside and inside the building. The problem is not only aesthetic but also of influence on the environment, so that interventions mustn't alter too much the natural landscape remained undestroyed. A consistent relationship between the site and the proposed object is required, giving not only the building but the site itself the deserved importance and attention.

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Endnotes

[1] Zumthor , Thinking architecture, Page 13, paragraph 1

[2] Pag 13- preliminary promises- first paragraph, Zumthor, Thinking architecture

[3] Zumthor, Thinking architecture, page 14
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[5] C. Norberg Schulz - "Existence, space and architecture" Praeger Publishers, London, 1971
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ARCHITECTURE, REGENERATION AND *SANITAS PER AQUAM*

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Abstract

The SPA programme of architecture is a relatively recent one, whose development has occurred in the last 10 to 20 years, according to the desires of longevity and to the ideal of eternal beauty but as well according to the increasing need of dealing with stressful situations that became characteristic of the contemporary life. The paper aims to examine this programme, to outline its specific features, within the first part by identifying some landmarks – architecture programmes throughout the history, useful for pointing out whether certain features have or have not been perpetuated.

Keywords: *SPA, thermal baths, wellness, atmosphere*

Introduction

The paper brings forward the architectural relaxation, treatment, health and wellness programs, the central element of which is water. The finality of the study consists in understanding the elements that outline this type of architectural space during history towards a better understanding of the actual phenomenon within this domain.

One of the most popular forms of using the water properties is immersion, with or without ritualistic implications, with culturally-religious valences or as simple routine in order to maintain health. Considering the type of space where it is carried out, either in simplicity or complexity, with the integration of cultural elements (for instance religious concepts) and even the place this custom occupies among the daily activities, it illustrates the common mentality of a society, implicitly of a certain period of time.

Bathing has surfaced as a healing method (it is supposed that the primitive man has discovered the curative properties of water by observing the behaviour of ill or hurt animals which retreated to the hot-spring-fed pools where they could immerse to cure themselves[1]). Later on, it was used both for healing and for the cult of gods said to possess the power of the waters (Babylonian civilisation – Goddess Ea, Indian civilisation - Goddess Varuna) or for the purification of priests, which was a part of the ritual. Hippocrates (4th century BC) recommends therapeutic bathing, as he had scientific knowledge concerning man's anatomy and physiology.

Two space typologies are therefore outlined: bath as a private space and public baths. The first archaeological proofs regarding the existence of private baths come from Antic Greece, dating from the 1st century BC, before the appearance of the first gymnasium[2]. The two types coexisted in the life of societies along time, while the influence of the private type on architecture is integrated into the dwelling program,

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the public type creating therefore its own programs. The ratio between the dominant and the dominated type is representative through its social implications.

Architectural forms which shelter public bathing are constituted into programs following social requests and sometimes into cultural landmarks. In Sigfried Giedion's vision, the latter are the ones sheltering regeneration. Regeneration is a collective fact and illustrates the attitude towards the passing of time[3], the balance between dynamic and contemplative attitudes and which starts from an individual level and translates as the effect upon the entire society[4]. The preoccupation towards regeneration is specific to large civilisations.

In contemporary times, the domination of the type of private bath on the public one is quite clear from the point of view of the number of users, which is due to the technology of the 20th century and the large number of baths as a standard unit and the relative generalisation of the water supply conditions. The purpose of the primitive bath remains, in most of the cases, the hygiene of the human body, but architects are starting to consider it more and more as a space for personal refuge[5].

The SPA program comprises the characteristics of both types: although most of the times it implies the use of a single space by several people at once, their interaction is reduced to a minimum, the experience being undergone individually, fact which is justified by its own purpose as a refuge from the dynamism of the daily life. It is also compensated through a space of the omnipresence of sensorial stimuli, a definitive element of the SPA experience, which thus creates a parallel reality to the daily one, being also delimited from this one. The design and interior design of a SPA brings forward the scenographic task of the architect, who creates a special environment, associating it to a concept which corresponds to its purpose and destination. One possible scenography is that of a ritualistic space, where, either through its significance or through its relation to the primordial elements of nature, man exceeds his immediate material condition, getting therefore closer to total regeneration, as Sigfried Giedion described.

Functionally speaking, to different types of SPA correspond different characteristics of operation, but the main criterion they are based on is the assurance of a therapeutic and relaxation circuit, within which each function is carried out by specially trained staff found in its immediate vicinity.

Compared to the programs of great civilisations, the main function of which (related to health and relaxation) was amended by functions which contributed to overcoming the immediate materiality and the regeneration of the soul (through knowledge and contemplation), the SPA program didn't find a way to integrate such functions.

Chapter 1. Architecture and Regeneration of Body and Soul in History

1.1 Architecture and Ritual – Regeneration in the vision of Sigfried Giedion

In the 7th chapter of his volume, Sigfried Giedion, "*Mechanisation takes command – a contribution to anonymous history*", the author makes a chronological analysis of the preoccupations regarding the regeneration of past civilisations, highlighting different attitudes.

Regeneration is seen as something which exceeds the interior and exterior purification of the body through water, being duplicated by a specific human dimension – namely the spiritual one, in different

forms: contemplation and acknowledgement. Total regeneration is necessarily the common denominator of the community[6] and it is, therefore, illustrative for a collective mentality. Under this aspect, the private bath, known from the 2nd century BC, cannot be considered a substitute of regeneration.

In opposition to the society following the age of industrialisation, the great civilisations of the world manifested their preoccupation, with no exception, towards regeneration, which also found its expression in architecture, giving birth to a series of programs with a specific destination and functional system.

The analysis of the archetype of total regeneration, its evolution and its spreading, constitutes a basis for a better understanding of architectural forms to which it gave birth.

According to Giedion, the archetype comes from Central Asia and spread to Russia where its initial form is maintained for the longest period of time, before spreading to Europe. According to the writings of Herodotus, the Russian type was known by the ancient Greeks. The roman type of regeneration, the thermae appeared in the 1st century BC, as a new form, composed of a gradual succession of rooms, being a synthesis of the type taken over from Hellenistic Egypt and also comprising the Greek gymnasium. The thermae were spread and adapted to the local conditions once the Roman Empire expanded. The original archetype of the steam bath persisted on Syrian territory until the 3rd century AD, as proof being the large spreading in the territory of approximately the same type of plan of uncovered buildings. Later, the Syrian type appeared built of stone, arched, as a hybridisation of the archetype of the Roman thermae, i.e. the type the Islamic world took over, adapting it to its own concepts. The evolution and spreading of all types of regeneration slowed down during the Middle Ages as the Church imposed its opinion regarding the importance of spiritual cleanliness[7], having negatively affected the custom of public bathing.

The architectural space of regeneration in history is, concretely, a space of bathing, a ritual which helps people ascend to that primordial element, a space which, considering its characteristics, is the common denominator of bodily purification and spiritual development. Always in accordance to the social values which gave birth to it, the architectural space evolves in parallel to the type of regeneration. The architecture of regeneration, closely related to society, brings forward certain aspects of time through its operation as well as through its means of expression: the structure and the liberties of social classes, the place of women, the economy and the influence of religious concepts.

The architecture of the archetype resembles that of the Russian type contemporary to the author: a wooden hut, with a central space where there is a fire heating a set of rocks. The Finnish sauna, copies, and most probably, the Russian type, as their architecture, the way in which they cleanse the body and their social-cohesive component being, in essence, the same. The Sweat-lodge of Navajo Indians has maintained intact the form and the ritual profoundly related to religious concepts in certain reservations, until present times. The architecture is still that of the hut, but this time with a wooden structure, covered with earth[8].

In the Greek space, the bath appears as a function annex of the gymnasium and together with it gives birth to a new incomparable type within the association of the regeneration of the body and that of the soul[9]. The most significant evolution of the archetype is considered to be the Roman thermae. Its complexity is due not only to having taken over and integrating the gymnasium (with all its functions) and the steam bath but also the organisation of a rich system of rooms with different destinations. The Hammam, which resembles to the thermae in terms of organisation of space, it is though fundamentally different on the one hand considering its dimensions, richness, and the reduction of the monumental

aspect, and on the other hand as it integrates Islamic religious concepts (for instance: bathing in stagnant waters is considered to be immoral, the semi-obscure space is considered to be populated by *djini* - spirits).

Although Giedion does not mention them among the regeneration forms, which through the description of examples specific to great civilisations appear as spaces which fully depend on human intervention, assuming therefore the task of self-regeneration, within public bathing programs, the construction of the building using hot-spring-waters for curative purposes is also comprised, such building existing in Ancient Greece (for example in Sarangeum, close to Sparta, where baths are carved into stone), on the territory of the Roman Empire (called *balnea*, in France – Aix-en Provence -*Aquae Sextiae*, Vichy, England – Bath Buxton, Germany – Aachen, Wiesbaden, Baden-Baden - *Aquae Aureliae*, Romania – Herculane, Austria – Baden) appeared as the territory expanded, but also in Japan where they are called *onsen*. The scale of these buildings is reduced and follows a trajectory imposed by the nature of the terrain where the hot-water-spring may be found, but they shall constitute a source of inspiration for the SPA program and also an individual category.

1.2 The chronology of a series of architectural programs for regeneration

In Ancient Times as well there was the private/public duality of spaces for cleaning the body using the physical properties of water, both in Greece and in Rome, but in the Orient and in Japan through relevant for the study of the morphologic and functional evolution there are the architectural programs destined for this purpose, as the type of the bath is comprised by the dwelling program, being therefore an adjacent space.

The main role of the Greek Gymnasium was to educate children (boys), while, after having come of age (18 years old) they were trained here and taught to use different weapons, before becoming members of the city. This is where the society draws the importance – *"Each city, it does not matter how small, was keen on having a theatre and a gymnasium"*[10]. Architecture is being outlined starting with the archaic period, before it not being considered as necessary to cover the spaces destined to sports. It was a large dimensions complex "having several sports fields and large annex buildings, with swimming pools, porticoes, fountains, statues, and others", everything in Athens being – "situated outside the city, in a large park, a public garden*..."*[11]. Among the specific functional spaces there are: the *xysta* – the covered portico, where training occurred in bad weather, the *palaistra* – the place for body contact fighting, and sometimes a *stadium* – for horseback challenges. A solid education cannot be resumed only at physical exercises; therefore it had to be completed with the study of poems, music, reading and writing, literary and philosophy studies. Therefore, the Gymnasium receives the value of educational centre and its architecture was adjusted through the appearance of new spaces. Vitruvius describes in book V: "*in the three simple porticoes, three large exedrae shall be built, with chairs for the philosophers, rhetors and all others who like to study, to be able to discuss while seated*"[12]. One of these spaces is the "*hall of the ephebians*", *which is a very large exedra, containing chairs, with its width equal to 2/3 of its length, on its right there was the corycaeus; next to it the conisterion, while in front of the portico wing there were the cold baths*".[13]

As significance, the Greek bath is impossible to individualise compared to the gymnasium. Although it is a simple ritual, consisting in cold baths and showers, it is remarkable how it is organically integrated between the spaces destined to intense physical effort and those destined to the philosophical discourse, or contemplation, constituting a totally different type of regeneration. Although there is proof of public bathing places, they cannot be taken into consideration as an architectural program, their incidence being reduced. Starting with the Hellenistic period, the steam bath similar in type to the roman one makes an appearance, lacking, though, in spectacularity, while its social-cultural importance is not significant in relation to that of the gymnasium.

Of all the gymnasiums the ruins of which are visible nowadays there are the Upper and the Lower Gymnasium of Priene, Lyceum – one of the 3 most important gymnasia of Athens, is the *Gymnasium at Olympia*.

Image 1: The Gymnasium in Olympia – Site plan
(Source: https://learning.watfordboys.herts.sch.uk/file.php/290/Olympiaplanlabels_001.jpg
https://learning.watfordboys.herts.sch.uk/course/view.php?id=290; Topic 5 – 1. Olympia Power Point)

The Roman Thermae, from a technical point of view, represent the most evolved stage of the archetype of regeneration, their complexity consisting in the system of rooms with different temperatures and levels of humidity which imply a usage circuit, comprising at the same time spaces specific to the Greek gymnasium. Although the thermae may be attributed to different values – the contribution brought to a good public health, the spreading of knowledge and information, the fact that it is constituted in important poles of the city, and even political, their construction by the leader is a symbol of power and

stability, the entry fees being small, it was considered as a form of consolidating the popularity of the leader – without a doubt, the most important value of the thermae is the social one.

Although they mostly take over the organisation pattern of the gymnasium with its organic balance between the two representative spaces – *palaistra* and *exedra*, implicitly their meaning – the intense physical effort and the cultivation of the soul, the importance of sports within the Roman thermae is reduced, the accent shifting over to the discussion, be it more or less philosophical, and over the bodily benefits of exudation and bathing.

The first certain pieces of information concerning the thermae surface after the census ordered by Marcus Agrippa in Rome in the year 33 BC. Although there is no considerable proof of the 170 such establishments, their large number proves their early popularity.

The state in which the census finds these thermae determines Agrippa, at that time, namely the year 20 BC, to build the largest existent thermae. It wouldn't have been possible to build them if certain technologies hadn't been mastered.

What is fundamental to the thermae is that they supply a constant volume of water corresponding to the capacity of the pools. This was realised with the use of aqueducts, which carried water on distances of tens of kilometres from the spring, filling up reservoirs which were situated inside the thermae.

The hypocaust system was used to heat up the rooms and water by the end of the 2nd century BC (or the beginning of the 1st century BC – the period being uncertain), the oldest examples being found in Pompeii. Its base was a hearth - *praefurnium*, situated in the basement, in a ventilated room which could be supplied with coal, usually situated either on a lateral or on a posterior wall. The heat is delivered into the *hipocausis* and then distributed through the pavement and through vertical pipes. This room is covered by ceramic plates, supported by brick pillars, situated at on an axis at 60cm, covered by a concrete pavement (*suspensura*). The appearance of plates with pins is observed for the vertical distribution of heat – *tegulae mammatae* and *tubules* – which create vertical pipes with a rectangular section being a component part of the wall, which start from the *hipocausis*. In order for the draft to be ensured, the superior part of the walls formed of *tubules* contains air pockets.

Similar in what their planimetric organisation is concerned, the thermae were generally composed of three elements: a massive central body, composed of the entire system of rooms with different levels of temperature and humidity, to which sometimes libraries or even a theatre were added (an example being the Thermae of Titus and Carcalla), an intermediate open space, destined to athletic practice, organised in order to be used as a stadium – some of the areas having vegetation, statues, organised as a park and a body disposed perimetrally to the later one, comprising apartments with different destinations such as: education (for philosophers and poets), private quarters, shelters for the slaves found in the property of the thermae, while those situated towards the exterior were destined for shops.

The main body, mainly shelters for the baths and their annexes, included most of the times a men and a women area. In the immediate vicinity of the main access which opens in to the *palaistra* (surrounded by the portico on three sides, the fourth being occupied by the *natatio* – an open air swimming pool, as the pattern of the gymnasium), there is the access to the changing room – *apodyterium*. From here one reaches the *tepidarium* – a room with hot and moist air, the main resting and socialising place. The tepidarium is connected to the *frigidarium* – a room with cold water pools (*alveus*) and the *caldarium* – a room with a high temperature and a large amount of steam. The thermae usually

comprise of a room with a high temperature and dry air – *laconicum*. Also directly connected to the tepidarium there are the rooms for anointment – *unctuaria*. The bathing ritual consisted in the passing through either all or one of these spaces. The complete circuit implied two entrances into the *caldarium*, in the end the individual being anointed against cold, while the most simple circuit is that of the sportsmen training in the *palaistra* and then in the *natatio.*

The composition of the main body depends on the following factors: the circulation of hot air from the *praefurnium* towards the bathing rooms (though the pavement and the walls) which implies for them to be connected according to temperature (i.e. *frigidarium*, *tepidarium*, *caldarium*). The main water supply is also one of the factors: the water reservoir, which was usually situated within the perimeter of the yard, serves the pools successively cold - hot[14], the water being heated as it gets closer to the *praefurnium*. The importance of the tepidarium renders it the central position within the site setting.

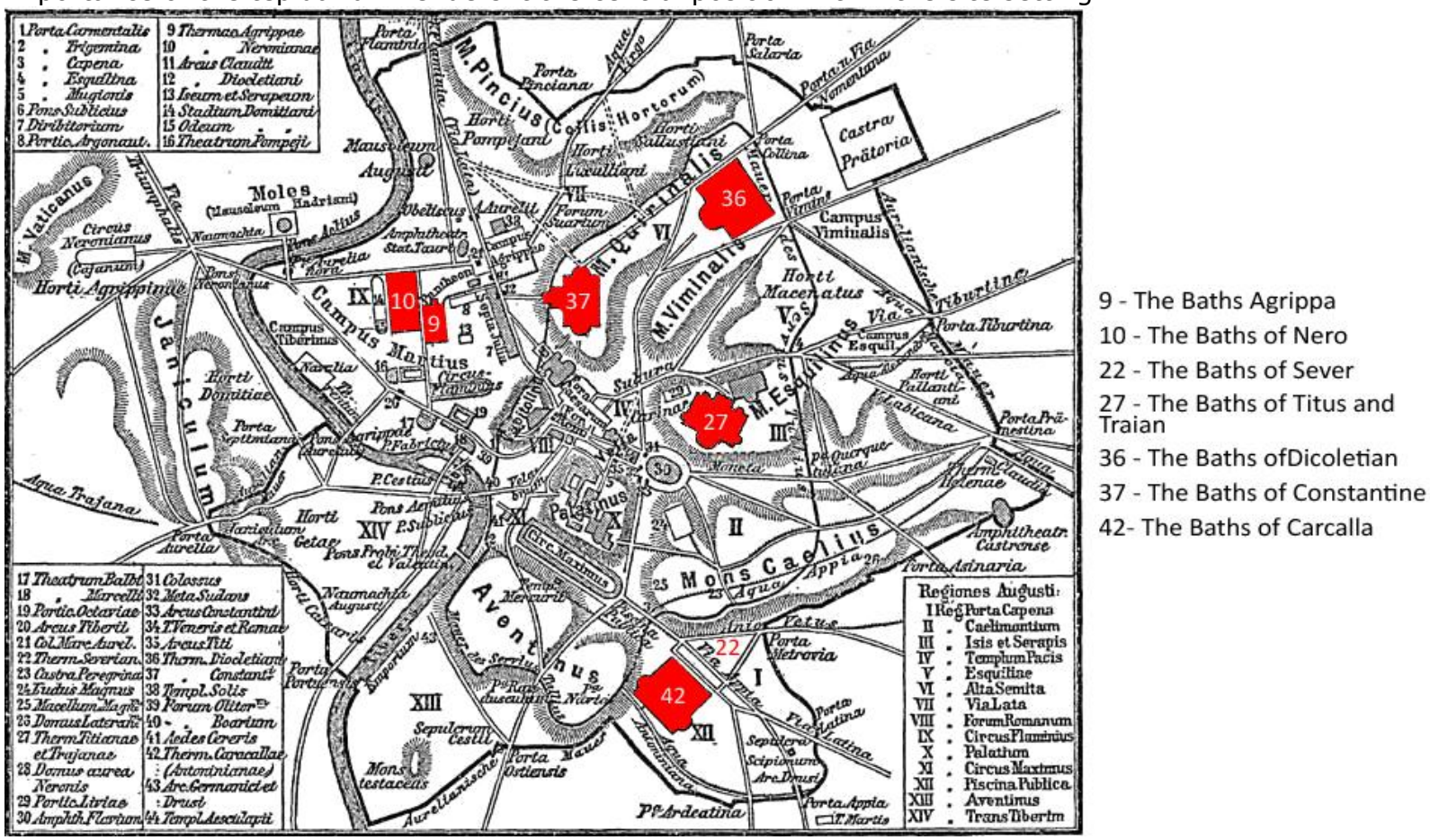

Image 2: The map of Roman Thermae
(Source: upload.wikimedia.org/wikipedia/commons/5/5d/Map_Rome_Trajan_baths.JPG)

Although the composition does not represent a preoccupation for the first thermae built[15], it becomes a distinctive factor for the most important thermae. The enclosure is usually symmetrical, its axis being justified by several aspects. Being built inside the urban web, the same as all other large public buildings, they are regarded predominantly from two perspectives. The composition axis is given by its central body, more precisely by the succession *frigidarium-tepidarium-caldarium*. The symmetry may sometimes be justified by separating the sexes and giving the spaces an area for women, though a reversed succession.

In order to characterise the interior space of the thermae, the general character observation of Bruno Zevi related to the concept of Roman architectural space may be taken into consideration: "*the fundamental characteristic of Roman space is to be statically conceited. Symmetry and absolute independence of the neighbouring spaces dominate the circular and rectangular spaces developed, highlighted by the thick walls which divide them*."[16]

Found at the opposite extremes, The Stabian Baths of Pompeii illustrate a regional simplicity[17] of the type of Roman Thermae and are representative for small cities, while The Baths of Carcalla illustrate the peak of richness and complexity of the program.

The Stabian Baths, dating from the 2nd century BC, bear a great importance considering the state of preservation in which they were discovered, fact which helped with the identification of the destination of the spaces, useful information for the study of thermae which were discovered in an advanced state of degradation. They are atypical through their symmetry, justified by the existence of older baths, which were remodelled, together with the introduction of the hypocaust system. The area meant for women is smaller than the one for men, therefore lacking the *frigidarium*. The colonnade of the perimeter of the yard destined for ball playing was composed of Doric columns, covered by white stucco work. The yard, as well as the frigidarium, was richly decorated.

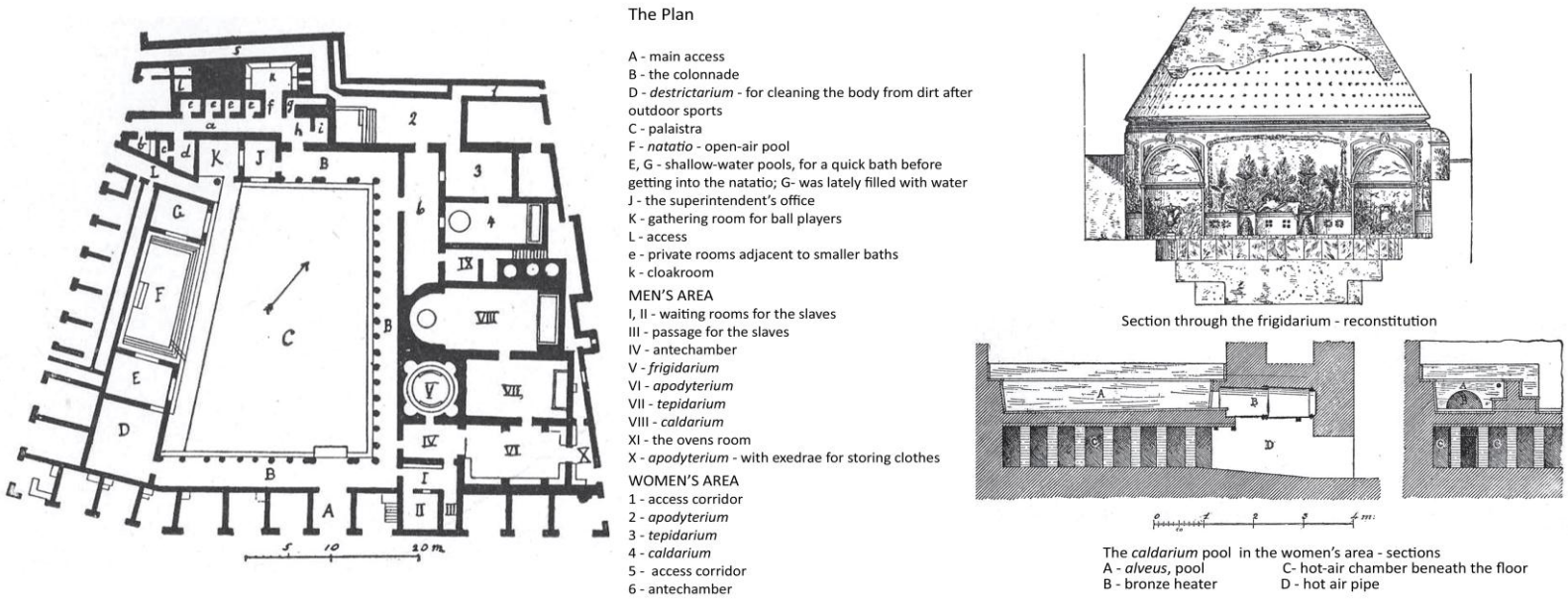

Image 3: The Stabian Baths, Pompeii
(Source: MAU August – „Pompeii –Its life and art")

The Baths of Caracalla, built in between 211 and 216 AD and completed by Caracalla's successors "*summarises the grand vision of the emperor, expressing through its architectural splendour his material expectations*"[18] while their opulence reaches the peak of the program. As a paradox, in relation to the luxury and richness of the decorations they are not used by the rich population, being placed at the periphery and being accessible to all kinds of population. They are built on a lifted platform longer than 230m. The most impressive aspect is the semi-spherical dome with an octagonal plan which covers a part of the central body. They are definitely abandoned in the 6th century AD after the destruction of the aqueducts by the migrating population, although their popularity, as that of other baths, considerably decreased as Christianity has spread across the empire.

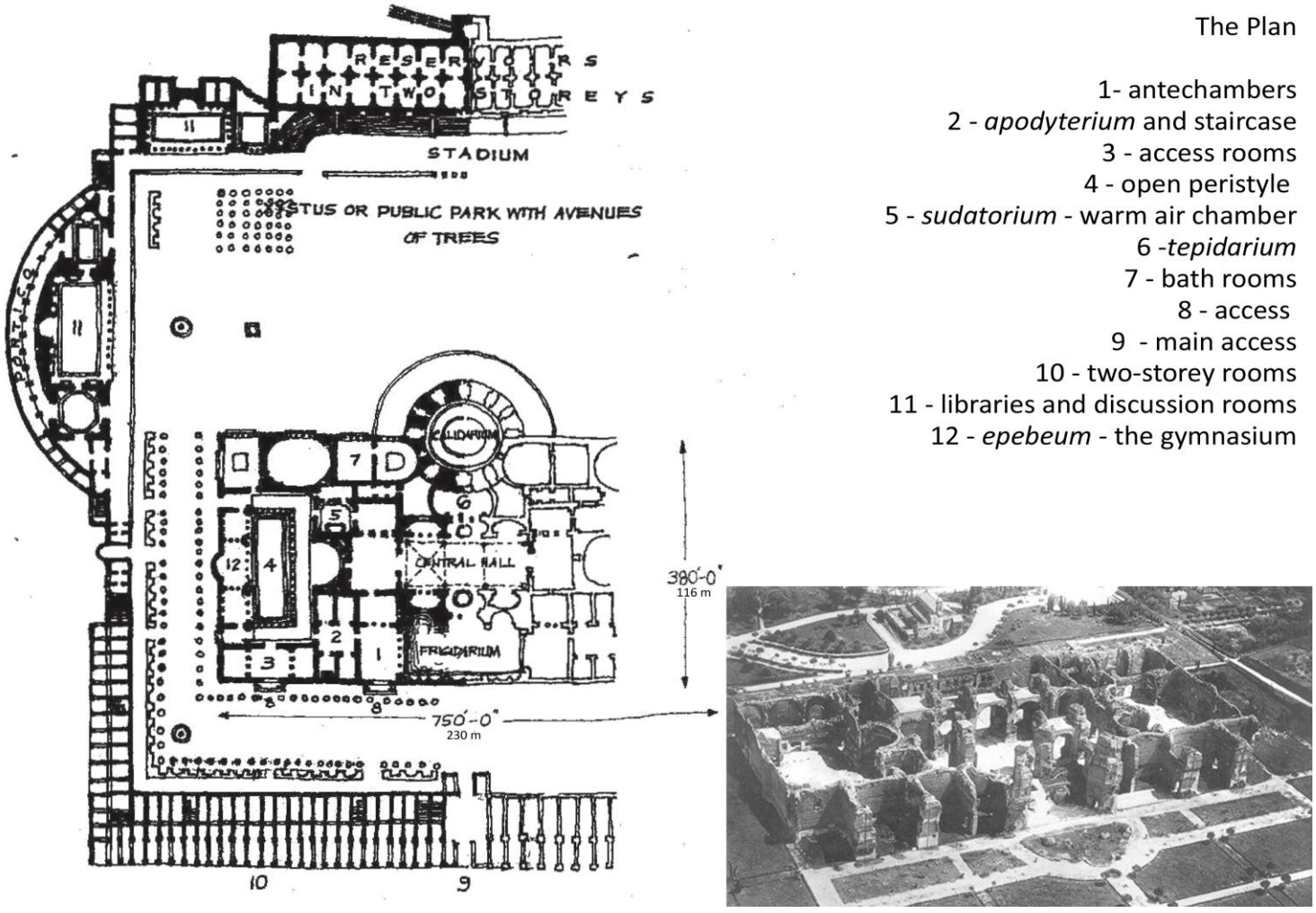

Image 4: The Baths of Caracalla
(Source: SALVAND George – „Architectural character & the History of Architecture)

The Hammam of the Islamic world with its origins in Syria between the 3rd and 6th centuries AD[39] appears like a synthesis between an evolutive variant of the archetype of regeneration and the Roman baths, which were known in the area before the territorial expansion. The first architectural variants of The Hammam are made of stone and vaulted. They belonged to the Omeyadd Caliphs and were built as they used to live a semi-nomad life. The importance of Hammam increases in time as much as it becomes complementary to the Mosque. From the ritualistic point of view its evolution is not substantial. It consists in sweating under the influence of hot air, in purification methods and massage. However, from the architectural point of view, the evolution is significant. The Hammam reaches its maximum of refinement in the XV century, its luxury being associated with the prosperity of the city where it is located.

Similar to the model of the Thermae, the Hammam typology was spread on a radial scheme, together with the Islamic expansion. Important centres were Baghdad and Cairo. The age of the buildings is often difficult to estimate due to the re-usage of the ancient degraded structures that were transformed into new Hammams.

The Islamic world adapts this architectural program to its own mentality. Attention is paid to the resting, passivity and meditation instead of active effort or sport. At the same time, the architecture of the Hammam changes from the one of the Thermae'. The disappearance of sports– the *palaistra* and its surrounding columns – affects the organization of the spaces. The spaces start to be oriented towards the interior, the attention towards the exterior being considerably reduced. The monumental aspect of the building is reduced to decoration, representing the only distinguishable element of a Hammam in a continuous façade. This, together with the adjustment of the spaces according with the number of visitors (Hammams were very common in all areas of the cities) and with the intimate atmosphere, all contribute to the dramatic reduction of the complex in comparison to the Roman Baths.

The hypocaust system is reduced as well, and the heating of the rooms is no longer done by *tubuli* which fit in the width of the walls, but by hot air pipes placed under the floor and by using high temperature vapours.

From a functional point of view, the specific rooms are similar to the ones found in the Roman Baths; however, their importance is changed[42]. The access is made through a corridor that leads to the *maslakh* – the locker room. This one, in contrast with the *apodyterium*- a transitional space associated to a cloakroom - becomes a very important space, thanks to its representational value. It was the receiving space and had a social function as a meeting room. It used to have a central fountain with benches for resting and it was surrounded by niches. The next room was one in which the temperature was slightly higher – *bayt awwal* – small sized, arched, transitory, equivalent to the *tepidarium.* It loses the central position that was characteristic for the plan organization of the Thermae and becomes an access corridor through *bayt-al-harara* (the equivalent of the *caldarium)* – the room with the highest temperature, which is also the most important one[43]. Placed radially to the previous one is the *maghtas,* the steam baths, usually two with different temperatures, replacing the *laconicum* (with high temperature and dry air). They have a central pool and different fountains with fresh water and perimetral benches. The *frigidarium*, with its cold water pool, disappeared. In the case of the first Syrian Hammams, they were filled with sand and transformed into cloakroom. In addition, similar to the Thermae, there is an area for women, though small

sized and poorly decorated. The Hammam was the only place where they were allowed to go outside their homes unaccompanied.

The architectural expression favoured an intimate atmosphere, even in the case of complexes of larger dimensions. The dusky space covered with domes with small and rare holes in the upper part, was thought to be populated by *djini*. It was thought that through meditation the user entered an immaterial state.

The Turks came across the Hammam during its full maturity – around the XII century, but they didn't operate major changes. It is under their influence that the attention for regeneration re-appears, yet limited in the Europe's of the 19th century. The responsible person is David Urquhart, an English diplomat who militated for building this type of establishments that he had seen in Turkey, however, without having a real success.

One of the best preserved examples, until the date of its restoration in 2008, is the *Haseki Hurrem Hammam*, built in Istanbul, near Hagia Sofia, in the 16th century (1556), by Mimam Sinan. Its nature is particular by its symmetry, the women area being identical with the one occupied by men. The two sides are separated by a wall, each group having a separate entrance.

Figure 6. Haseki Hurrem Hammam – particular in its symmetry related to the central shaft and by the equal opportunity between women and men.

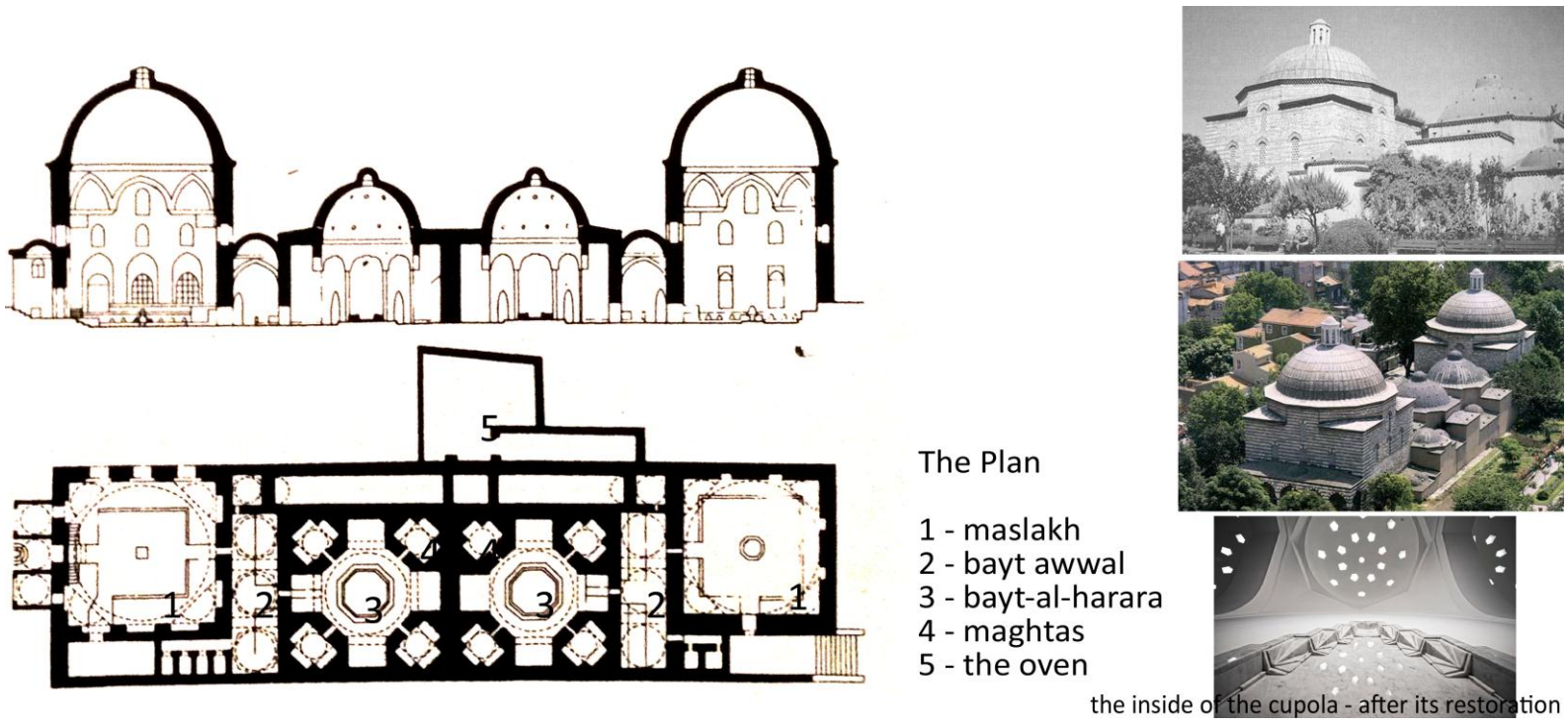

Image 5: Haseki Hurrem Hammam
(Source: PAPADOPOULO Alexandre, L'islam et le musulman
http://www.visit2istanbul.com/haseki-hurrem-sultan-hamam-bath/)

The decline of the buildings that were meant for regeneration, the disappearance of the architectural programs that were designed for this purpose occurs together with the reduction of the pursuit of regeneration. In Europe it happens together with the spreading of Christianity. The fact that the public baths were blamed as being immoral as well as the Church conditioning the achievement of eternal life after death by cleanness of the soul led to the abandon and, finally to the disappearance of public baths. Another reason that led to their gradual degradation is the destructive influence of the migratory peoples. Beginning with the displacement of the Crusaders in the Orient and their contact with the Islamic Hammam, which at the time was in its full development and expansion, some efforts were carried for the rehabilitation of this kind of establishments. However, the influence of the Church was stronger – the oriental tradition was not to be followed.

Beginning with the Middle Ages, the preoccupation for the regeneration disappears and so does the social value of the bath. The technology cannot satisfy the luxury of a private bath inside the home and personal hygiene decays. The public baths that were still open, yet proscribed, were closed at the time of the epidemics, especially when the plague emerged. The interest for the personal care decreases, the end of the XVII century being characterized by complete carelessness[47]. Designing without carrying about hygiene and sanitation became a habit.

The Iluminism re-discovers nature and brings about new initiatives that can be associated to regeneration, based on water combined with other beneficent elements: sports in the open and sun baths. Later, an attempt to revive public bathing is David Urquhart's initiative to build a Hammam in London. Though it did not become a trend, it was a pioneering move. The advantages of this time were the discovery of new methods and a re-discovery of old ones, which, at a certain point, would give birth to specific spaces.

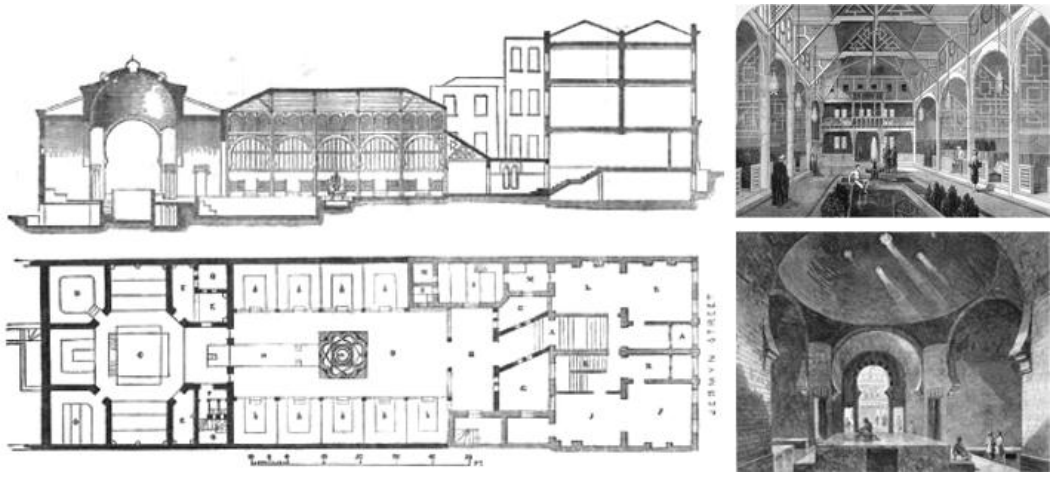

Image 6: David Urquhart's Hammam
(Source: http://www.victorianturkishbath.org/_3TOPICS/AtoZTopics/Social/Doggett/images/76jsplan2.jpg
http://www.nickelinthemachine.com/2011/04/the-turkish-baths-in-jermyn-street/)

1.3 The XXth and the XXIst centuries– the domination of the private space

The awareness of the unhealthy environment where most of the population dwelled takes place once the new reality of the industrial city is accepted, with its pollution, overpopulation and its small dwellings lacking light and fresh air. Efforts are made by the cities administrations, architects and engineers towards designing each dwelling as having a room destined to personal hygiene. The only public facilities were communal showers. As only the beginning of the XXth century brings running water into most of the homes, this is the moment where the mechanisation of the bath brings an irreversible domination of the private bathing space over the public one. In the XXth century, America produces what was going to be used worldwide in home design: the standardised bathroom unit, which had a fixed layout given by the pipes.

The main concerns regarding water were the hygiene and the efficient use of water pipes in order to ensure an increasing number of bathroom units. There were no thoughts for associating the bathing with a social ritual, hence no specific space appeared. Although bathing in hot springs for health reasons remains a habit, no architecture programme is developed.

The end of the XXth century re-discovers waters benefits for relaxation and wellness and gradually, a specific space emerges, yet having very different characteristics from the historic programs. It was to be adapted to the century of the speed and of the technology and destined to be a refuge. However, it can only later be considered a programme, after the beginning of the 21st century.

The 21st century does not argue the necessity or the efficiency of the bathroom standardised unit and it becomes mutually adjacent to the bedroom. There are however preoccupations for transforming this space from a strictly functional one into a personal refuge. Such a space requires a view, much more generous dimensions then before, a natural layout of the furniture and sanitary objects, even an artistic touch. Amongst the architects that search this path are Antonio Citterio and Phillipe Stark. A gateway is opened this way, a dialogue between the private and the public space for bathing, even though it is a purely aesthetical one – the public one tending to reach the intimacy of the private one and the private one tending to reach the luxury of the public one.

Chapter 2. SPA

2.1 The origins of the SPA programme

The above-written chronological presentation of the architecture programmes, whose function implies using the physical properties of the water, intends to identify an accurate origin of the contemporary SPA programme. One criterion taken into consideration was the way in which these programmes were integrated within the everyday life of a certain society at a certain time. At all times, the bathing and the implicit participation into the social ritual associated with the spaces where it took place, was considered a useful fact in itself, not only when considering the physical benefits it brought. Considering this point, it cannot be stated that the SPA, like today, it is a direct descendant of these programmes, as the SPA is a place of oneself, of individual emotion.

The term SPA is supposed to have different origins. It could be the acronym of the Latin expression "*sanitas per aquam*" – meaning "health from water". It could also be the adapted Valon word *espa* – fountain or the generalised use of the name of a small Belgian settlement – Spa- where a thermal spring existed. Nevertheless, defining the buildings having this destination by the word SPA becomes usual by the end of the XVIIth century.

Chronologically, the closest to the birth of the SPA comprising a series of water basins of different temperatures and treatment rooms is the Turkish bath that David Urquhart promoted. But the approach is fundamentally different. In fact, the closest shape to the SPA function originates in 1970 in New York, in the series of Red Door saloons of Elisabeth Arden – where the red door constitutes the frontier between the exterior space of the city and the interior space of pampering. The SPA is no more naturally integrated in the daily habits but it is an exceptional fact, a sort of parallel world.

The SPA does not invent brand new therapy techniques, but it adapts some old ones to the contemporary requests and integrates them into a space with exceptional sensorial features. Regarding its therapies, the SPA takes a lot from eastern cultures – therapies having a more or less scientific base that have long been practiced and experienced (acupuncture, Ayurveda, reflexology).

Being a relatively recent programme it is difficult to underline key moments, but in the development of the last two decades architecture and design undertook the essential role in defining it. The aesthetics of the interior, more specifically, the atmosphere of the space is an essential component of the SPA experience.

Above the main purpose of the SPA experience – which is supressing the physical and psychological discomfort caused by stress or excessive effort. Its concept implies accentuating the consciousness regarding the factors with positive or negative effect over health and wellness, in a proper space.

The vision on further development of a SPA specialist considers two trends: a SPA based on longevity research and the slowing down of the ageing process based on medical and scientific methods and the exclusivist SPA, with a holistic approach, including all therapies and treatment methods.

As a rule, architecture takes the shape of the concept that gave birth to it – resulting into a programme with a very well defined direction – total relaxation and detachment from the quotidian, by less defined means– a particular atmosphere, coming from novel associations of materials, colours, light and shade that attract the user into an unusual dialogue of the senses, when passing through a circuit of functions.

The SPA is a place of oneself, where the experiences are usually individual – as well as unique from the point of view of personal experience – enjoyed alone in a room or within a group of people, the social aspect of bathing being reduced to almost nothing. It is rather a ritualistic space of the ego.

The space can be conceived by associating symbols and their significance. Frequent motifs are the cocoon, the oasis, the labyrinth, the cave, and the fountain – motifs that give birth to spaces with great visual impact, sometimes to introvert spaces, having special features of light, colour and smell.

Image 7: Symbols and motifs in SPA design
(Source: Kanebo Sensai Spa, Igloo 101, 2010, p.26; Evensong Spa Wisconsin, Ottagono 230, 2010, p.94; Bathhouse Las Vegas, SCHULTZ Annika, Relax! Best of spa design, p.22)

2.2 Specific design features

Two aspects are fundamental for the SPA programme: its functioning and the interior aesthetic, especially if it creates a particular atmosphere. Its way of functioning is defined by spaces with contradictory features: public/private, interior/exterior, wet/dry, hot/cold and by the relationships between them. The aesthetic of the interior firstly derives from dimensioning but especially from detail design. The atmosphere is an aspect of space's aesthetic without whom the SPA would not be entirely defined.

Functionality aspects

The main function is conceived as a circuit of sub-functions, whose dimension is conditioned by the dimensions and the shape of the site where it would be built, by accessibility means, by satisfying the requests of the target public. The spaces that are to be found in a SPA are those destined to water pools of

different dimensions, temperatures, having or not having incorporated hidromassage jets, saunas, treatment rooms – for massage, aromatherapy, light therapy – spaces for underwater massage etc., all of these being served by specialised personnel. When designing a SPA, it is compulsory to take into consideration the global knowledge regarding therapy methods and their spatial requirements- in order to provide correctly dimensioned furniture and finished spaces.

Among the sub-functions that make possible to experience the circuit there are the locker rooms, sanitary filters, technical spaces – all of these similar to those of the public pools.

Aesthetics. Atmosphere, sensual space

Though there is no aesthetic category to define the SPA design, some general principles can be deduced from studying examples:

- the contemporary aspect of SPA buildings lacks an excessive dynamism, which would be contradictory to the nature of the function; most of the times, the emphasis is placed on the interior, which becomes the central element
- the SPA buildings usually show a coherent attitude towards the place where they are – either it is an urban space or a natural landscape – sometimes integrating features of regional style.
- expressing the public nature of their function – by emphasising access points, by opening their public spaces to the exterior
- emphasising intimacy by means of interior aesthetic, layout of spaces, adequate openings – both as dimension and positioning
- they use local materials, for ecological purposes or for integrating the newly-built volume

The interior space becomes the protagonist, being the main method to induce relaxation by creating a parallel world with the real one. It is capable to trigger physiological reactions by integrating well-known therapy methods – such as light therapy, aromatherapy. The atmosphere is the defining aspect of the interior space and it is particular to each design concept. The elements by which the atmosphere is created are the light, the colours, the materials and the multiple variations of their interactions. The SPA is chiefly associated with the sensorial stimulation and its implicit atmosphere is regarded as a way of overcoming the immediate materiality.

Light, shade, shadow

There are numerous aspects to consider when placing the light sources in a SPA, as light is the main factor that creates the atmosphere. Placing the windows should consider the implications. Light has different colour shades and intensities according to the cardinal orientation. The position, the shape and the way they are sub-divided are important when trying to obtain a uniform light or a punctual one. The same observation goes for the artificial light sources – their colour differs from one type of source to another. Light effects should be carefully studied in order to obtain coherence between the concept and the atmosphere. For example, it is well-known that placing light at the bottom of an object makes it look like it is floating, whereas placing it at the top of an object optically amplifies the space. As a general principle, excessive lighting of SPA spaces might not be the best idea – as it is a space for relaxation and detachment. There should be areas where shadow or shade predominates to favour meditation and

relaxation. Light can also amplify or generate sensations like heat and sometimes it accentuates the smell of materials - by heating of the surfaces.

A considerable role in creating a sensual space belongs to the materials, by their physical properties: colour, interaction with light (natural or artificial, direct or indirect), smell – sometimes accentuated by temperature or humidity, by the sensation they offer when touched – temperature, roughness. Peter Zumthor describes the interactions between light and material from a personal perspective: „to systematically go about lightning materials and surfaces and to look at how they reflect the light - in other words, to choose the materials knowing how they reflect and to fit everything together on the basis of that knowledge." [19] The atmosphere, however, cannot be created by the sole presence of the materials but it derives from their association, a thing that only the architect can do. Natural materials are preferable for all the aspects that they integrate: time, climate conditions – briefly – for their whole history, which offers a way of overcoming the immediate tactile experience.

The static aspects are not the only ones that count. There are certain requirements for the materials, as the spaces where they are used have special conditions of humidity and temperature. Some of these requirements are: easy cleaning, high level of humidity resistance, being non-slippery, low conductivity of temperature – for a pleasant contact with the skin.

Some of the most popular SPA finishing materials are:

- ceramics
- stone (marble, granite, quartz, salt bricks)
- mosaic
- wood
- (rarely used) concrete (for its rather cold appearance) and plastic

Usually, the effect of involving all senses when perceiving the space makes the bond with reality even stronger[20]. The exceptional sensual experience of the SPA breaks the psychological contact with the exterior world and makes one more conscious of its own body and its reactions.

The SPA, with all its differently featured spaces can be considered a place defined by thresholds. They are either physical (transparent or opaque walls) or immaterial, and this can be felt in the difference of quality or quantity of light, because of the amplification or reduction of the noise, temperature variation, humidity etc. - they open or close a space, they define it. The SPA has to be a fluid space, in order not to become aggressive. Hence the thresholds should be integrated in the atmosphere with subtlety.

2.3 Classification and characteristics

While having the same function, there are some features that differentiate the SPAs. Three of those are definitory: the place, the architecture and the nature of the therapies it offers. Categorizing SPAs is a recent preoccupation becoming necessary once the number of them grew rapidly. Considering the wide variety of combination between the three essential factors, the categories are flexible and some new categories may be taken into account.

The thermal SPA is the one having the longest existence. Such buildings have existed since the Antiquity times, where natural springs were to be found – the best conserved are the ones built by the

Romans (Vichy, Bath and Spa). Most of these SPAs reuse an existing structure, most of the times expanding it in order to adapt to the contemporary requirements or for purposes of an efficient use of land. The architectural language of the exterior is most of the times a discreet one, using neutral elements for establishing a dialogue with the existing structure. They can be found both in urban spaces and in the natural landscape.

The resort SPA is a complementary function of the resort, completing a variety of leisure options. Being subordinated to the main function (usually sports but business as well) has a series of implications: reduced dimensions in comparison to the ones of the complex, a certain position within the circuit of leisure facilities, implicitly an access that is filtered by the complex's access and aesthetic language adequate to the one of the complex.

The hotel SPA makes a different category from the resort SPA because it is adjacent to a single main function. As purpose, it is similar: it completes the hosting offer of the hotel and provides a relaxing possibility to spend time. Its access is also filtered by the access to the hotel as it is part of the hotel – usually situated at a lower level (but not necessarily). This implies the dependency of the architectural language of the SPA to the one of the hotel. The distinctive feature of this type of SPA is their concept which is usually the same as the one of the hotel.

The medical SPA (wellness SPA) is distinct because of the nature of the therapies it offers, which usually rely on scientific methods, amongst the personnel having doctors as well. The approach gives the same attention to both physical and psychological aspects. There are usually consultant specialists – like nutritionists, psychologists etc.

The day SPA is the most popular type of SPA and it is mostly situated in the urban environment – for an efficient use of time. Of all categories, it is the one who is destined to shelter from contemporary dynamics. It offers short-time therapies and a relatively short circuit of functions as most of the clientele come after the work hours. This implies a specific functioning time: a sort of rush-hour – associated with the average hour for a labour day. It requires adequate dimensioning of spaces, without neglecting efficiency. Considering a constant, long-term relationship with the customer has implications both on the services and therapies, but as well on design choices. The flexibility, the possibility to redecorate after a period of time – are important in order to avoid dullness.

The destination SPA has the advantage of being situated in a spectacular location, besides the therapies it offers. The architecture of these SPAs is usually integrated in the natural landscape; if it is located in an urban area, its expressive language can integrate particularities of the local architecture (for instance Moorish elements)

The Thalasso SPA's specific is its reliance on marine water, on the use of algae or marine microorganisms for treatment methods. They are usually situated on the sea shore but it is not a general rule.

Holistic approaches

A SPA's main attraction is the variety of therapies it offers. There are, however, numerous projects which, by a specific approach, by a concept and its relevance for the interior and exterior aesthetics, upgrade the SPA experience from a beauty ritual into a ritual with deeper connotations, linked to the

essence of the place, to the symbolic understandings of the water or of the space, reintroducing the archaic connotations of bathing. The following examples are illustrative to this purpose.

Peter Zumthor's design for the Thermae of Vals (Vals, Switzerland, 1996) can be regarded as a manifesto, one of a sensual architecture. As an environment destined to the pampering of the senses, a SPA is probably the best choice to this purpose. The solution's complexity resides in the perfect integration of the typical SPA procedures into an architecture object which perfectly blends into the natural landscape, favouring a nearly ritualistic experience. Therme Vals is a thermal SPA, but it can also be considered as a hotel SPA and a destination one.

The hot spring is situated at a height of 1200m. The vicinity is a ribbon-like settlement along the Valserrhein River, where wooden and stone-clad houses give an acient time air.

The SPA's building history is a long one, representing the third use of the same site: the first SPA, built in 1893, was a small one, which, at a certain point, could not accommodate the entire number of tourists. It was hence replaced by a new structure in 1960. Recently, the SPA was redesigned by Peter Zumthor, the project being finished in 1996.

Even from the beginning, the image was one of a rigid volume, avoiding natural inspiration shapes. It was to be a solitary object in order to emphasize the key point of the concept: the volume's interaction with the mountain, the breathtaking landscape, its topography and geology. It was to be an object intrinsic to the mountain, belonging to it.

Another aspect pursued by the design was the implicit mysticism of a cavern and the way water interacts with this interior space - by reflexion, vapour diffusion, by the specific sound it makes. The bathing ritual, purification, the direct contact between skin and stone, the desire to supress time – all of them show the same mystical preoccupation, the desire to approach the archaic.

The structure is independent form the one of the hotel and it is situated in the southwestern part of the site, having a steep slope. The image is one of a grass-covered stone monolith that belongs to the mountain. The connection with the existing hotel is made through an underground passage.

The imagined space was the one to create a primordial experience while appealing to all the senses, born from direct contact with natural elements water, stone etc.

The interior space can be associated to the one of a cave, where the light penetrates more and more difficult as if gets further away from the exterior. The interior perspectives are always controlled, accepting or denying the view as the role of the space within the circuit and its function allows it. The interior space is delineated by the inside of the mountain and the façade opening up to the valley, thus establishing a visual continuity between the cave and its exterior.

The slots in the slabs filter the light, either by directly illuminating the spaces that communicate with the exterior or having the space illuminated by artificial sources of light. Sometimes, the light is filtered by the water. This is how a hierarchy of the spaces results according to their luminosity, contributing to the coherence of the articulation of the circuit as a sensual one.

The access area is typical– situated inside the mountain and artificially lit, followed by dark locker rooms. All this entry area prepares the user for the naked contact with the continuous floor of the pools. From certain bathing spaces one can descend to the cave-like level, where each room has a specific atmosphere.

Building the walls required a new technology of layering concrete and small pieces of stone. The composite structure contributes to the monolithic image. Most of the architectural elements have been built using this technology: floors, ceilings, stairs, and benches. To add more to the monolithically image even details have been conceived using this layering technique (pools, anti-sliding systems, and thermal insulation).

Though it mainly avoids natural shapes, the homogenous mass of rock illustrates the main idea – which derives from a natural element: the cave.

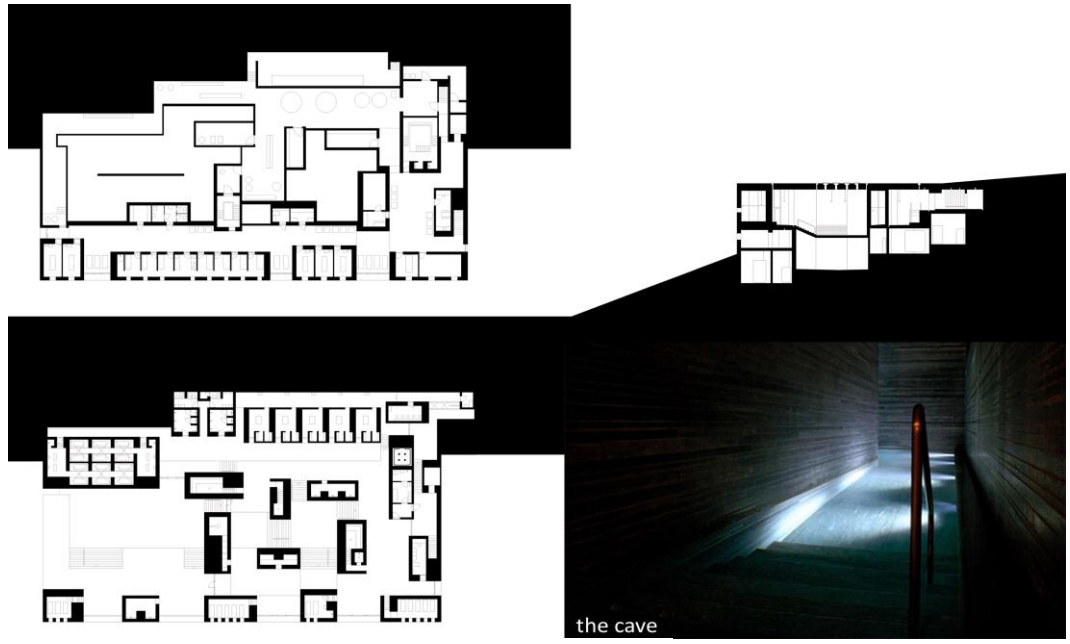

Image 8: Therme Vals
(Source: http://openbuildings.com/buildings/therme-vals-profile-2978/media#)

Matteo Thun's project for the New Thermae of Merano (Merano, Italy, 2005) is certainly a SPA where the destination has an important contribution. It can also be considered a day SPA as Merano is a city with relatively low population, most of the customers being the locals. The complexity of the project (besides the great variety of sub-functions and their dimensions) resides in the urban aspects that its construction involved. To mention some: the first urban plaza of big dimensions of the city, resulted from moving the traffic to an underground level and the plaza's continuity with the neighbouring park (having a surface of 50,000 sqm). This improves the connection between the old centre and the new area of the city (the south one).

The SPA's site is a large one, its design comprising two phases: firstly, the SPA design and the nearby park, secondly a luxury hotel – the two functions and their positioning towards the plaza being the key elements in the composition of the plaza. Even though they are distinct elements, they are connected by an underground passage, each one having its own compositional features.

It is situated on the site of an old SPA, built around 1870, using the mineral water of an underground spring. The project proposed by Matteo Thun thoroughly redecorates the site, including the adjacent garden.

The hotel is built around an interior garden, having a small garden. The volume is rather compact. The south façade opens trough loggias. At the access level, there are the specific areas: the access, a large lobby, conference halls and the restaurant. The space is continuous towards the exterior through a terrace. The hotel has 139 rooms, layered on 3 different levels.

The SPA is a huge glass box that shelters 12 pools situated at the intersection of interior alleys. At the bottom level, there are the treatment rooms and the administrative body. The 13 outdoor pools represent a continuation of the interior space towards the plaza.

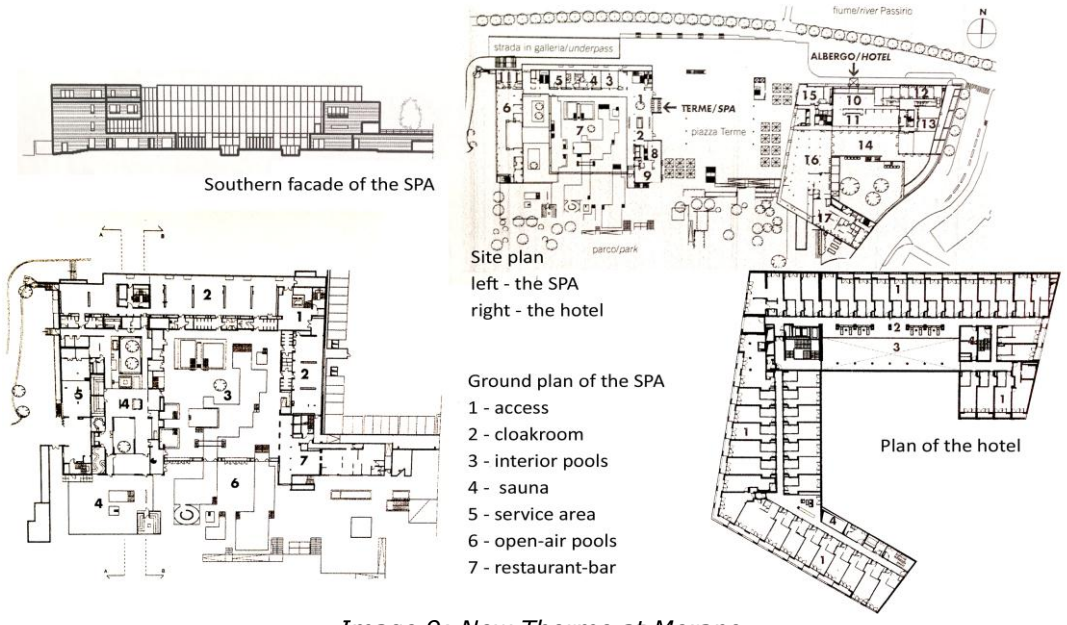

Image 9: New Therme at Merano
(Source: Abitare 466, 2006, p.192)

Regarding the aesthetics of the ensemble, the architect chose a minimal approach in order to integrate the new volumes having a spectacular natural background. The interior aesthetics is defined by the transparent architecture, having a visual dialogue with the plaza. Discreet lighting and the interaction between it and the materials in use are defining as well.

The materials are Vicenza stone for interior and exterior walls, Lion granite for the floors of the areas adjacent to the pools, wood for the furniture and relaxation areas, mosaic for finishing the pools and black china tiles and dark wood. The materials were chosen for chromatic and tactile purposes, searching for a thorough sensorial experience.

Another element that increases the project's complexity is its energetic efficiency. A series of passive systems were used. The heat of the pool water is reused for energy production as well the heat from shower water, thus producing a certain amount of the energy needed.

Conclusions

The regeneration concept inspired by Sigfried Giedion's writing proved useful when studying the programs that were the precursor of the SPA. It offers a much deeper perspective by overrunning the superficial chronological display, integrating some cultural aspects. Regeneration is a form of contact with the primordial, either by means of superstitions, by references to a primordial social structure, or simply by touching the water.

The contemporary SPA programme benefits from a long time experience concerning the methods of relaxation, treatment and prevention by using different physical properties of the water – pressure, temperature, its physical condition (liquid or gas). The cultural characteristics of the program are still difficult to be defined, given the fact that it is a recent programme.

The first buildings destined to this function were used for steam baths and they were built in Europe beginning with the IIIrd century B.C. initially in a small number, only by some of the cultures. The Greeks didn't adopt the steam bath until the Ist century B.C., though they integrated cold showers and cold baths in their daily activities. The moment that this function defines itself as a stand-alone programme is once the thermae emerged. This was possible due to technical progress and evolved urban solutions, which were well known by the Romans: water adduction via aqueducts, the hypocaust system, covering large open spaces with brick vaults linked with Roman concrete.

The Roman expansion spreads this programme that reaches its maximum complexity once the Thermae of Carcalla were built (during the IIIrd century B.C). The Muslim civilisation transformed the thermae type, adapting it to its necessities and conceptions.

The destructive influence of the migratory peoples, during the Middle Ages, over the urban works and important buildings, along with the spreading of Christianity and its mentality, marked the beginning of the decline of this programme. The closure of the last standing facilities once the plague emerged and the disappearance of the technology for ensuring water adduction for the houses has resulted in thorough neglection for personal hygiene. However, exceptions exist. The Hammam type has a rich history and an impressive number of buildings, their proliferation being interrupted only by technological progress and the supply with running water in the homes. Even then it was not thorough, as public hammams were still being used by the poor. Although there were interactions between the Muslim world and Europe (through the crusader's missions for example), the bathing, especially in public places and with an important social role, could not find a way to reborn. In terms of persistence, Finland and Russia (the northwestern part) prove to be the most tenacious in the preservation of the programme, perhaps because sauna architecture, respectively the steam bath in the Russian variant, lacks complexity. They are of small dimensions and involve local techniques and materials, being much easier to build.

One of the attempts to reactivate the bathing habit, used by then only for curative purposes, belongs to an English diplomat. He takes the hammam model by contacting the Turkish culture and brings it to England of the 19th century. The result is not the expected one, as a few public baths of this type were built, but they were attended only by rich people.

From this history, the SPA programme retains only small facts: using steam bath as a method of relaxation and body purification, a system of rooms with different temperatures and humidity ranges (the

Roman succession of *tepidarium*, *caldarium*, *frigidarium*, *laconicum*) and the administration of treatments after exposing the body to high temperatures and sweating.

From the point of view of the aesthetic language, the only distinctive recurrent elements taken from the historical programs are the ample spaces, vaulted, perforated at the top- sometimes used to reproduce the hammam experience. Certain construction materials are still used for spaces with the same destination. The sauna, which had to migrate from the natural landscape towards enclosed spaces, turned rather into a treatment method and all the associated superstitions that are defining for the culture that gave its birth have begun to wane.

Unlike other civilization's programs, the SPA does not regain an important aspect: its social role, its ability to glue together a community. Thoroughly justifiable when considering the current society features: globalisation, implicitly leading to the reduction of local particularities, the weakening of the community spirit caused by the constant migration of the population (longer or shorter distances). Definitely important for the contemporary society, the SPA is a place of refuge against the daily routine.

The means by which this is done is the introduction of a specific aspect of the aesthetics of the interior: the atmosphere. When thoroughly involving the senses in perceiving the space, the effect is paradoxical: the person is fully anchored in the real parameters thanks to a more dynamic interaction with the environment of its location. At the same time, it is separated from the usual things, because of the individuality of the experience.

In defining the atmosphere, the dimensioning of the building has a fundamental contribution. There are many aspects to be considered: the gauges, the heights, structural suitability, the position and the size of the windows and the doors, the choice of construction materials and finishing.

Although it is a relatively recent programme, as the number of SPAs has significantly increased in the last decade only, there are still specific and variable aspects. The specific aspects are the nature of the function and its implications: the existence of filters between inner and outer spaces, the need for specific types of equipment and facilities to ensure optimum functionality (different temperatures in rooms, water temperature, water purification and disposal of the used one), different structures capable to cover large spaces.

In the SPA design, the hierarchy of the spaces is determined by the architect, by the concept. It is different from the case of the thermae or the hammam, where a certain space is given the greatest importance (*tepidarium* and *bayt-al-harara*). The concept usually exploits the most special aspect of the designing task. Aspects such as climate, landscape, culture and place - may influence the concept, which in the end expresses itself in the atmosphere and aesthetics of the interior.

A characteristic of the SPA design is giving priority to the interior over the exterior. There are, nevertheless, examples where the holistic approach and the ability to associate an appropriate concept to the symbolic of the things defining the programme (water, place) reintroduce the archaic and ritualistic aspects of bathing and, potentially, the regeneration.

The former programs of the old civilizations were illustrative for certain social and cultural aspects and so did the SPA. It is illustrative to some degree for the society that helped it emerge. Presently, the SPA experience is usually a product, a ritual that superficially concerns the beauty of the body. It is, however, the task of the architecture to integrate another stimulus in addition to the already well-known

sensorial ones, which create a parallel world. A stimulus that would make possible to overcome the actual matter of things and improve its significance.

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[7] MONTES C., editor, Spa and hotel wellness design, (Spain, Graficas Calima, 2005) "In the Middle Ages the Christian Church [...] considered cleanliness of the spirit more important than that of the body and went as far as propagating myths that Roman baths were dens of perversion."
[8] AALAND Mikkel, Sweat, accessed February 2014 www.cyberbohemia.com/Pages/sweat.htm "It resembled a giant bee hive – a split cedar frame sunk two feet into the ground and arching four feet high, covered with dark New Mexico earth. These earthen mounds are not uncommon throughout the reservation."
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[18] Idem: "The baths of Caracalla epitomized the grandiose vision of the emperor, putting into architectural splendour his material expectations.", p. 95
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THE NEIGHBORHOOD IN DUTCH STRUCTURALISM

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Abstract

This paper aims at covering and understanding the role of the home and the neighborhood in the vision of the Dutch Structuralist movement of the 1950s and 1960s, starring Aldo van Eyck, Piet Blom and Herman Hertzberger. Why the Netherlands? Because their main concern has been breaking free from the association of the exterior space with the public space and of the interior with the domestic, familial space, and blurring the boundaries between the public and the private space. Their wish to respond to mass society rather than reinventing it led to the elaboration of new spatial configurations in terms of housing which were intended as an integrated part of the urban environment rather than subordinated to it.

Keywords: *Neighborhood, Structuralism, Team 10, Aldo van Eyck, Configurative Design.*

Introduction

The first human settlements led to the home and property notions. Property boundaries were defined by factors of belonging and familiarity that all individuals were developing since childhood and which were present all throughout their lives. The home represented the core of the family, a base for moving out into the world and back, and several families that lived in the same small area formed a community. As the living area grew or developed directly proportional with the number of residents, the community was fragmented into areas with different social interactions between its members. Currently this form of organization is called neighborhood.

A neighborhood is, as I was saying, a human community geographically located within a larger settlement of municipality, city, town, suburb or rural area type; although neighborhoods are often social communities with considerable interaction between their members, researchers have not yet agreed on an exact definition. In general, a neighborhood can be defined in terms of space as a specific geographical area, and from a functional point of view as a set of social networks. Therefore, the neighborhood is the *spatial unit* in which social interactions occur face to face – the place and the circumstances under which people try to reach common values, to socialize and maintain effective social control.[1] Neighborhoods are typically generated by the social interactions among the people who live near one another. Thus, the neighborhood is a local and social unit greater than the home and it is subordinate to the city, but not directly under its control. Two physical components can be distinguished in the neighborhood– the home

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and the street, meaning the public space and the personal space, notions that differ in terms of perception from person to person, depending on social status, age or occupation.

Social life has a nearly uninterrupted flow between the home and the street: children are sent out to play, mothers rest on the window sill to watch and take part in the activity going on in the street or go out in the street to talk to friends and acquaintances, men and young people meet in the evening when the weather is pleasant and talk.[2] In many neighborhoods the territory is bounded differently in different people's opinions, for most of them being relatively small. The limit between housing units and the street can be very permeable but few people dare to incorporate something from the public realm as part of the private space. The street is a common unit of neighborhood sentiment.

Modern architecture is based on the concern for the relationship between interior and exterior space. Architects began to design new types of houses, especially interior spaces, which should be well lighted and airy, free and in relation with the external environment. However, this "external environment" could not be found in the city, but rather in nature; suggestive examples are Frank Lloyd Wright's *Prairie Houses* and Ebenezer Howard's *Garden City*. Gradually, modernist architects and designers have ignored the relationship between individual homes and the public space as a place for meetings, dialogue and spectacle.

Chapter I: What is Structuralism?

1.1. General notions

The turning point of the nineteenth century marked considerable progress in science due to a fundamental concept that philosophers refer to as Structuralism. Structuralism is a theoretical model in sociology, anthropology and linguistics based on the postulate that the elements of human culture must be understood in terms of their relationship to a larger system or structure that contains them. Its main objectives are the understanding and discerning of all human activities, of the way people think, understand and feel. Alternatively, according to philosopher Simon Blackburn, Structuralism is *"the belief that phenomena of human life are not intelligible except through their interrelations. These relations constitute a structure, and behind local variations in the surface phenomena there are constant laws of abstract culture"*.[3]

Structuralism originated in the early twentieth century, in the structural linguistics of Ferdinand de Saussure and in the schools of linguistics of Prague, Moscow and Copenhagen. In the late 1950s and early 1960s, while structural linguistics was facing different challenges and risked to lose some of its importance, a lot of humanist scholars borrowed from Saussure's concepts in order to use them in their fields of study. French anthropologist Claude Lévi-Strauss was undoubtedly the first such scholar who led

to the widespread interest in Structuralism. A structuralist approach began to be used in a wide range of fields as anthropology, sociology, psychology, literary criticism, economics and architecture.

Structuralism, as a movement in architecture and urban planning, shapes itself somewhere in the mid-twentieth century. It was a reaction to Functionalism and New Objectivity[4] that led to a lifeless expression of urban planning and which ignored the identity of the inhabitants and urban forms.

1.2. Origins and manifest

The failure of modern architecture to address the problem of relating the domestic space with the urban space is connected to the disciplinary and, to a certain extent, professional separation of urban and architectural planning. Although in practice this separation was not total, the establishment of urban planning as a distinct discipline, in parallel with architecture had a great significance. In the 1950's, the group of young architects who would be known as Team 10 had started to question this split, wanting the built environment to be accepted and understood as one indivisible entity. Not only did they question the disciplinary separation, but they also asked that the relation between the indoor and the outdoor space to be reviewed. They felt that the urban environment, not the natural one, represented the pair object, the adequate equivalent of personal, domestic space and that the indoor and outdoor space should not communicate through visual transparency or through spatial continuity but through meaningful, psychologically effective transitions.

In architecture and urban planning, Structuralism goes back to the Congrés International d'Architecture Moderne (CIAM) after World War II. Between 1928 and 1959, CIAM was a stage for discussions on architecture and urban planning. Many groups with different and sometimes conflicting views worked within this organization. For example, some groups were made up of members with a scientific approach to architecture and without aesthetic premises (Rationalists), members which saw architecture as an art form (Le Corbusier), members who promoted high or low-rise buildings (Ernst May), or members of the small group Team 10, who militated in favor of change after the Second World War, certain individuals of this group laying the

Image 1: CIAM XI, Otterlo 1959; this meeting marks the dissolution of CIAM organization
(Source: Netherlands Architecture Institute (NAI), TTEN, unknown photographer)

foundations of Structuralism in architecture. The core group consisted of seven members, the most active and with the longest participation, namely: Jacob "Jaap" Bakema, Aldo van Eyck, Alison and Peter Smithson, Georges Candilis, Giancarlo De Carlo and Shadrach Woods. As a group of avant-garde architects, Team 10 was active from 1953 to 1981 and two different movements emerged from it: Alison and Peter Smithson's New Brutalism in England and Aldo van Eyck and Jacob Bakema's Dutch Structuralism.[5]

An important step in affirming the Structuralist movement was the manifesto written by Aldo van Eyck in issue number 7/1959 of the architectural magazine *Forum*, where he was editor and which he had turned into a platform for his ideas.[6] The manifesto was compiled as a set of instructions or activity plan for the International Congress of Modern Architecture in Otterlo, in 1959. The primary purpose of this manifesto was an open attack directed towards the Dutch representatives of the New Objectivity (CIAM Rationalism), who were responsible for the post-World War II reconstruction work. The magazine contains many examples and assertions in favour of a more humane form of urban planning. This congress marks the official beginning of Structuralism although such projects existed before.[7] Only from 1969 the term "Structuralism" appeared in publications of architecture and urbanism.[8]

Ideas in favour of the Structuralist movement developed outside the group Team 10 as well, ideas influenced by the concepts of Louis Kahn in the United States, Kenzo Tange in Japan and John Habraken in the Netherlands. In 1960, the Japanese architect Kenzo Tange designs his well-known project for a floating city in the Tokyo Bay. Reflecting later on the initial phase of this project, he said: *"It was, I believe, around 1959 or at the beginning of the sixties that I began to think about what I was later to call Structuralism."*[9] Tange also wrote the article *Function, Structure and Symbol* in 1966, describing the transition from a functional approach to a structural one in architecture. He considers the 1920 – 1960 period as being under the direction of Functionalism and the post-1960's one as being under the heading of Structuralism.

1.3. Principles and general directions

Anthropologist Claude Lévi-Strauss remarked: *"I do not believe that we can still speak of one structuralism. There were a whole lot of movements that claimed to be structuralist."*[10] This diversity can be found in architecture as well, but, nevertheless, structuralism in architecture has an autonomy that does not comply with all the principles of structuralism in human sciences; in architecture, different directions have created different concepts. In Structuralism, as a current in architecture, there are two major directions: *Aesthetics of Number* and *Structure and Coincidence*.[11]

The concept of *Structure and Coincidence* was formulated by John Habraken in 1961 and aimed at the user participating in housing. Also, in the 1960s many projects and known utopian movements were based on this principle (Metabolism, Archigram, Yona Friedman).[12] During this period, devotees of Structuralism criticized the limited applicability of the functional principle of *Form Follows Function*, finding

solutions for a new structural principle in the architecture of historic towns, a principle based on an interpretable, adaptable architecture and with potential for development. *Forum* magazine read ideas of *"polyvalent form and individual interpretation", "reciprocity of form"* and *"participation"*. The most representative prototype of this direction is the Yamanashi Culture Chamber in Kofu by Kenzo Tange, completed in 1967. The principle of Structure and Coincidence is relevant nowadays as well, both in housing design and urban planning, the tools used in urban structuring being traffic lines, symmetries, rectangular shapes, representative buildings, rivers, shores, green areas and landforms.

The term "Aesthetics of Number" was first introduced by Aldo van Eyck in *Forum* magazine, in the same issue as the 1959 manifesto. In this article, van Eyck presents the similarities between two works of art: a structuralist painting by the contemporary artist Richard Paul Lohse and a traditional African textile of the Kuba tribe, made by a tribal artist of the "primitive" culture. The combination of these two cultures has a symbolic meaning in the Structuralist movement. This concept can be best compared with a cellular tissue. A representative example, the most important model of this direction is Aldo van Eyck's orphanage, completed in 1960. The *Aesthetics of Number* concept can be described as *Spatial Configurations in Architecture* or *Mat-Building*. Although this principle has proved to be less suitable in the structuring of an entire city, exemplary models of articulated configurations emerged in both urbanism and housing schemes. Besides his famous orphanage in Amsterdam, van Eyck built another inspiring configuration for the Space Centre Estec in Noordwijk in 1989. These two compositions are among the most beautiful symbols of Structuralism.

Chapter II: Van Eyck and Dutch Structuralism

2.1. A host of ambitious projects

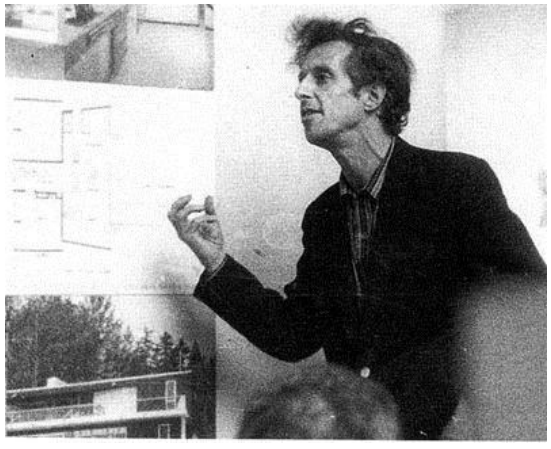

Image 2: Aldo van Eyck at CIAM XI (Otterlo, 1959). (Source: Team10Online.org)

In the 1950s, Aldo van Eyck stands out as an important figure in Dutch architecture. In his attempt to create interiors and ambiences full of meaning, people can identify with, he developed a design method that aimed at integrating the various components of space in a coherent configuration. Van Eyck said that *"a house must be like a small city if it's to be a real house; a city like a large house if it's to be a real city"*,[13] thus creating a suggestive and powerful image in terms of conceptual thinking, subsequently becoming a paradigmatic way of thinking for his followers.

A number of ambitious projects, gathered under the hallmark of Dutch Structuralism, resulted from the exploration of such thinking in the 1960s and 1970s. These included ideas

and schemes of Piet Bloom, Joop van Stigt, Frans van Klingeren, Onno Greiner, Jan Verhoeven and Herman Hertzberger.[14] While some have been successful in their attempt to create clear urban registers, many ideas have been criticized and failed to integrate into the socio-economic and urban environment for which they were intended. Aldo van Eyck had Piet Blom as a student, then in his first year at the Academy of Architecture in Amsterdam, between 1956 and 1957. When van Eyck became editor of *Forum* publication (along with Herman Hertzberger and others), he published a student project by Blom, called *The Cities will be Inhabited like Villages*, in the very first issue of 1959. The schemes drawn in Blom's second year of study depicted a new residential neighborhood for 800 inhabitants located on the outskirts of Amsterdam. Based on a constructive module, a *bouwsteen*, containing 24 residential units of various sizes, configurations and types of access, the project presented a stark contrast compared to uniform apartment blocks that dominated contemporary residential spaces. These housing modules were designed to be clustered or arranged in rows, giving way to successions of courtyards and interstitial spaces, eventually even creating a whole neighborhood.

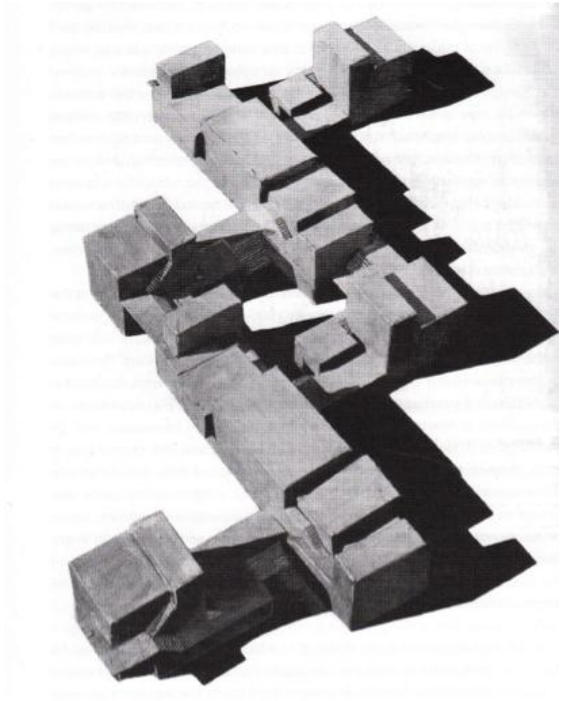

Image 3: Piet Blom, "The Cities will be Inhabited like Villages"
(Source: Forum 14, no. 7/1959)

Blom's *bouwsteen* was similar to the *stempel* or Jacob Bakema's and Lotte Stam-Beese stamp approach who, in the early 1950s, designed new neighborhoods based on the configurations of buildings clustered around inner courtyards. Both ideas were reactions to the sterile configuration of the CIAM *Zeinlenbau* type, but Blom's approach had a much higher spatial complexity than the *stempel*'s repetitive pattern. Blom described his plan for *Cities like Villages* as a *"plan that forces people to live together"*.[15] It was born from the desire to create a shared living space where the dividing walls could be put down so as to create diversity and a form of association among people. Convincingly, he revealed that there is no dualism between individual and collective existence.

This was a direct response to his childhood experience, influenced both by life in the communities of the older neighborhoods of Amsterdam and new and insipid housing neighborhoods arisen after the war, which he had experienced as a construction worker and later as a young draftsman.[16] Blom saw contemporary residential design in the new cities and neighborhoods as absolutely reckless. One year after the project *Cities like Villages*, he participated in a "practical planning exercise" (*Praktische oefening stedebouw*); this time his plan was for 500 residential units located in an area with large expansion, adjacent to standard rows of flats and houses oriented around some generous courtyards. In contrast, Blom's plan proposed modular units of apartments and interconnected single-family homes that generated

small inner courtyards, with two multi-storey apartment blocks, each of them placed in an opposite corner, and emphasizing every yard in a diagonal path. As in the first case, these arrangements could be connected in order to form semi-open courtyards in their points of connection. Again, Blom's student projects were published in *Forum*.[17]

2.2. The city is a house and the house is a city

Blom's dismissal of the architectural bases and the status of Dutch society was largely in tune with the criticism of post-war developments in the Netherlands expressed by the *Forum*'s editors. Van Eyck had repeatedly stated that the Netherlands became increasingly "uninhabitable" due to the soulless character of large-scale planning as well as to the bureaucratic and impersonal nature of prosperous post-war society period. Herman Hertzberger was also unhappy with the state of things, dissatisfaction that he expressed in an article entitled *"Three better possibilities"*, published in the same issue of the *Forum* as Blom's second project. Hertzberger criticized the reductional categories based on psychological and sociological studies used by planners in the assessment and grouping of the population.[18] For him it was essential for architecture to determine the complexity of social groups; beyond this, Hertzberger believed in the capacity and designation of architecture to take on a formative role, generating communities and new social forms. The general directions of these ideas were in tune with the modernist idea that architecture could be the catalyst for a new and better society. After the Second World War, early modernist visions succumbed to modest initiatives in the generation of architects represented by Team 10, which rather sought to respond to society than to reinvent it. In the late 1950s, Blom, Hertzberger and other young architects inspired by van Eyck took upon themselves the task to restore these social forms which, in their opinion, were eroded by modernist planning approaches. Specifically, the thriving urban community felt as endangered as an endangered species.

In a direct way, the plan for *Cities like Villages* and naturally "the practical planning exercise" encouraged meetings and communication. Architectural characteristics such as the semi-open courtyards, the rows of external stairs, the ample access areas, the carefully designed networks of trails and the plastic joints of facades and the volumes helped the formation of strong visual and spatial connections between the housing area and adjacent blocks, thus providing protected areas that invited residents to make full use of the exterior space. Although influenced by Scandinavian and British tendencies to provide more usable environments at a small-scale and by the attempts of a number of Italian architects to design contemporary housing typologies based on vernacular urban models, Blom's plans differed from these in their structural and relatively independent character from the context and lack of stylistic references to vernacular architecture. In addition to the need to provide spaces as intimate and differentiated as possible, the juxtaposition and chaining of Blom's modules aimed to blur the boundaries between public and private, interior and exterior in wholly new ways. Speaking later about his project, *Cities like Villages*, Blom commented: *"I hate the word dwelling, because it is directly associated with the idea of a roof over*

your head. Dwelling is also the neighborhood, the street, the communal facilities (vorzieningen), the atmosphere of a quarter."[19]

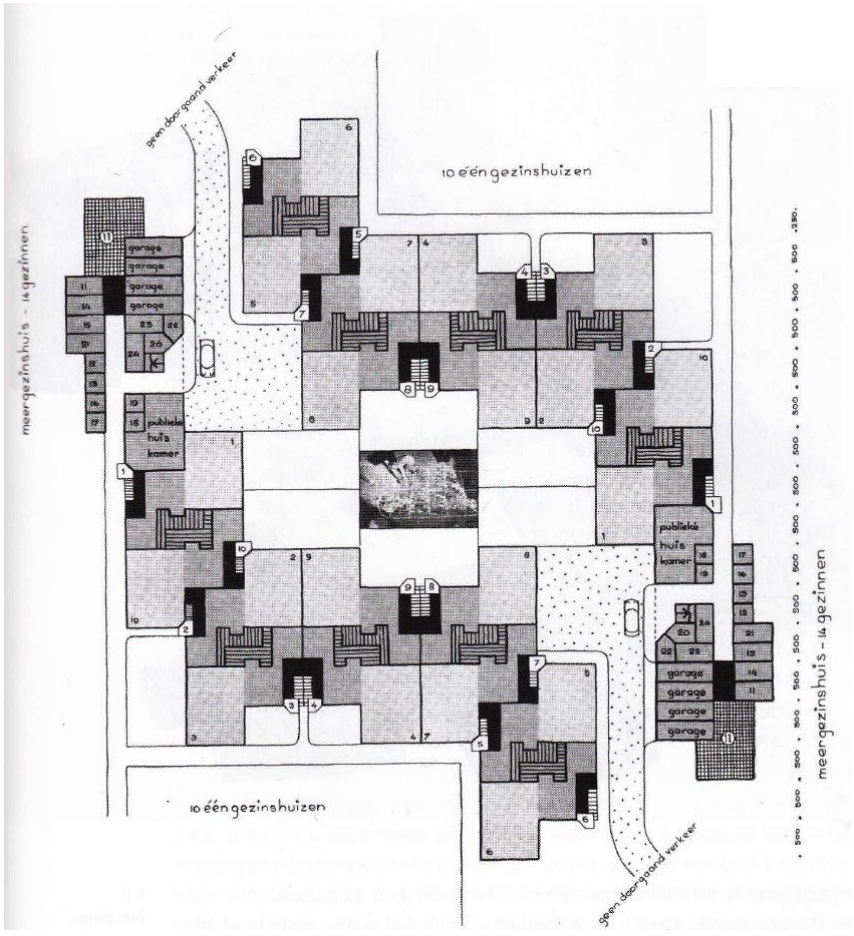

Image 4: Piet Blom, "Practical Planning Exercise", Study Project, 1959 (Source: Forum 15, no. 5/1961)

In a similar manner, in 1962 Blom decided to name his winning proposition of the *Prix de Rome* – a scheme for a children's village – *A Village like a House*, saying that *"the village hall must be more like an open square than a building, and, inversely, the village square must be less a square than a building."*[20] His plans were based on an understanding that urban space and urban housing are naturally complex and ambiguous, and the title of his project echoed directly from Aldo van Eyck's phrase that *"a house must be like a small city, a city like a large house."*[21] Blom's goal was to break away from the dualistic concepts of public and private space and the simplistic correlation of the interior with the domestic space and of the exterior with the urban realm. In his projects, this was achievable especially through complex configurations, where each apartment, house and courtyard were involved in a series of social and spatial distributions. In such a way, it was hoped that the residents will be able to identify themselves with the environment. This could be done through the fact that an aspect of the city (public space) could fulfill a role similar to another aspect (domestic space) with familiar features such as the intimacy of domestic spaces that could be found in public spaces.

The built environment, in Blom and van Eyck's vision, had to be linked with the non-dual and complex structure of the human mind. If such a structural homology would exist in perceptible ways from conscious or subconscious points of view, people would feel at home in their environment, an effect van Eyck accordingly called "built homecoming". For him, the structural relationship between the different orders of the city and the relative number of qualities, constituted a dynamic and ambivalent nature of the urban space. Van Eyck typically used the terms "duo-phenomena" and, later, "twin-phenomena" to describe the bilateral nature of home and city, and form and counter-form to describe the similarity

between mental and social characteristics and spatial structures. Contrary to the rigorous intellectual approach of van Eyck, Blom presented little interest in grounding his work in theoretical terms, but both architects shared a strong interest in the structural nature of the urban problem. While in Blom's work the analysis of urban structure, inspired by the interest in musical compositions of J.S. Bach, is found particularly in his plans and technical works, van Eyck drew inspiration from a wide range of literary and academic sources to shape his thinking about structure.

Chapter III: Theoretical framework of van Eyck's ideas

3.1. Sources of inspiration

Image 5: Dwellings specific to the Dogon culture (Source: Nathaniel Coleman, Utopias and Architecture. Abingdon, Oxon: Routledge, 2005)

Van Eyck's ideas about structural ordering principles were indebted to philosophical and anthropological contemporary writings, especially Martin Buber's theory on society and culture as structural entities or systems of psycho-social material relations. Because of his interest in traditional, non-Western, cultures van Eyck was familiar with the most recent anthropological research, the most important being the study *Patterns of Culture* by Ruth Benedict, written in 1934. In her book, Benedict described cultures as being configurations which followed a certain pattern,[22] and according to her theory, although such configurations are recurrent and found all over the world, every culture develops and is in turn defined by its own structural configuration. Although this idea has attracted much criticism, according to Benedict, a culture derives its character from a specific structural configuration rather than universal structural principles. Therefore, culture was the result of a distinct creative process and could be described as *Gestalt*, phenomenon of shape or silhouette. A culture was seen as an entity described precisely, its outline and components determined by its structural order, order that can be more or less cohesive.

In 1960 van Eyck encountered what he considered the perfect illustration of Benedict's theory when he visited the Dogon people, an ethnic group from the central region of the African country of Mali. Van Eyck had been reading about Dogon culture since the late 1930s. In a long article he elaborated on what

he had observed as being the analogy between form and counter-form in their culture, he thoroughly described that what was of particular interest to him was the *"unrivalled virtuosity"* with which *"the archaic tribal artists, always drawn as they are to both centrality and numerical sequence, have managed to set the former free, allowing it to breathe and become spatial and impart rhythm and variety to the latter"*.[23] Van Eyck saw this spatial dynamic as a dialectic reflection of the social configurations of the tribal society; the man-made environment and material culture represented the *counter-form* of the social and existential reality of the individual and the group represented the *form*. Regarding the ability of tribal artists to manipulate rhythmic or geometric patterns van Eyck said: *"It was never a question of allowing myself to be directly influenced by what I see when faced with their artefacts, or of applying their method directly. Important to me has been...that it is possible that this kind of language actually exists with proper scope. If it can be done in their world in their way it can be done in ours, our way."*[24]

What anthropologist and linguist Benjamin Whorf – whose works represented another important reference source for van Eyck – discovered about the structural character and role of communication and language in the building of consciousness, van Eyck researched in material culture, in the built environment.[25] The idea that the built environment can act as an "incubator" for social life may be associated with the formative influence of the linguistic and cognitive processes. Van Eyck considered that valuable progress for our world – the West – was made regarding configuration, structure and numbers in a modern context through the avant-garde artists such as Paul Klee, Piet Mondrian and Swiss painter Richard Lohse. However, he was concerned not only that modern Western society was unable to give physical form to the social aspects, but worse than that, they had very few patterns or forms to which architecture could react.[26] Despite this, van Eyck strongly believed that it was the duty of architecture to provide a fertile setting in which modern society could begin to develop its own contemporary form.

As a result of these arguments, the structural aspects of the built environment have been highlighted as the key to a recovery influenced by the architecture of the social forms, not on a small scale, but responding to the needs of mass society – something with which architects have fully failed to reach an agreement, according to van Eyck. He sought a structural order, complex and dynamic, which he variously called "harmony in motion", "aesthetics of number" or "Kasbah organisé". Although the latter term, as Blom's project title (*Cities like Villages*), suggested a move towards smaller-scale environments, what was the most promising about the concept of "Kasbah organisé" for van Eyck and his followers it was just its potential to help mainstream society. *"It is of primary importance,"* wrote Hertzberger regarding Blom's practical exercise of urban planning, *"that this plan has the latent possibility of expansion"*.[27] This expansion should not be cumulative in nature, but structural or configurative, so as every counter-form would become the main form – completely covering the surface as a structural formula. Because the housing units are located next to each other they belong alternatively to the next unit in line, in a fine and shy manner every yard opens up to a greater whole while retaining its identity.

3.2. The concept of relativity

Aldo van Eyck tried only once to bring together the most important of his ideas, although the result of this attempt – *The Child, the City and the Artist* – was never published during his lifetime. The general concept to which all other concepts in his theory refer to is relativity. Concerning relativity and the principles of and van Eyck, Francis Strauven summarizes:

> *"The understanding of reality as a complex coherence of space, time, matter and energy, a unity that necessarily manifests itself as a diversity; the insight that the coherence of things does not reside in their subordination to a central, dominant principle but in their reciprocal relations – relations that are just as important as the things themselves; the relativity of all frames of reference, the awareness that they are at the same time autonomous and mutually related; the equivalence of all viewports; the simultaneous consciousness of the successively perceived; the essential role of the subject in the space-time continuum, when time is regarded as being real, consciously experienced time."*[28]

In order to understand his conception of relativity, three abstract notions in his writings, each derived from the idea of relativity, can be identified: twin phenomena, intermediate space and interiorization. These mutually connected and highly abstract concepts proved to be the basis for his architectural critique and design approaches. The concept of *twin phenomena* plays an ontological role: it is meant to explain what an entity is in relation with other entities; the interiorization concept has an epistemological role and it is meant to explain how we understand the space that surrounds us. The in-between realm is more focused on the aspect of relativity in the physical and mental addressing of space. Other important notions either provide a theoretical basis for these key concepts or are successive steps towards an understanding of urban reality.

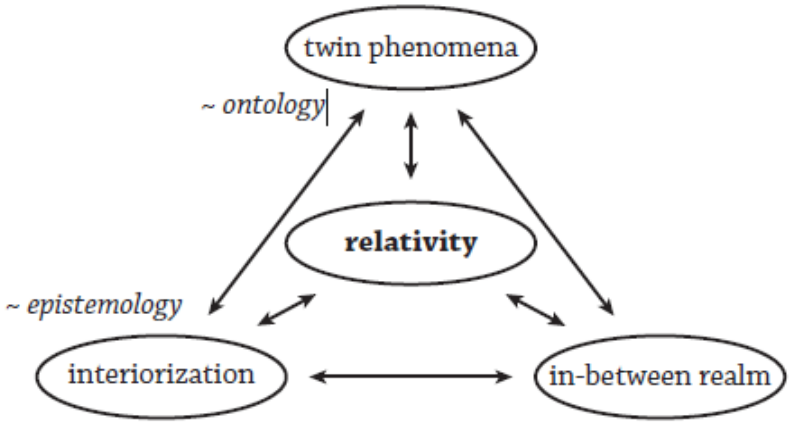

Image 6: The abstract key concepts in Van Eyck's theory (Source: Harm Lammers, Potentially)

3.3. Twin phenomena

The central idea of van Eyck's theory is not just that everything is connected, but that these connections and relations are mutual – entities become understandable only in relation to other entities, same thing happening with their characteristics: there is no large without small, no inside without outside and so on. Van Eyck refers to these reciprocal entities or mutual features as twin phenomena or dual phenomena.

The term dual phenomenon was first used in 1950 in a letter to Sigfried Giedion (on the function of a proposed UNESCO art review), in the context of the relation between collectivity and individuality and the relationship between art, science, religion and social configurations. The origin of this term can be found in the avant-garde movement of the early twentieth century, particularly De Stijl.[29] The idea behind this concept is that because elements or characteristics are relative to each other or even to the people who perceive them, they cannot exist without their opposites. Einstein, Planck, Bohr, Heisenberg and many others have made it quite clear that we cannot measure what cannot be compared or put in relation with us. Furthermore, all dual phenomena are connected and form a network or system. As the phenomena are connected at a complex level, their separation may result in false variables. This is one of the reasons why van Eyck criticized the analytical approach of CIAM. The concept of twin phenomena should be seen as a transposition of the idea of relativity into an approach towards how specific phenomena could be understood.

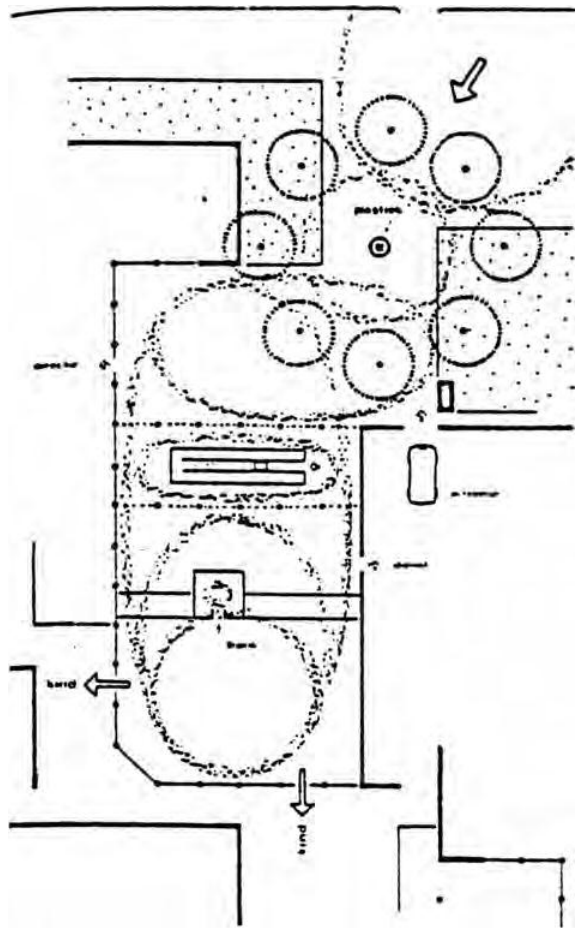

Image 7: Scheme of the entrance sequence of the Orphanage as an example of the in-between in Van Eyck's approach
(Source: Aldo van Eyck - Writings, [1961]: Vol. 2, p. 318)

Before 1962 van Eyck used the term dual phenomenon, which he later changed to twin phenomena in order to avoid confusion with the notion of dualism, while the term "twin" is inspired from the cosmology of the Dogon people which he visited in 1960. What's important is that the notion of twin phenomena is not meant to dissolve opposites, but, on the contrary, it presumes the simultaneous existence of both instances.

3.4. The in-between realm

The spatial equivalent of the notion of twin phenomena in van Eyck's theory is the notion of *in-between*. It was first mentioned in a brief comment written after his two trips to the Sahara: *"The Sahara spans between two worlds: the world of Mohammed and the world of the Negro. Both in the imagination and in fact, this ocean of stone and sand is an in-between world."*[30] He later used this idea in a more architectural sense, at first as "in-between province" in an article about the schools he made in the Nagele village between 1954 and 1956. It was the period in which he designed the Orphanage in Amsterdam when he turned the notion of in-between into a design strategy that was intended to implement in architecture the idea of twin phenomena – a strategy that provided an alternative to the modernist principle of continuous space.

What van Eyck called the *in-between realm* originated in the notion of *doorstep* introduced by Alison and Peter Smithson at CIAM IX (Aix-en-Provence, 1953). Van Eyck extended the meaning of this term into something more than the transition between the home and the street: *"I have been mulling over it, expanding the meaning as far as I could stretch it. I have even gone so far as to identify it as a symbol with what architecture means as such and should accomplish. To establish the 'in-between' is to reconcile conflicting polarities. Provide the place where they can interchange and you re-establish the original dual phenomena. I called this 'la plus grande réalité du seuil'. Martin Buber calls it 'das Gestalt gewordene Zwischen'."*[31] This quote shows that the transition from *doorstep* to the *in-between space* was achieved by combining the concept of *doorstep* with *das Zwischen* (German for 'the in-between'), a term introduced by the Austrian philosopher of Israeli origin Martin Buber (1878-1965).

In *The Child, the City and the Artist* van Eyck offers a broader elaboration on his interpretation of Buber's *Zwischen* using *Das Problem des Menschen* (The Problem of Man - 1943) as reference. In this book Buber wrote about *das Reich des Zwischen* (The Realm of the Intermediate) and the relation between individual and collective, which van Eyck related to his notion of twin phenomena. *Das Reich des Zwischen* inspired Aldo van Eyck to name his concept "the in-between realm", thereby extending the concept of *doorstep*. From the relation between the house and the street (*doorstep*) and the relationships between people (*Zwischen*), van Eyck developed a notion that covered every significant relationship between people and between people and things. The concept of in-between space is a remarkable one in the understanding of the relations between people, society and the built environment.

3.5. Interiorization

While the concept of twin phenomena represents the ontological side of van Eyck's theory by explaining how elements can gain meaning, the concept of interiorization represents the epistemological part: it is his attempt to interpret the way in which we, humans, are able to understand the built environment, how we relate to it and how it works. It is probably also the least understood aspect of van

Eyck's theory; he developed this concept from multiple views in *The Child, the City and the Artist.* It is a concept that connects certain aspects of ideas that he developed: the perspective on the twentieth century in terms of relativity, finding a way to reconcile the rationalist analysis with imagination (science with art) and the understanding of human nature and its culture. It is also a way to eliminate differences between object and subject, often perceived as being in opposition, and to understand them as twin phenomena.

The term "interiorization" is a little problematic one, which led to less acceptance in architectural theory. The meaning of this word, for van Eyck is other than its ordinary meaning of "to incorporate within oneself"[32] and rather a synonym for "assimilation". It also becomes difficult to understand when it is associated with dualism – distinctions between mind and body, mind and matter or between subject and object – or differences between internalism and externalism in epistemology, where the internalism is that truth or reality can only be in our minds.[33] Both cases create a clear distinction between object and subject, using van Eyck's terms: the reciprocity of the twin phenomena is divided into two false alternatives. Another reason why the idea of interiorization was not accepted in architectural theory may be because it is a very abstract concept, more closely related to debates in philosophy, psychology and anthropology than architecture. Therefore, it is likely that many of his followers had not fully understood the frame of mind Aldo van Eyck wanted to instil into architectural thinking. It is still remarkable how many of the less abstract and closer to architecture concepts that he developed based on the idea of interiorization enjoyed more appreciation.

To fully understand the concept of interiorization and assess whether it is a concept indicated for the current problem of the relation between man, society and the built environment, or if it can be replaced with something else, we must first understand what this concept is based on and with what other important and less abstract concepts from van Eyck's theory it is related.

3.6. Duration, memory and anticipation

Already in his study years at ETH Zurich, Aldo van Eyck researched many ideas about relativity; his sources were different modern art currents and texts of well-known physicists such as Albert Einstein, Niels Bohr, Werner Heisenberg and Louis de Broglie, but also the writings of the French philosopher Henri Bergson (1859-1941). Although van Eyck studied those works since the late 1940s and early 1950s[34], it was not until he wrote *The Child, the City and the Artist*, in 1962, that van Eyck developed his own epistemology, referring to Bergson's philosophy. He mostly referred to the role of memory and simultaneous perception of the past, present and future, brought together in Bergson's notion of duration (*la durée*):

> *"...in order to define consciousness and therefore freedom, Bergson proposes to differentiate between time and space, 'to un-mix them', we might say. On the other hand, through the differentiation, he defines the immediate data of consciousness as being temporal, in other*

words, as the duration (la durée). In duration, there is no juxtaposition of events; therefore there is no mechanistic causality. It is in the duration that we can speak of the experience of freedom."[35]

Through duration, in simple terms, people live the moment in time; the world is not felt discretely, as a quantitative multiplication, but rather as a qualitative multiplication continuously and yet heterogeneously. This notion is related to its understanding regarding memory: memory preserves the past and the experience of moments – the experience of duration, in which the present moment and the multitude of past moments in memory come together. Therefore, not even a single moment can be the same twice, because the previous moment has already been added to the past. Memory and human understanding are progressive; in this case, variety is represented by the simultaneity of many different memories, taken together with the present moment. The past and the present are one indivisible entity. Understanding time as a full experience and the recognition of unity in the heterogeneity of memory and perception is what Bergson called intuition. It is a more dynamic method of understanding than the analytical process of intelligence, that side of memory and of human thought which he called "habitual". This type of habitual memory was created by obtaining an involuntary behaviour, automatically by repetitive means and habitual thinking or intellect, most often imposed by the body and the space from which we gather information. Memory, in Bergson's theory, represents a mixture of both habitual memory and "pure" memory in which personal memories persist. Intuition is the process of transition from pure memory directly into action. These processes represent the creative moment and they give birth to creativity.[36]

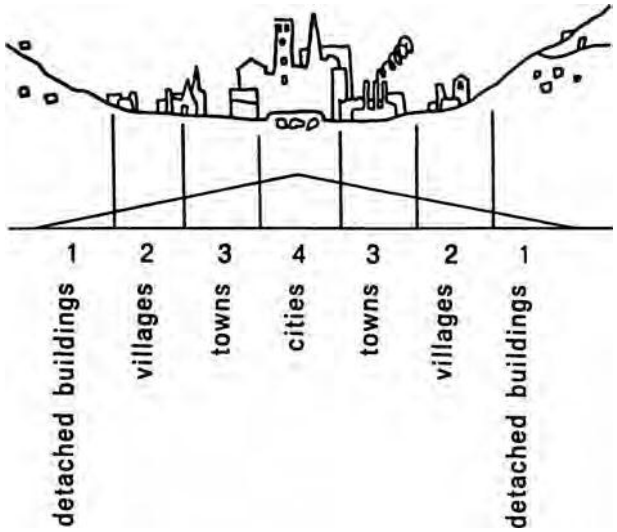

Image 8: "The scale of human associations" of Alison and Peter Smithson in con-junction to Patrick Geddes' "Valley Section" (Source: "Het Verhaal van een Andere Gedachte", Aldo van Eyck - Writings, [1959]: Vol. 2, p. 256)

In addition to duration and memory, van Eyck used the notion of anticipation; it can be regarded as a variation of Bergson's idea of creative thinking. Van Eyck described two mental processes associated with anticipation: mental association and emotional association. The difference with the notion of mental association and emotional association is that now there is no concern for man in general, but rather for the architect as a designer, who must anticipate the future in order to be able to make quality design. Yet another meaning of the concept of association can be found in the works of Alison and Peter Smithson; in 1953, at CIAM IX, they proposed the replacement of the hierarchy of functions with a scale of human associations inspired by the *Valley Section* of the Scottish biologist, sociologist and urban planner Patrick Geddes (1854-1932). What they called "human associations" corresponded more to what van Eyck called "human

relations". Van Eyck was not focused on hierarchical categories such as "house", "street", "neighborhood" or "city" because, from his point of view, people's ability to relate to a place does not necessarily depend on its scale.[37]

The three concepts Aldo van Eyck used to understand the human relation with the time and the space – duration, memory and anticipation – are a derivation of the way Bergson understood duration and memory. Through Bergson's understanding about time and memory, van Eyck found a way to overcome the reductionist tendencies of "pure analysis", especially the fragmentation of urban complexity into four functions: living, working, recreation and transportation and humanizing the modern architectural approach through recognition of the validity of human experience in relation to the built environment.[38]

3.7. Place and occasion

As Bergson focused only on the temporality of experience, in contrast with concerns of the scientific world about spatiality, Van Eyck combined Bergson's temporal relativity with Einstein's spatial relativity into the twin concept of place in relation to time. Starting from the idea of interiorization, he introduced the concept of Bergson's duration in space; both space and time, as he saw them, are abstract concepts that could be humanized: *"place and occasion imply participation in what exists"*.[39] In *The Child, the City and the Artist*, he presented a link to Bergson's theory; as the duration for Bergson, the occasion for van Eyck represents lived time, in other words time understandable in comparison to completely abstract time. Van Eyck emphasized that the properties and qualities of place cannot be designed, but instead they arise from the relation between human and space. At the same time it is a feature that cannot be included by choice in a project. Van Eyck considered that a place is not necessarily a quality of an entire space; it may also be part of the space as well, thus enabling the perception and understanding of the whole space.

In the 1960s, while nobody paid attention to the distinction between space and place, Aldo van Eyck was probably the first to develop this concept in the context of modern architecture.[40] The understanding of space in van Eyck's vision has proved very valuable in understanding the relation between man, society and the built environment because it is an attempt to humanize a spatial concept that sometimes can be very abstract and at the same time does not promise a predictable result – only the architects' ability to create potential. Also, this notion plays a very important role in all his writings and theoretical work. The place and the in-between realm represent the architectural equivalent of the principles of relativity and reciprocity and are probably the most important concepts of van Eyck's theory, necessary in order to understand his view regarding the role of architecture and the architect.

Chapter IV: Configurative approach

4.1. Configurative design features

In 1962, following his success of his recently finished orphanage in Amsterdam, and in the attention of the ongoing debates about Blom's and other young architects' projects, van Eyck published an article in *Forum* entitled "Steps Towards a Configurative Discipline", which appeared along with a story about the culture and architecture of the Pueblo Indians of the South-Western United States.[41] In this article, van Eyck gave an opinion on structural design and architecture as a configurative discipline, allowing the development of new types of association, and, finally, restoring the forms of modern society. These ideas led to years of intense study at the Academy of Architecture in Amsterdam and to a number of communal and residential projects built throughout the Netherlands.[42]

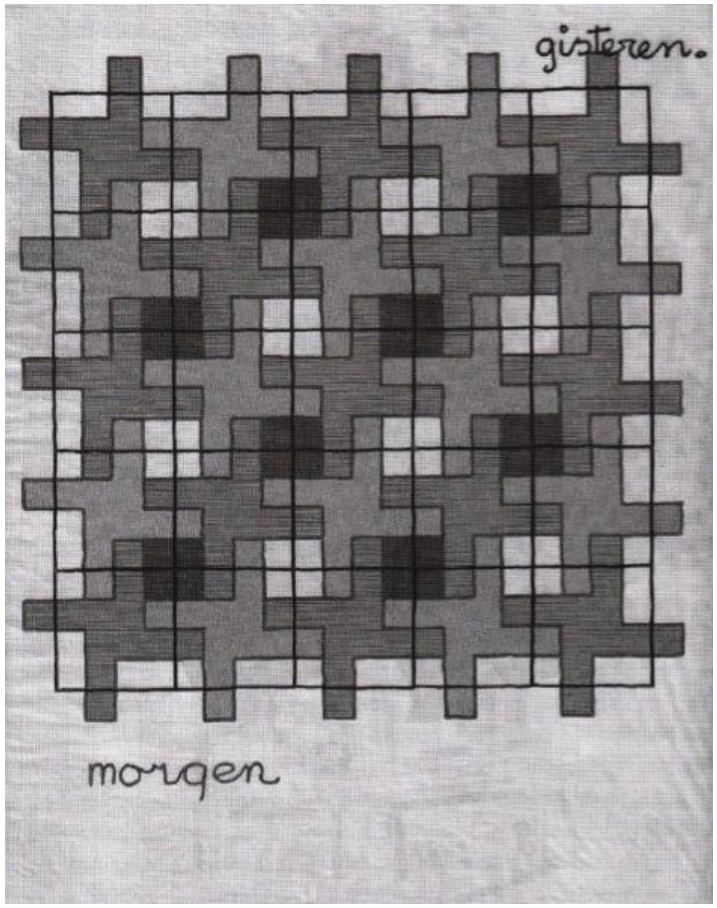

Image 9: Gisteren, Morgen (Yesterday, Today) configurative pattern with a superimposed grid structure; author Piet Blom (Source: Forum 15, nr. 5/1961)

"Configurative design" was based on the principle of systematic multiplication of a basic module in one or more Gestalt-forms at different scales and levels. Relationships between different scales and spatial orderings had to be established either through formal (figurative) or morphological (structural) analogy. Van Eyck's notion of "homecoming" was translated into a systematic design in which the different degrees of association could be organized through a cyclical pattern – pattern representing a theme or the smallest common denominator of a type of human association. The compositions obtained that way were generally addressed to relational examples such as closed/open, centrifugal/centripetal, public/private and so on. Each pattern or theme was analysed by the architect, in order to be applied at different scales or levels of spatial or social association, thus ensuring their integration. By recognising the general order, as a whole, people could be aware of the environment in which they live, and identify with it, both with its subdivisions and as a whole.[43]

Despite the initial goals, many of the configurative prototype design plans were similar to mega-structures as type of approach, offering a little

more than a symbol of a socio-cultural model of the *Gestalt* type, which is reflected in the urban plan. There was also a clear link, although unexpressed, with the cyber post-war paradigms and a fascination with autonomous systems that opposed the humanistic principles in Blom and van Eyck's work. Van Eyck, who had anticipated this danger, had already raised the issue of how configurative design could act at an urban and regional scale. Responding in echo to Alison and Peter Smithson's ideas, as well as those of Kenzo Tange and Louis Khan, van Eyck suggested, the introduction of infrastructural elements such as road networks as a part of the scheme. In addition, he suggested that a system composed of large elements and which has a civic meaning or city forming potential, could help in shaping the urban image and therefore increase the sense of urban identity.[44] These types of elements included traditional iconic figures such as churches, squares and theatres, but also rivers and other natural landmarks.

These attempts to study the whole concept of the built environment in ways that might ward off the alienating effects of modernist planning were, of course, part of a wider concern, of considerable importance for the post-war period. Through various projects and writings about configurative design, a number of different approaches to the matter at hand were proposed. The structural or morphological configuration of the city, opposed to the functional order, was believed to lead to "awareness of total urban cluster," obviously relying on cognitive mapping mechanisms as the main source of guidance, identification and understanding of the urban realm. This was a relatively abstract approach compared to van Eyck's need to add iconic elements to the city, where meaning could be extracted from the visually clear and distinct urban characteristics with the city as a backdrop in a relationship consisting of silhouettes and earth's surface, suggesting a conceptual link to the *Gestalt* theory. At another level, Blom's student projects and many of van Eyck and Hertzberger's buildings encouraged the residents' immediate interaction with the environment, indicating a phenomenological understanding of things.

Image 10: Construction of Speelhuis theatre in Helmond, 1977
(Source: Photographer J.v.d. Broek)

4.2. Design strategies

At the intersection of these different ways of understanding and orientation in the urban realm, a number of strategies can be identified within the configurative approach. There are three examples of such tactics: first, the idea that meaning can arise through rather than from form; second, the articulation of individual homes as constitutive elements and not subordinated to the urban realm, and third, the use of spatial archetypes to stimulate the creative organization of urban and domestic spaces.

Underlying both Blom's work and van Eyck and Hertzberger's theoretical approaches, there is a belief that urban

environment should be able to incorporate socio-cultural values or at least be willing as to allow individuals and groups of individuals to project experiences and memories onto it. Understood this way, the built environment gains meaning. It can be said in this case, that configured urban form can accommodate this "understanding" in the built environment, but, at the same time, raises the question of how such forms might be determined. Van Eyck's interest in vernacular culture and avant-garde art, as well as his efforts to understand the psychological processes involved in creating cultural identity sought to find a solution to this question.

Formal plasticity in the configurative design projects was the result of a desire to articulate the individual dwelling as a part of the public space. In these projects, individual homes are not hidden by a facade or inserted into the interstices between public spaces. Instead, they stand out through their physical shape determining shared spaces. According to Hertzberger's affirmation, *"the dwelling-unit is the primary entity, the smallest complete building unit and basis of a configurative design process".*[45] Instead of using symbolism or typology to create meaning, the constitutive motifs of Blom, van Eyck, Hertzberger and others' schemes were made up of what they described as archetypes: spatial elements and situations that were understood as basic units of both physical and social living. These included, for example, outlooks, such as balconies, terraces or platforms; connection points such as steps and stairs, paths or passages; shelters, which could be roofs, niches or corners. In his children's village Blom had created scenic, theatrical areas in the inner courtyards between the housing units; he wrote about them as follows:

> *"...what if no performance is being given? The 'theatre' can be played in every day, it is an extra large landing and can be used for everyday traffic. In this inhabited theatre it must be possible to practice 'acting' every day, in many places and in different situations. Therefore, there is not a central theatre, as might be expected, but one normal theatre and three times an imaginary theatre and, in addition to that, still many more places in which, by just behaving normally, you seem to be acting."*[46]

In one of Blom's housing projects in Helmond, a theatre in the real sense became the centre of interest for the community. The theatre was not separate, but embedded within the housing, easily identifiable, but not different. In such projects, the public space was considered extremely important and relied very little on symbolic or traditional indicators, while, in contrast, the smaller and less defined elements – the basic units or spatial archetypes (*Urforms*) – could fulfill their role at different scales and levels.

Chapter V: Conclusion

In the Netherlands, modernist urban planning and the growing spirit of anti-modernist rebellion were to have one last confrontation in the Nieuwmarkt neighborhood of Amsterdam. This was the site where the first metro lines with a four-lane inner-city highway that passed over it would be built. The road would pass directly through the middle of one of the oldest and well-loved districts of the city. Hundreds of students, artists and activists had occupied the empty buildings in the neighborhood, where, along with some of the residents, formed the Aktiegroep Nieuwmarkt. After years of courageous resistance and a violent uprising in 1975, the modernist planners eventually gave up along with the politicians who were leading them; the subway line was completed, but the construction of the road was stopped and other plans were removed from the agenda. Thus, the Nieuwmarkt district was saved, becoming a source of inspiration for other anti-modernist movements in the country. A new model for urban development came to light – "bouwen voor de buurt" (building for the neighborhood) – that was to replace the large-scale modernist interventions in favor of smaller-scale projects. Aldo van Eyck and the existing group around *Forum* magazine's structuralist architectural philosophy would become a model for the next decade. One of the earliest and most representative of these projects was the redevelopment of the Nieuwmarkt itself, and, not surprisingly, van Eyck was the architect to work on it. Here, his ideas on interstitial spaces and non-hierarchical compositions led to an architecture that could easily shape itself in the existing fabric of the neighborhood.[47]

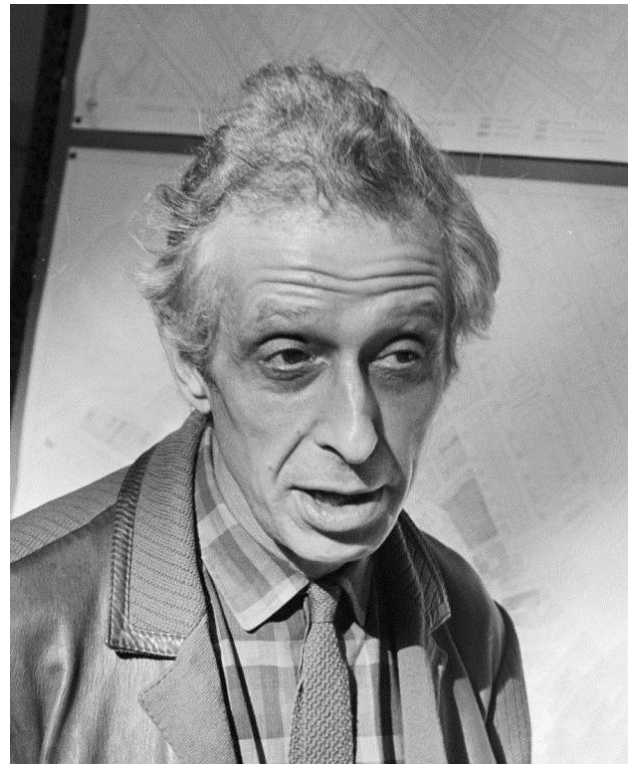

Image 11: Aldo van Eyck in 1970
(Source: Dutch National Archives, Haga, Fotocollectie Algemeen Nederlands Persbureau (AneFo), Acces no. 2.24.01.05)

In conclusion, the configurative design as conceived by van Eyck, exemplified in Blom's plans and explored and carried out by a whole generation of Dutch students and architects in the 1960s and 1970s, it may not have achieved its goal, that of restoring "form" and social integrity to modern society. In many cases, projects have failed because of their schematic nature and to a kind of architectural pride very close to the one *Forum* editors had criticized in early modernist approaches. But both in its theoretical considerations and the moments of creation, configurative design managed to question earlier ways of urban planning, especially the denial of the city by modernism through its redefinition of the "outside world". Clearly opposed to a mechanistic or rationalistic understanding of the city, van Eyck and his colleagues developed a set of tactics designed to rethink the spatiality of the city from a familiar scale to a regional one, in

order to become the solution for a modern collective existence. Small-scale configurative projects contain elements that are strangely both destructive and fortifying at the same time, while at a larger scale a new kind of spatial conformation and structural coherence becomes possible. Conceiving these different scales always in relation to each other will remain a challenge and an opportunity for architecture.

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THE ARCHITECTURE OF THE CYCLADIC HOUSE THE PRECEDENT OF THE MODERN ARCHITECTURE

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Abstract

The Cycladic architecture draws attention mainly through its similarities to the modern architecture. Always at a human scale, its simple, defined shapes and its functional organization come close to the house as it is known today. Le Corbusier found his inspiration in the Aegean area, his creations being clearly influenced by the traditional Greek architecture.

Starting from the main purpose, to create a shelter, the anonymous constructor develops different typologies for the main architectural program – housing, a program that grows together with his needs. So, going through each Cycladic Island, one can notice how the urban tissue and its architectural elements were created, ultimately being considered examples of modern architecture.

K**eywords:** *Cyclades, Greece, housing, traditional, modern, Le Corbusier*

Introduction

Traditional houses in the Cycladic Islands can be considered the prototype of modern housing and this is what this study will be dealing with.

During the documentation for the site chosen for the diploma project, which is situated in Elia, in the Island of Mykonos, I realized that there were some similarities between the typology of the traditional architecture and the modern architecture of Le Corbusier – this was a starting point in my research.

The Cyclades are the most popular Greek Islands, grouped in the Aegean Sea. They have been inhabited since the prehistoric times and their culture began to develop during the Bronze Age. The mythology says that the 56 islands were created by the god of the seas, Poseidon, which turned nymphs into islands and cliffs.

The name of Cyclades (κύκλος=circle) comes from the way in which the group of islands surrounds the sacred Island of Dilos – the birthplace of Artemis, goddess of hunting and Apollo, god of sun and music.

The discovery of the Aegean aesthetics and ideology is linked to the concept of national identity that takes place during the interwar period aiming to introduce and assimilate new artistic trends from Europe, fact that can be considered an attempt to create a traditional modernism.

The structure of the Aegean landscape is one of the best examples of the Greek modern architecture. With simple tools and materials, the islanders respect and extend the natural landscape creating communities with a high occupancy rate, but with an unmatched aesthetic value. Through their

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composition and plasticity, simplicity and purity of forms in which they blend with the landscape, rural houses come as a result of centuries of experience and local heritage, but also a personal expression of their manufacturer.

Image 1: Map of Greece and the Cycladic Islands (Source: http://www.yasas.com/greek-island-travel/locations/cyclades.asp)

Image 2: Overview of an Aegean built landscape (Source: http://hdwallphotos.com/photoswall/mykonos-view-photograph-wallpaper-hd.html)

By building these simple structures, the craftsman, the farmer, tried to satisfy his needs combining utility with aesthetics in such a pleasant way.

Le Corbusier reproduces the forms and structure of the Cycladic architecture setting out the principles that guide the modern architecture. The five principles of modern architecture refer to the free ground floor, the construction of "pilotis," the terraced roof, the open-plan, the free facade and, last but not least, to the long strip windows.

Image 3: Le Corbusier, MaisonCitrohan, 1922
(Source: LE CORBUSIER, Towards a New Architecture, Dover Publications, New York, SUA, 1986)

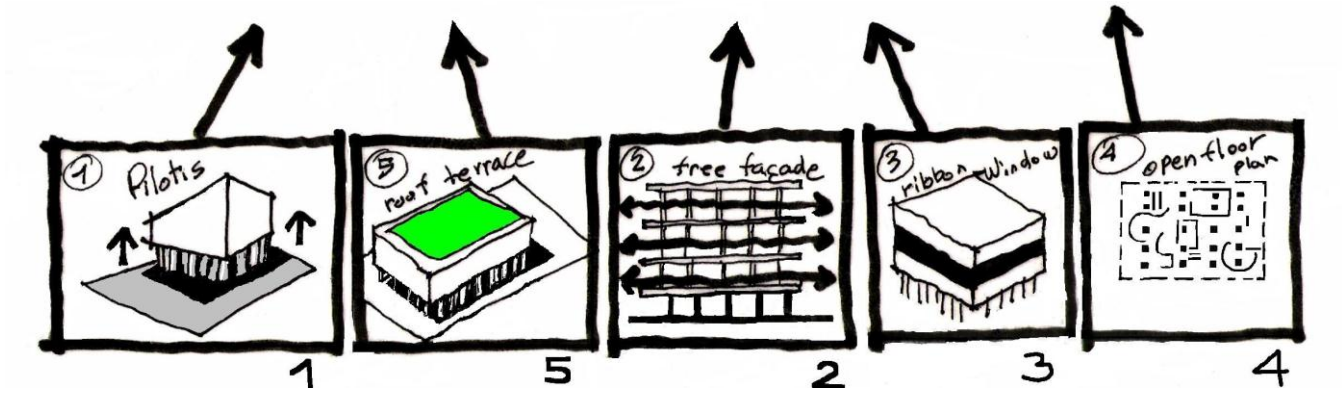

Image 4: Le Corbusier, The Five Principles of Modern Architecture
(Source: http://archidialog.com/tag/le-corbusier/)

Chapter 1. Short Introduction to the Traditional Greek Architecture

In Greece, the presence of different landscapes (mountains, islands, plains) leads to the existence of numerous building materials (stone, wood). After liberation from the Turkish domination, some areas have continued to keep elements of the traditional architecture, before they had been destroyed in 1821, during the Independence War.

The Turks had under domination all the seaside towns and ports and in some of these cities – Chania and Rethymno, in Crete and the islands of Zakynthos and Corfu, monuments left by the Venetians can still be found. The influences upon the traditional mainland architecture come from these urban centres.

In the mountains, the villages of Pilio and Pindou are distinguished thanks to the crafting development. Here, the buildings are mainly made of wood and stone, which are local materials.

The characteristic construction for the continental area in the 18th and 19th centuries is a villa with high stone pedestal, with balconies or loggias upstairs and covered with a sloped roof. The major difference between the insular and the continental architecture is the way of roofing. The terraced roof has existed since the ancient times in the islands of the Aegean Sea, in Crete and Cyprus, mainly due to the lack of wood.

The current forms of settlements in the islands keep the white facades of the 20th century and some of them retain the medieval characteristic in which the facades are not directed towards the sea, for protection against pirates.

Climatic and geomorphological conditions are different in all the islands and, therefore, the architecture of Mykonos is different from the one in Santorini, the Cyclades from the Dodecanese, the Aegean Islands from Crete or Cyprus.

In some larger islands, such as Samos, Chios, Mytilini and Limnos, the architecture is more similar to the mainland's. During the Medieval period, the architecture was unitary and the wooden roofs with four slopes and ceramic covering were found both on the mainland and in the islands.

In general, the architecture of Independent Greece has two influences: Eastern (Byzantine) and Western (Neoclassicist). The rules concerning the urban planning and design date back to ancient times

and are illustrated in archaeological sites. Starting at the end of the Byzantine Empire, new theories regarding the way of building, the functional distribution related to the surroundings – water and plants were formulated and used until the 20th century. These regulations included: the right to build a wall between two houses in a row, niches at the entrance of the building, the right to restrict the visibility from the street of the private areas, creating bridges between buildings if belonging to the same owner, thus creating some public squares.

Image 5: Pilio (Source: http://www.panoramio.com/)

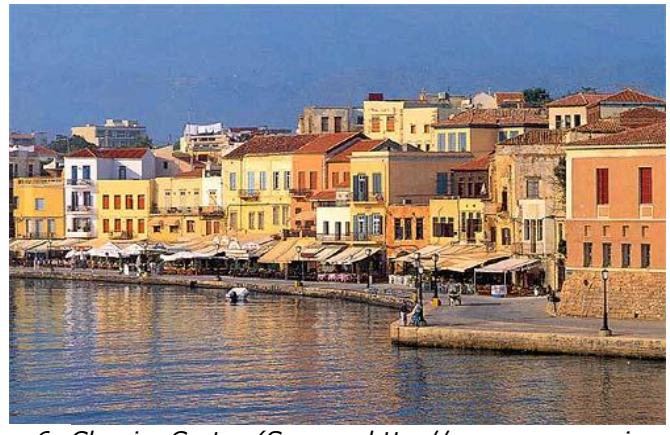

Image 6: Chania, Crete (Source: http://www.panoramio.com/)

Image 7: Mytilini Island (Source: http://www.panoramio.com/)

Image 8:Limnos Island (Source: http://www.panoramio.com/)

The neoclassical architecture also represented another chapter of the Greek architecture and was analyzed by different criteria. The changes in the lives of the Greeks after the Revolution in 1821 occurred in clothing, country management and language, and also influenced the architecture. The Neoclassicism appeared for the first time in Western Greece by the end of the 17th century. Inspired by the culture of Ancient Greece, Neoclassicism was perceived as a revival of the traditional architecture and oppression of the Byzantine style; in the 20th century and the early modern movement, there was a tendency to search

for the identity of the Greek architecture as the antithesis of Neoclassicism. So, a research to find the architectural elements particular to each area was started, aiming to further introduce them into the reconstruction of the refugees' settlements.

By the '60s, the international organizations dealing with the protection of the architectural heritage had implemented various strategies to preserve the local architecture; by the '80s, the elements and different features had been coded to monitor the development of the Greek architecture.

So far, they have investigated the authenticity and the architectural elements in the Greek culture to survive the historic route. Regardless the way they are perceived, these elements follow similar concepts, so the local identity and the globalization are differentiated in terms that involve the third dimension of informatics.

Chapter 2: The Architecture of the Cycladic Islands

The traditional architecture of the Cycladic Islands represents a different case, both in terms of settlements as a whole (the organization of the architectural elements from the urban point of view), and in regard to their different elements: houses, temples, roads and markets or windmills and so-called "peristereones".

The cycladic architecture is characterized by a geometric rigor and function of the buildings. The general conditions - climate, scenery, building materials prevailing in the area – led to a different architectural style. Local differences created many variations of the basic solutions that were implemented and grew the interest besides them.

The most significant differences, for example, in Santorini, resulted from new local solutions in construction and architecture. Beyond the differences in landscape or the materials available, the differences in the social classification and the history of each island played an important role in shaping the traditional architecture. In Naxos, for example, we can find the "towers" villas with western influences, almost unique in the Cycladic group.

The basic model of the traditional houses is the one on a rectangular plan with one room and a terraced roof. These houses are always made of stone and have small openings. The strong light and wind and the lack of wood only allow small openings. Moreover, this lack of timber does not allow the construction of high length beams and, because of this, an intermediate arch is often used to support the roofs' beams in the cases in which the opening is bigger than their length.

The interior of the houses is also simple: in many cases, the height difference underlines the sleeping space and niches are built into the walls for storage.

This basic type has evolved in several ways, depending on circumstances. A second rectangle is added as an extension of the original spaces in order to create a house on two levels: in this case, the upper floor is accessible through an exterior staircase made of stone. In the yard, the oven and the storage spaces can be noticed. On the outside, the Cycladic houses are characterized by their geometric shape, by the strong shadows left by the cubic forms and through the white volumes which give them an extraordinary plasticity.

Initially, the houses kept the natural color of the materials, they were not plastered to seamlessly integrate to the rocky, devoid of vegetation environment, characteristic that had more a protective role

against pirates than an aesthetic one. Later, after the dictatorship of Metaxa, a law that involved the white covering of the walls of all buildings was promulgated. The way in which settlements are arranged – in concentric areas, as well as the way in which paths are disposed – as a labyrinth show that the Cycladic settlements are fortified.

The houses of the Cycladic Islands are sometimes decorated, besides their geometrical shapes, the clarity and rigor dictated by the construction and the functional solutions. Carved pilasters and lintels or embossed skylights that fill arches can be often found.

Notable is also the presence of the western morphological features that are explained by the Venetian occupation. The "Peristereones" are remarkable constructions with perforated facades being an example of functionality and originality.

The ecclesiastical architecture is always based on local variations.The strictly geometric expression and simplicity are kept, but the construction is certainly more developed and has a stronger tendency in decoration. There are also influences from the west, such as sharp arches that mixed with the general perceptions were integrated to the local traditional architecture.

2.1. Elements of Town Planning

The difference in the structure of every settlement creates a composition of different types of houses and groups them into neighborhoods and settlements. In the settlements dating back to the Byzantine Empire, the houses are very close to each other, leaving between them a road of a maximum width of 3.00m, while the upper floor gets closer due to the console parts. During the Ottoman Empire, the houses were all in a row, creating a characteristic compact volume. The small size of the roads is also kept today, being by far one of the elements that distinguish the Cyclades from every other area.

2.1.1. THE URBAN TISSUE

The urban tissue has been altered over centuries, after a gradual development. In the 18th century, the urban tissue was restricted to the limits of the fortified city (9). The extension began by the mid-18th century when the areas were restored and new rules of urban planning were set.

The high density is achieved due to a high percentage of land occupation, only 10% being free space. Churches are often built into the free spaces and, hence, the land occupation can reach 100%.

The population growth and improvement of the economy of the islands together with the growth of trade and navigation have led to the expansion of the settlements with a much larger area than the existing city. This time, upon a closer look, a hierarchy of the road network can be noticed, the built assemblies are more organized and can be divided into two categories: urban and rural settlements, which differ in geometry and land surfaces.

All these differences of the urban tissue combine and this is how a unitary result of urban organization is created due to the volumes in its composition.

Image 9: Phases of the urban development in Mykonos
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

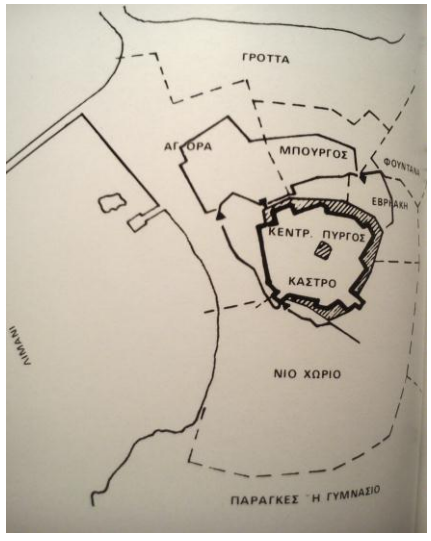

Image 10: The configuration of the center
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

Image 11: The center in Andros
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

2.1.2. THE ROAD AND THE HOUSE

The public spaces of the settlements are always small. Squares are rarely found, as the public space is represented by the streets. At this scale, a balance between the whole and its elements is created. The whole is represented by the street and the facades of the buildings surrounding it. The street is a result of the way in which the houses are disposed: with narrow or wide fronts.

Usually, the houses of a territorial unit are of the same type and have the same features. For those with a narrow front, they have the same dimensions, two floors, with the ground floor having a height of 2.50m, and the total height of the facade of 4.00-5.00m. They have two openings on each floor – a door and a window, with a central skylight for lighting and ventilation and separate access to the upper floor from the street through a stone staircase stiched to the exterior wall. The windows, doors and balconies, are similar and are made of wood with the same dimensions being differentiated only by color and decorative wood details.

With this configuration of the space, not only a harmonious urban view is created but also a unique relationship between the street and the house.

However, houses retain their uniqueness through their geometric shape. Passages result from the overlapping of the buildings across the street thus creating a game of lights and shadows and full-empty.

In this way, the house contributes to the animation of the public space, both by its plasticity and the way in which the access to a private space is facilitated from the public space.

2.1.3. THE CENTER AND THE PUBLIC SPACES

By the end of the 18th century, with the development of navigation, the value of the center and the public space increases. The center moves from the fortified city to the coast, facilitating the new lifestyle of the locals.

The streets are cobbled and narrow, the density in the city is higher and this time the houses have more floors and fewer storage spaces.

The center is marked by the presence of a church, and the square, if exists (in many Cycladic islands it is missing), is decorated with fountains and springs, gifts of the shipowners. This area focuses on buildings with administrative functions, which have particular elements of different architectural styles marking the city.

The public spaces are concentrated in the center, located on a plateau and the way in which the buildings are located in relation to the environment gives the great feeling of a home salon.

The urban structure of the city, although unstudied, is an outstanding example of balance that can be noticed in the multitude of its composing elements, resulting into a unified overview with high aesthetics created during several centuries.

2.2. ELEMENTS OF ARCHITECTURE

The architectural element that prevails in the Cycladic space is the house, the most important and widespread function since the first human need is to build a shelter. Thus, depending on the needs and location, different types that share certain characteristics (simplicity, colors, roofing and human scale) will occur.

2.2.1. THE RURAL HOUSING

The rural housing is the most common in the category. At first, there is a basic unit, a rectangular covered space, which answered the needs of the simplest architectural program: housing. From this simple typology, more complex forms result when the interior is divided into functions or from the horizontal or vertical repetition of the basic unit. The row of the houses leave only two sides free that provide light and access; when the land slope is high, the construction takes the form of the land leaving the only one side accessible. The access and the windows are conditioned by the length of the local wood: 2.90-3.00m used for the terrace.

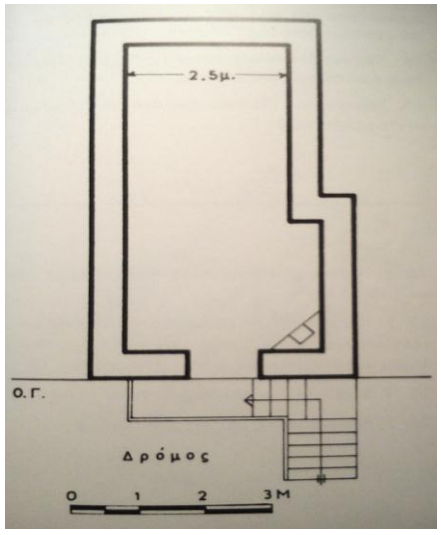

Image 12: House in Paros (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2,Ekdoseis Melissa, Atena, 2001)

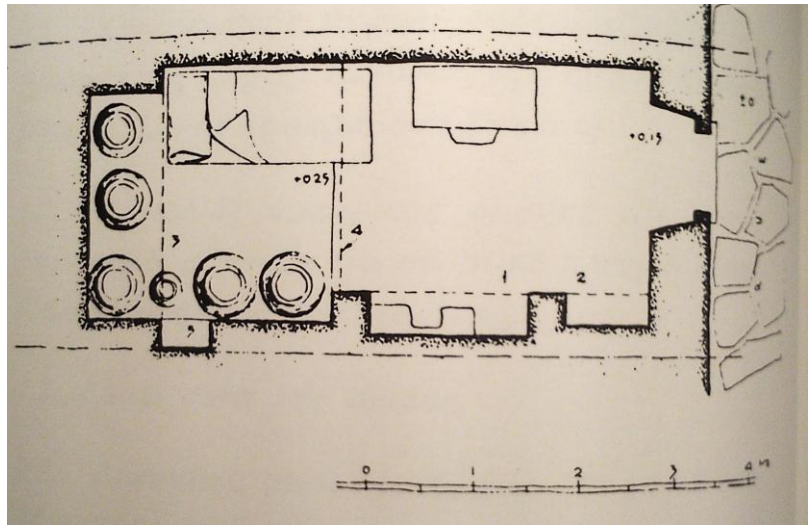

Image 13: House in Naxos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2,Ekdoseis Melissa, Atena, 2001)

The need of a bigger space led to the development of a vaulted solution, which has a central axis that supports the roof and splits the house into two symmetrical places. The pillars of the vault form angles that are efficiently used -on one side there is the cooking space with fireplace and on the other one the bed.

The planimetric development of the general house is highlighted by the separation of the functions. Thus, separate rooms result from the living room, divided by a vault in two symmetrical areas: day and

night areas, kitchen with a dining room and fireplace and the courtyard with the storages. An essential role in the distribution of the functions is held by the courtyard which develops naturally, with the same importance as a room, being directly related to the living room and the kitchen and considered their extension during summertime.

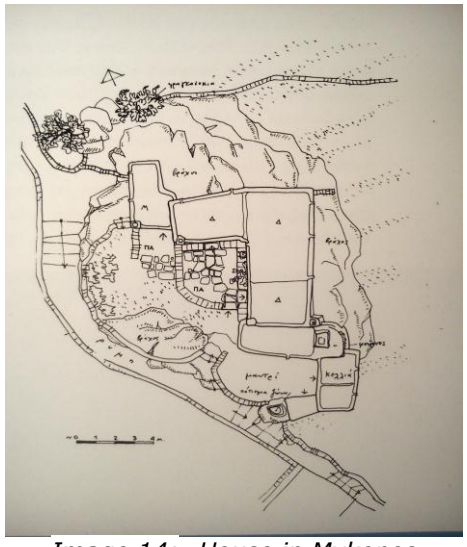

Image 14: House in Mykonos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

Image 15: Interior, Naxos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

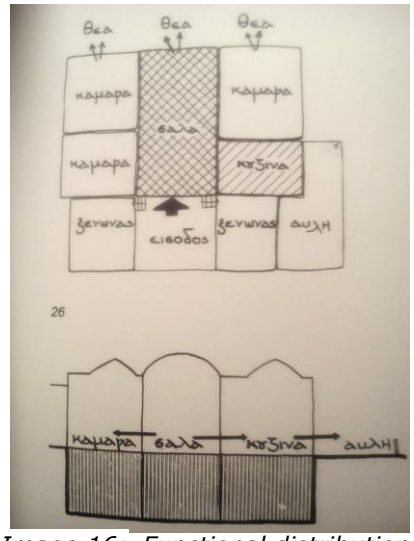

Image 16: Functional distribution, Naxos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2 Ekdoseis Melissa, Atena, 2001)

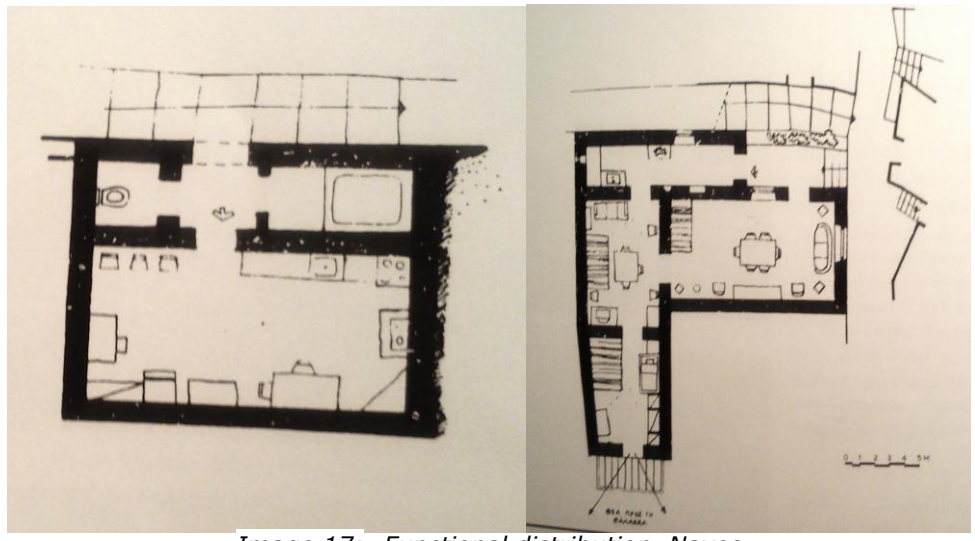

Image 17: Functional distribution, Naxos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

When the construction starts its development on height, a new concept appears: the house with upper floor. The dense appearance of the settlements for defensive reasons and the landscape create a way of life and a precedent for the urban structure from the new typology. The plan remains rectangular, a room is sometimes added to the basic shape above the street or on a neighboring house, and to solve the issues regarding ventilation and lighting, skylights are placed on the terrace. *"The houses are placed in a row and have small courtyards. Many times, the house extends over the neighboring house or over the street, or uses as backyard the terrace of the neighboring house. Spaces overlap so space is used more efficiently. Lighting and ventilation are provided through skylights placed in the terrace. A customary codified law is created in this way that serves the community's needs and leads to maximizing the use of space."*[1]

Regarding the functional division, the ground floor includes the annexes with the kitchen, storage room and toilet. The kitchen is an important area, fully equipped and furnished, being narrow and long: 2.50 x 3.00-4.00m. The bathroom is minimal, 0.60 x 0.80m, next to the fireplace under the staircase. The ancillary areas are surrounded by walls without openings. These spaces are parallel to the street or to the other houses and with one or two steps below the ±0.00 level of the road. The access is made from the main entrance or directly from the street when they are used as commercial space or workshops.

Upstairs, the main element is the living room which occupies most of the space in the house and retains the special attention of the owners in terms of interior design, as being the only room which is fully furnished. Adjacent to this room, small bedrooms are symmetrically placed. Bedrooms have only one bed, fact that shows that the family gathers for many hours in the living room.

The ground floor is linked to the upper floor through a wooden interior staircase and the lack of hallways and circulations is characteristic. The simplification of the rules of construction and the distribution of the functions around a central cell facilitates the extension of the house. Even if it is considered conservative, traditional architecture is in a constant progress aiming to ensure comfort and quality of life. Thus, housing is not treated as a finished entity, but as an ongoing process. This typology also has an outdoor area: a courtyard or a balcony. What is remarkable is the continuity created between the private open-spaces and the public ones, the courtyard being the transition space from the public to the private areas.

In the island of Santorini, the rural house is located on the outskirts of the village or in the fields and it has a large yard with ancillary areas around the perimeter. Because of the drought, rainwater tanks are placed either indoors or outside in the courtyard of each house.

Depending on the morphology of the land, the construction can often be buried; when at the ground level, the roof is cylindrical. The facades are symmetrical, with the main entrance placed in the center and a window on every side having the same dimensions, with a skylight above the door.

Most of the times, the housing is developed on one level, while the particular function is the winery, as Santorini has had a long tradition in wine production.

The oven has also a special significance, being now placed in a separate building of larger dimensions, in order to serve all the community. The oven building is directly related to the baker's home.

It is known that the high density of the buildings in the Island of Paros does not leave space for annexes and further development of the functions, so they build the farms outside the settlements. The planimetry of these assemblies offers countless possibilities, each area receiving a clearly defined function by its owners' needs.

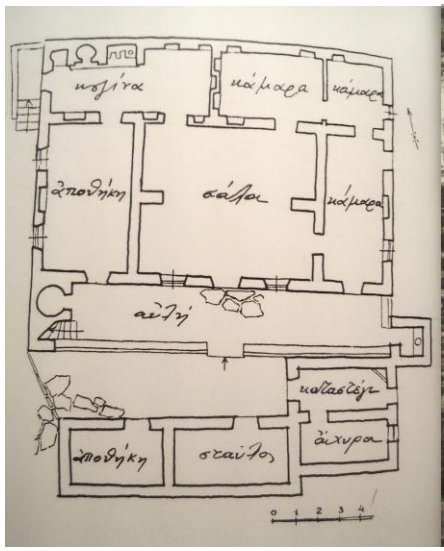

Image 18: House in Tinos
(source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

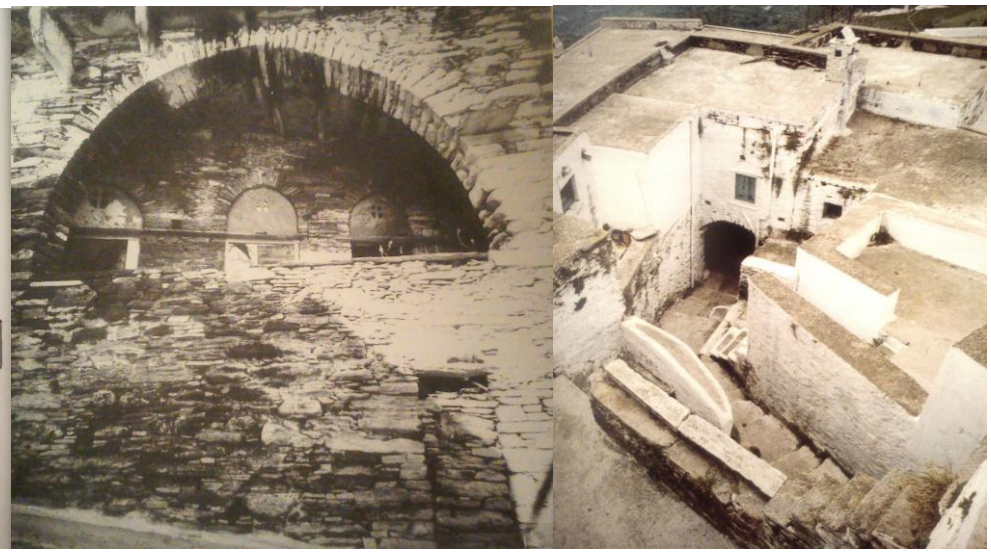

Image 19: L shaped house in Syros
(source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

In Syros, rural houses are different.Their development starts from an assembly that includes a circular enclosure surrounded by a stone wall with an animal shelter and hay that has an "L" shaped plan; a hut is placed along, so that they form an isosceles triangle. After the 1821 Revolution, more rural houses are built, and their function slowly changes, making them the first summer houses. Most of the buildings are "L" shaped, on one single level, and the long side is parallel to the land contours. In terms of functions, the living room is placed in the front and the bedroom back on the long side, while the kitchen is on the short side. The corner made by the two sides forms the patio that is partially covered with a pergola. Every space has a different height, thereby creating a visual game. The materials used are as usually of a local origin: wood – for the terraces' construction, straw – for thin walls, stone – for the main walls (because the rocky land does not require foundations) and iron – for railings and bars on windows and skylights.

Windows are always rectangular, with wooden lintels as marble is totally missing from the Island of Syros. From the aesthetic point of view, at first, the walls were uncovered, due to the poverty of the locals and the simplicity of the construction that did not allow such treatments. Later, the interior was plastered, and the exterior cemented so that the edge of the trowel leaves parallel horizontal lines. The socket is treated differently, from practical considerations. On a height of 0.90-1.20m - the height of a loaded animal - the plaster has another texture, being more resistant to the impact and a darker shade to resist to the dirt – usually shades of ocher. However, the detail that distinguishes the houses in Syros from the others in the rest of the Cycladic space is the parapet of the terrace. It has between 30 and 40 cm in height and 1-1.5cm in thickness, perimetrically surrounding the building. It is treated totally differently both in terms of texture and color – indigo.

2.2.2. THE URBAN HOUSING

With a width of 2.50m that can be provided by local wood and one single room, the studio, the oldest type of house can be mainly found in Paros, in the fortified settlements and the very dense areas.

As they move towards the periphery, these studios are expanding and the lack of materials leads to the division of the ceiling into two bearing modules that are supported by the walls and an axial arch, making the plan almost square, characteristic for the Aegean architecture. In the simplest constructions, the arch is replaced by a beam and pillars. The pillars, besides their supporting role, also facilitate the functional distribution.

The house extends by repeating the basic units in the attempt to give importance and independence to some functions by creating single-purpose spaces. These are the middle-class houses, mainly owned by merchants, especially due to their position: near to the street.

All typologies try to enhance the efficient use of limited space, and houses in high density areas have a ground and first floor, the access to the first floor being made via a staircase that is parallel to the street. Depending on the area, on the available space and on the lighting requirements for the ground floor, the stairs are either built along their full or partial length. Sometimes, the stair houses a gallery of arches with columns, creating the effect of a false facade. The way in which they set the stairs and the walkways usually creates varieties of the urban houses, being also considered decorative elements along with the carpentry and the window shutters.

The cities of Santorini Island also have a high density, and the available space is limited and without a predetermined shape, being a result of the disposition of the properties and the intersection of the volumes.

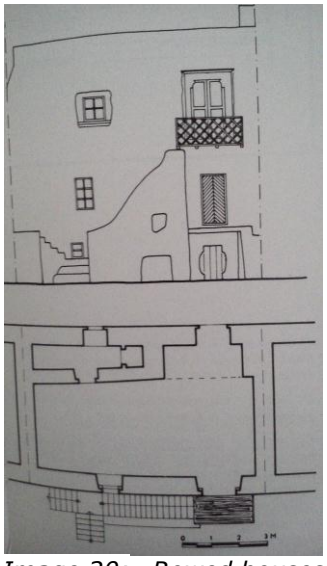

Image 20: Rowed houses
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2,Ekdoseis Melissa, Atena, 2001)

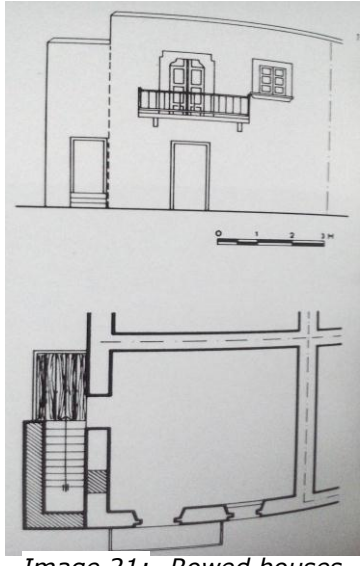

Image 21: Rowed houses
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

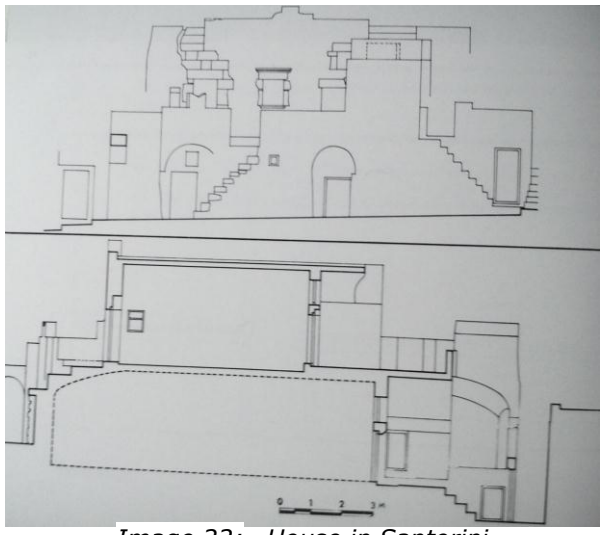

Image 22: House in Santorini
(source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

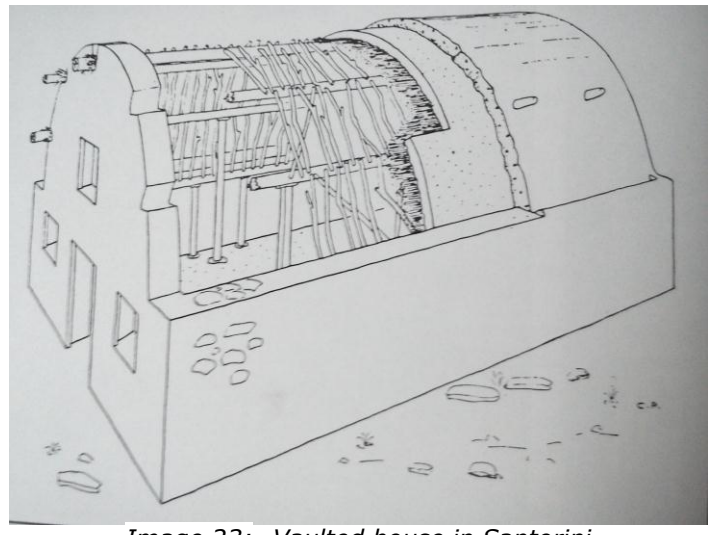

Image 23: Vaulted house in Santorini
(source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

In addition to the restricted space that they occupy, unlike the rural house, the urban house has fewer annexes and shelters for animals, and it resembles the house in the present times. In the interior, there is a wall parallel to the exterior one, with two windows and a door in the central axis. The space between the two walls represents the living room, and skylights are set when the ventilation and the lighting of the space are not sufficient.

The furnishing is minimal due to the lack of wood, but in some cases tables, chairs, sofas and cupboards brought along with the development of shipping are there, too.

In the Sifnos Island, the urban house has a typology which was kept until the ‘50s, unique in its planimetry. These houses are usually disposed on one floor and are divided into two modules: one primary and one auxiliary. The main module hosts the lounge with two niches and components of the auxiliary module behind and around the kitchen and the cellar. The entrance comes directly from the lounge and it is marked in the facade by two symmetrical windows placed on both sides of the entrance.

In Syros, the rectangular cell is kept with one or more rooms around it, above the neighboring house or above the road, to save the ground space. Thus, the urban houses are divided into three categories: on the ground floor, with one or with two upper floors.

The ground floor house starts from the studio that has an extra lounge and other ancillary areas. In many cases, the kitchen is small because the living room is the place where family gathers and it is included here many times. The houses with a first floor have the shop and the storage space on the ground floor and the main house upstairs. Houses with two upper floors appeared later due to the need of a larger space. The ground floor features a kitchen with the storage spaces and on the other two floors, there are the living room and the bedrooms.

These types of houses can be considered modern and their composition is easy to be decoded. In the Kea Island, the house is composed of a long, narrow rectangle, placed with one of the short sides

towards the street. The same rectangle is found exactly on the top of the other one. This unit splits into three areas on the ground floor to allow a passage; hence, a gang was created. When the houses are placed parallel to the contours of the terrain, they have a courtyard. The functional division is very simple: the living room in the center and on one side and the kitchen and the bedroom on the other.

2.2.3. THE MANORIAL HOUSING

In Naxos, the manors are the most urban houses of all the Cycladic space. Their plan does not seem to be derived from another typology present in the Cycladic architecture. Otherwise, the organization of the interior space is made peripheral around the living room, the sizes of the rooms according to their importance, and the central core allows the access to the rooms. Through its position, the living room gathers all the family, a feature known since the medieval times when houses had a closed courtyard and functions were developed around it. In this case, the manors are not decorated in a unique way, they are especially fortified on the ground floor and are different from the rural houses through their increased dimensions of the rooms and the height of the main spaces.

With the social and economic empowerment of the residents of Sifnos Island at the end of the Ottoman Empire, the mansions that followed models from abroad are built and grouped into new assemblies that gathered the noble class. Houses inspired by neoclassicism emerge, with terraces and traditional elements such as vaults on the ground floor and a central living room, with larger sizes than the rural houses.

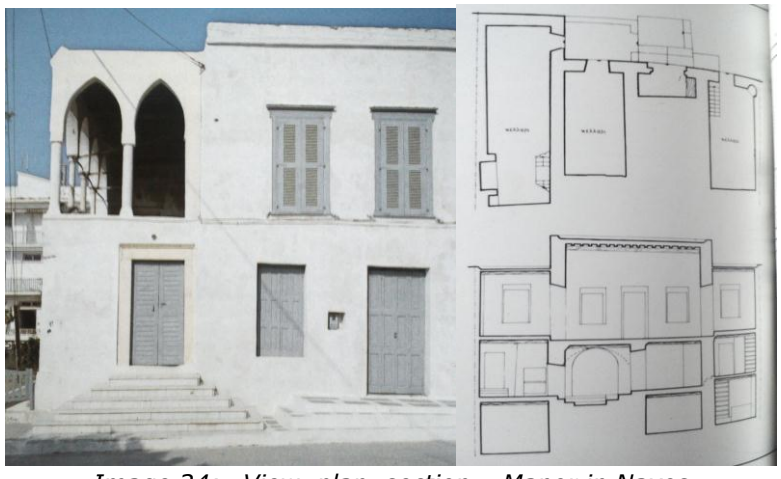

Image 24: View, plan, section – Manor in Naxos (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

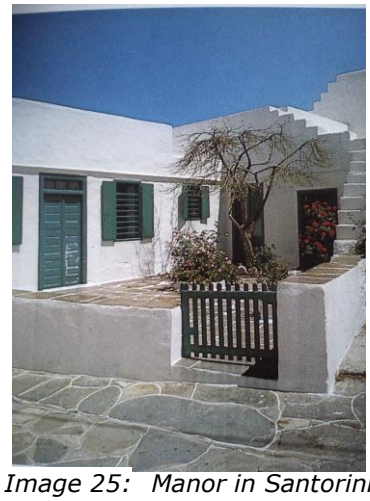

Image 25: Manor in Santorini (Source: Personal archive)

Santorini is one of the islands with remarkable manors. However, the mansions in the 19th century had the same characteristics as in the present: an imposing and unitary volume, with symmetrical facades.

In areas where the terrain allows, level differences are used to develop housing on three levels. The barn is on the ground floor and the house itself develops on the next two levels. The top level has two open spaces: a courtyard on the interior and a terrace on the exterior.

The basic cell receives complementary spaces parallelly disposed, in a right angle with it. More or less, this typology is also built in the rest of the Aegean space in fortified settlements.

The mansion is inspired by Neoclassicism and has the main and the side facades decorated with pillars that frame the windows and the door. On the Eastern façade, there are two oeils-de-boeufs – circular skylights – above the windows, a specific element of Neoclassicism.

Also of a Neoclassical inspiration there is a round skylight above the entrance, and the facade height divided into two equal areas to create the optical effect of construction with two floors. Variations of this type can be found all over the island but more frequently in Oia, the most important town in Santorini.

2.2.4. THE WINDMILLS

Windmills, these stone giants, are usually located on the hills of Mykonos, Amorgos and Santorini, where the wind is very strong and rarely at the exit from the gorge, an area where northern winds are stronger, due to the geographical configuration. Sometimes, these can be located in the courtyard of the millers' house along with the storage spaces and the barn.

The windmills in the Cyclades are famous thanks to their cylindrical wooden roof covered in reed. While built of stone and plastered white, *"they dominate the fields as stone guardians, guarding the entrances that they once served."*[2]

The purpose of the windmills was to turn the wind into energy and move through their sails, a system of wooden axes and wheels, to transmit the air force to the mill stone and make it spin.

Through the center hole of the stone, the farmers poured seeds of wheat and barley which were crushed by its big weight and so flour was obtained.

Their most impressive feature is the conical roof that exploits the air no matter where it comes from. The windmills were considered reference points and many paths were leading to them.

Due to industrialization, they have currently lost their original function, being transformed into museums, leisure facilities and holiday houses.

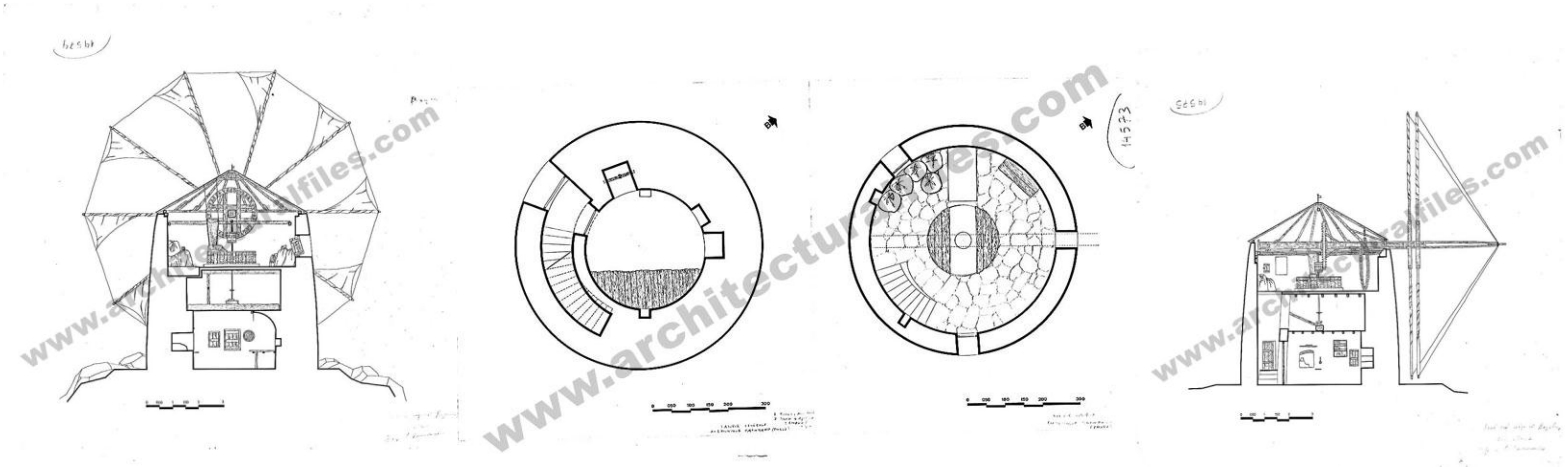

Image 26: Windmill in the Cyclades
(Source: http://architecturalfiles.com/)

2.2.5. PERISTEREONAS

Image 27: Peristereonas in Naxos
(Source: Personal archive)

Image 28: Peristereonas in Tinos
(Source: Personal archive)

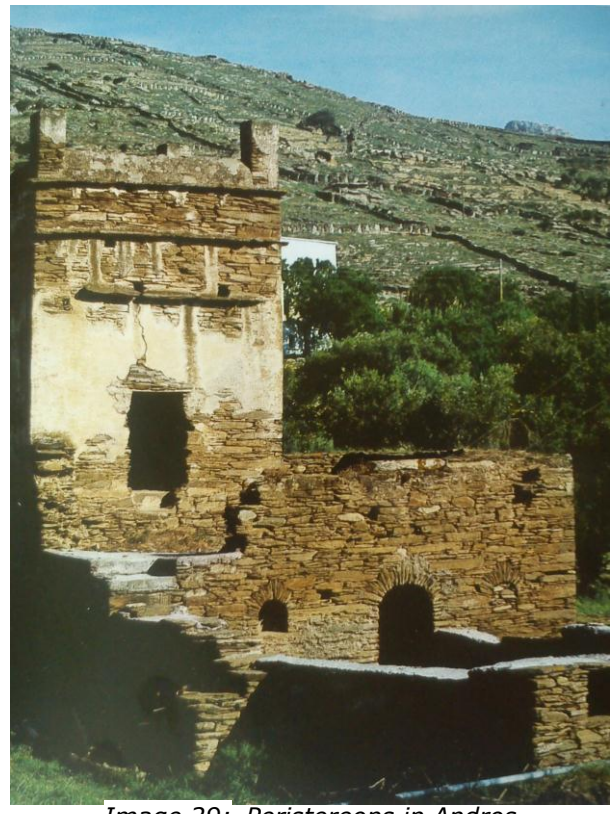

Image 29: Peristereons in Andros
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

"Peristereonas" is a particular structure from the Cycladic Islands, especially found in Tinos. With rich exterior decorations, it is built in areas which are protected from the wind and with a large open space in the front to facilitate access for the pigeons, on edges, on slopes, but always near to streams and springs. The main facade is parallel to the edge of the valley, and the building is never oriented to the north. When the place does not offer optimal protection against the wind, one or two walls are built on sides at the corners of the building, with lengths between 0.75 and 2.50m aiming to create a barrier against the wind. Many of these buildings have two or three floors and in this case the ground floor is wider to allow a courtyard upstairs. It is a complex building, with different functions on the ground floor depending on the owners' needs: holiday house, barn or stable. The entrance door is wooden without openings to protect the pigeons from snakes, rats or other predators. The interior, in contrast to the exterior, is not plastered. The upper part of the walls has small openings to allow access for the birds."[3]

The Venetians brought the habit of breeding pigeons to the Islands of Amorgos and Tinos.[4]These constructions exclusively belong to the Aegean architecture, with basic elements similar in all the islands where they can be found, as the differences are often insignificant.

The inner division is simple: the ground floor for the owner, and the 1st storey for the pigeons. In Andros, the construction narrows towards the top, and the facades do not abound in decorations, unlike

the ones in Tinos. In the corners, they build small towers with simple forms that have a termination reminding of bird wings.

In Tinos, the Venetians began to build peristereones that didn't belong to them, but were meant to protect the pigeons. When the Venetians left, the villagers were given the land and they began building them regularly; in the medieval villages, peristereones were added above the houses.

In this way, a mere shelter for pigeons became a masterpiece of traditional architecture in Tinos. In the gardens, on the fields or valleys, the craftsman built a construction on a rectangular plan, well proportioned, with two storeys and a terrace, in abstract plastic compositions, decorated with thin slate tiles. The unique decoration starts from the small windows that allow access to the birds. The thin tiles around the openings create infinity of forms and themes from the perception of the anonymous craftsman.

As symbols, the most used were the sun, the cypress and the diamonds' network which are equal, harmonious and symmetrically placed. These buildings were always different, the first floor communicates with the ground floor through a staircase and the roof was a flat made of pressed clay.

2.2.6. THE TOWER

Image 30: Tower in Naxos
(Source: Personal archive)

The tower has survived as a traditional building for the nobles in the early 19th century and it is found in the Andros and Naxos Islands. The earliest description of the tower was given by Tournefort (1700) and referred to the Tower of Aga.

Descriptions show that all the towers had the same constructive system and functional organization and they were considered a developed version of a traditional manor.

All towers were built far away from the sea, close to the Byzantine villages or valleys, in well-chosen locations. They were high, with a rectangular section, with thick walls and stone foundation, with two floors and a terrace roof. On the ground floor, there are spaces for the personnel with storages and hideouts and tunnels leading far from the tower in the basement, used in case of danger. On the first floor, there are large spaces with fireplaces, the rooms and the staircase, and on the second floor there are the bedrooms.
The first floor allowed the access to the tower through a wooden door with metallic insertions. A wooden ladder was attached to the entrance during the day, being later replaced by a stone staircase.

Arched windows with metal grids can only be found on the second floor, being replaced on the first floor with niches for weapons. If the exterior was simple, the interior was showing the wealth of its owner being decorated by skilled craftsmen from Venice, as well as the furniture and other utensils; above the entrance, there was always an inscription with the name of the nobleman.

Naxos preserves approximately thirty towers built after 1600. Here, the towers were used as holiday homes and were located in areas suitable for leisure functions. A wall that encloses the courtyard and its annexes: storage spaces and barns, surrounds every tower thus creating a complex around the tower.

The tower's walls are continuous on all their height to keep its parallelepiped appearance. However, the walls have an inclination in the upper part in order to seem higher.

It is a construction that combines the western architecture with the Cycladic architecture, especially noticeable in the plans: the reception hall and the living room on the first floor, storages and annexes on the ground floor.

The ground floor is accessible from the inside through a wooden or stone scale, while, in the exterior, a stone staircase leads to the first floor to the main entrance.

The plan is not open, the functions are distributed by axes and the division of the rooms is symmetrical. On the first floor, the space is divided into three: the living room in the center on one side and the bedrooms and a kitchen with the built oven on the other.

On the opposite, the entrance is also composed of three areas: the central hall with the main entrance, the staircase leading to the second floor and the hatch leading to the ground floor. On the second floor, there is another living room with access to the terrace and one or more rooms.

The geometry of the facades is very clear, without complex volumes or the white which gives a particular light, the stone being apparent so the towers fit the landscape.

The windows, although few and small, are symmetrically placed, the only decorations of the facades being the arches above them or the marble border around them, thus preserving the fortified nature of the building.

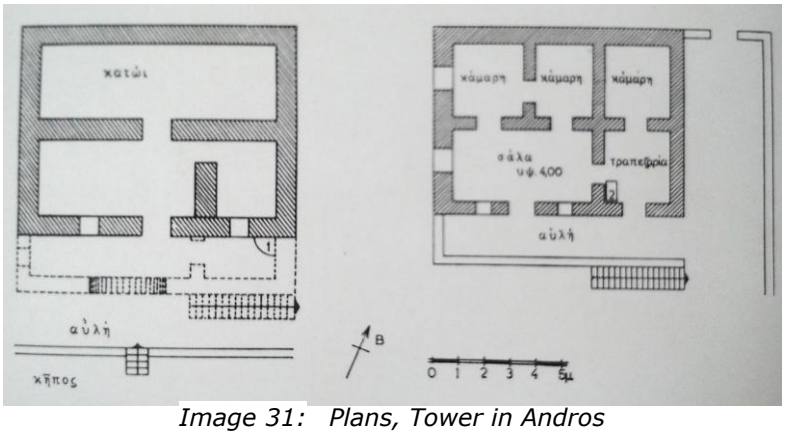

Image 31: Plans, Tower in Andros
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

Image 32: Zaganiaris Tower in Andros
(source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

The monastery-tower in the Eggares village is one of the most notable buildings in Naxos, known as the Tower of Aggelakopoulou, named after its last owner. A landmark and refuge for farmers, is well fortified especially due to its location near the sea. The tower was originally built as a church in marble

with a cross above the entrance and was dedicated to Virgin Mary, being the most powerful fortress on the island. Later, during the Venetian domination, it became a home. Well protected from the outside, the two floors in the tower can be lived in, around a courtyard accessible through a long, narrow alley. On the other three sides of the courtyard, storage spaces without access from the ground floor, but with small windows for ventilation can be found. A stone stair leads to the first floor of the terrace to the circular defense tower. Sidewise, there is a monastery with a Byzantine church. The massiveness of the stone tower, with massive walls without windows made the building more similar to a fortress than a monastery.

Unlike the sober exterior, the facades from the courtyard have a different plasticity, with arched entrances, landscaped walkways, planters and plastered walls. This difference between the two views shows the lifestyle of the towers' residents, that they lived isolated from the outside.

Chapter 3. Urban Furnishing

Throughout the journey in the Cyclades one can see that the public space is very small and that plazas or other public assemblies are rare. These places are always designed, as one can notice, in the case of the fountains. The courtyards are well decorated and furnished to show the lifestyle of the locals, their isolation from the exterior when they live in fortified buildings. The Greeks also give a particular value to the street, the most general public space.

3.1 THE FOUNTAIN

Image 33: Fountain with 7 springs in Andros
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2 Ekdoseis Melissa, Atena, 2001)

Image 34: Fountain in Kairi, Andros
(Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

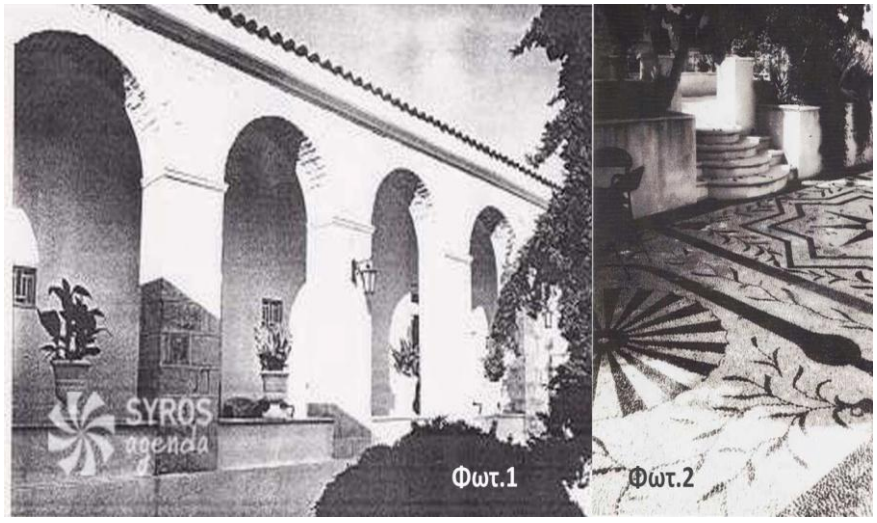

Image 35: Stoa in Syros
(Source: http://rubens.anu.edu.au/)

The oldest fountains in Andros Island are located in rural areas, near the old towers or around the medieval monasteries. From the typology perspective, they are all similar. The abundant waters have their springs into the rock and flow into a semispherically decorated marble bowl. They are always covered with a dome, which has the form of an arched entrance.

Another fountain is the one in Menites, with seven springs and lion heads whose timeline is not exactly known.

In the 18th century and at the beginning of the 19th century, a rivalry between nobles is noticed and new fountains are built, with the old ones restored. Above the springs with lion heads, old marble boards with low-relief decorations representing various emblems and symbols are placed, thus a unique popular art influenced by oriental or occidental Baroque.

Built wells that date back thousands of years are considered unique architectural relics, the so-called springs of Tinos. They are still preserved in their original form in many villages and some of them are still used by the villagers.

While the water comes through the ground to a higher level, a rectangular gutter built in marble is filled, from where the villagers take the water that they need. The same gutter is used also for watering the animals.

No fountain is located outdoors on the island. They are protected by a stoa which is, on its turn, provided with benches for resting and sheltering from the sun. This plan has been dated since the Ancient times - for example, the Sanctuary of Poseidon with a fountain dating back from the fourth century B.C. The gallery that surrounds it has different facades, depending on the period, and this is how neoclassical columns and arched openings can be found. The oldest types come from the Venetian domination and they are often placed in squares. The fountain of Pyrgos, all made of marble, with the seven plates that form the tank's parapet decorated in the specific Baroque style of the 18th century, with thin marble columns in the front side.

3.2 THE STONE FENCING

Image 36: Slate tiles disposed vertically (source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki,vol.2, Ekdoseis Melissa, Atena, 2001)

Image 37: Slate tiles in stripes (source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

Image 38: Slate tiles disposed horizontally (Source: FILLIPIDIS Dimitris, Ellinikiparadosiakiarhitektoniki, vol.2, Ekdoseis Melissa, Atena, 2001)

Stone fences are some remarkable works which on the perpendicular, horizontal or circular directions, split into grasslands and plot all the mountains' and hills' slopes, from the top to the sea side. In the valleys with significant slopes, where rain causes landslides, the horizontal fences are thickened, being located one below the other, at a 2-meter distance, thus creating a network of narrow plots.

The vertical tiles are introduced between the narrow spaces of the horizontal raw slate tiles to save rock and time. Depending on the daylight, the slate tiles change their shape and size, through their shadows and all the fences are transformed into abstract art sculptures.

On the plains, in order to protect the gardens from the wind, the fences are built differently, in the way that they are tall, with small and flat slate tiles, either in horizontal layers equal in height and with a perfect fit, or in vertical layers as a matrix. Some fences are a combination of different juxtapositions of the slate tiles: vertical strips at the top and the bottom and horizontal strips in the center of the fence.

Chapter 4. Le Corbusier – The Cycladic and Modern Housing

In 1911, at the age of twenty-four, Charles-Edouard Jeanneret, known as Le Corbusier, starts his big trip which he called "Trip to the East," in which he found areas unknown to the tourists back then. For the first time in Greece, he is fascinated by the Parthenon that he considers a pure creation of the soul and by the monks' life in the Athos Mountain and he will be then influenced by these discoveries in his artistic and spiritual development.

During his second visit to Greece, in 1933, at the CIAM IV Congress (International Congress of Modern Architecture), as advised by his Greek friends, he discovers the magic of the Aegean architecture. Le Corbusier considers the Cycladic architecture eternal and real. He will later reveal that the plans and sections of the houses in the Cycladic islands meet the needs of the modern architecture and of course his own vision of what modern architecture should be.

His admiration for the primitive, archaic, for the identity of the Greek architecture is later expressed in texts. He refers to the plasticity of the forms, the play of the lights and shadows, to the simple volumes without decorations and praises this house which is, for him, eternal, unchanged, alive, human reflection.

Blinded by the Cycladic architecture, he says in his writings that he found a street full of eloquent examples that he was searching for to illustrate the new architecture.

Of course, his first clue to the past is the hut. In the book "Versune Architecture" (1923) he describes the primitive man in the process of creation of a shelter for himself and one for God. For the architect, what is important are not the characteristics of the hut, but the spirit, the idea, the content of the hut, facts that are sources of information in the mist of time.

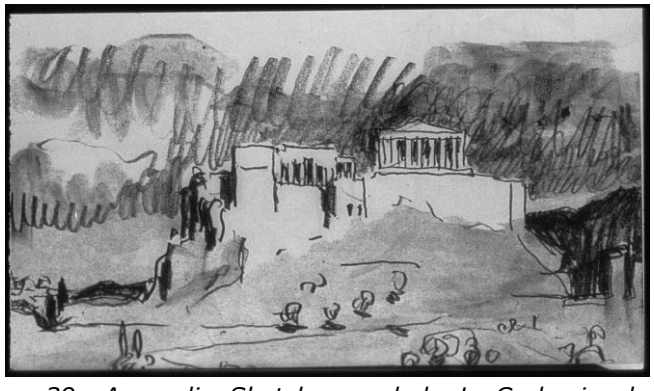

Image 39: Acropolis, Sketches made by Le Corbusier during his trip in Greece
(Source: LE CORBUSIER, Keimenagia tin Ellada, Agra, Atena, 2009)

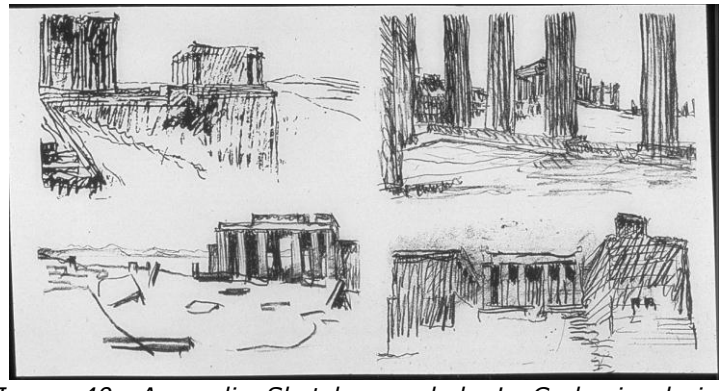

Image 40: Acropolis, Sketches made by Le Corbusier during his trip in Greece
(Source: LE CORBUSIER, Keimenagia tin Ellada, Agra, Atena, 2009)

In 1942, he discussed with the architecture students about the importance of the past, mainly about the Greek one, emphasizing that the past is the only guide through creation in architecture, where the century-old gathered heritage has a permanent value. He considered that the works of the anonymous architecture expressed the creative spirit through the traditional knowledge, a sense of harmony with the landscape and the climate and the peoples' needs long leading to proven solutions.

Therefore, the architect develops a relationship with Greece that he supports both in his theoretical work and his designs, thus managing to inspire other architects. He succeeds in convincing that this is architecture for the masses, an affordable, quality architecture, which responds to the demand of modernity. Greece thus becomes, especially after the war, the largest manufacturer of modern architecture.

For Le Corbusier, architecture is a lifestyle, a philosophy that one must believe and dedicate himself to, it is the co-existence of art and awareness. Through technique, the man comes into contact with the environment and applies the idea of the project through the process of knowledge, logics and talent. On the other hand, the consciousness is the understanding of the human being and is an internal process which depends on every individual. The architecture is not only linked to experience, and, therefore, it cannot be learned, but it is a result of general information and a necessity.

Every culture that appears firstly has to shelter its members, and the mission of the young architects is to equip the present culture with decent houses that meet the real values of the community.

Le Corbusier denies the revival, the neoclassicism and the other styles saying that the architecture is not a scenery, that it is always based on the culture of the Antiquity or of the Middle Ages. Here he expresses his admiration fro the traditional Cycladic architecture and advises architects to create a new folklore that will express the social life in a culture of engineering.

In an interview in 1965, published in 1979 in the "Modulus" magazine of the Architecture University in Virginia, Le Corbusier talks about the influence of the Greek architecture on his vision:

"Where was I inspired from? From the Acropolis and the Agia Sofia.[…]Finally I arrived in Athens and I saw the Acropolis.[…]I found then that the architecture is the game of the volumes, of the contours, 100% invention, which exclusively depends on the creativity of the one that paints.[…]

- *And how, Mister Le Corbusier, you stand opposite to the Greek architecture? […]*
- *When I went to the Acropolis, at the age of 20 or 21, when I spent seven weeks in the front of the Parthenon, I saw that the Greeks created something fascinating: is was in marble, sculpted like sugar, a construction that from the wooden columns became from marble with the triglyphs and all those details, it was made with so much art that you could only take off your hat. We can say that the Parthenon is not functional, but this thing only shows how restrictive is the notion of functional. So the Parthenon is surely one of the greatest works of mankind.*
- *So you think the Parthenon is functionalist architecture.*
- *No, no, let's consider it this way: it is functional because it touches. […]*
- *Did other architecture influence you beside the Greek one?*
- *No. I studied Gothic architecture a lot.[…]The Notre Dame Cathedral is amazing, dazzling, only that my heart belongs to Greece and not to the Gothic. The Gothic is a product of an aggressive mentality. […] Architecture is a skillful, fair and interesting game of the volumes under the light which means that someone must have sculptural skills and be a poet and at the same time he has to know in depth the rules of construction."*[5]

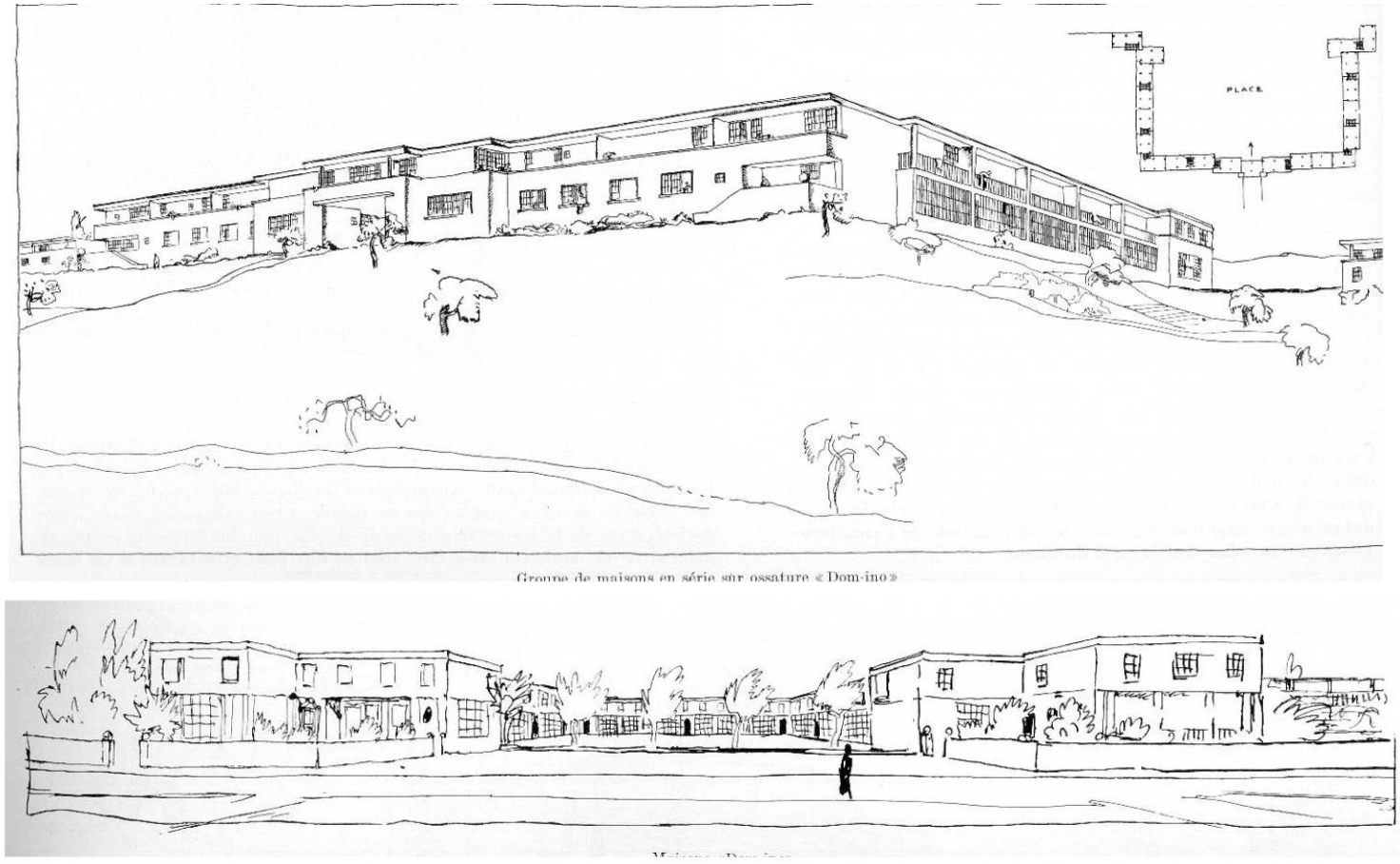

Image 41: Les Maisons Domino, Le Corbusier, 1915, mass housing
(Source: LE CORBUSIER, Towards a New Architecture, Dover Publications, New York, SUA, 1986)

Conclusion

Every work of the architecture is the result of a synthesis of time and space. Time leaves its mark on the functions that meet the needs and the lifestyle of the period, and the area influences the shape and the style of the building through climate, local building materials and, last but not least, via the local traditions.

The architectural identity is thus influenced by a series of factors: the landscape – with clear shapes and strong light that highlights every detail and the traditional building material – besides its structural role, it is a character of the area, local materials fitting as texture and color to the existing landscape.

To embrace modernism, standards in the traditional architecture are found, this time in the insular architecture, which is considered the prototype of the modern ideology. Le Corbusier is fascinated by the Cycladic architecture and anyone can find similarities between his architecture and the Cycladic one.

Moreover, the Cycladic house represents the prototype of the modern house in its present form. Facades without decorations, with symmetrical windows and the clearly defined volume are the starting point for Le Corbusier who states that it was the Greek architecture that inspired him.

The scale of the buildings also characterizes the architecture of the nation. Throughout history, the Greek architecture is always at a human scale, in complete harmony with the environment. From antiquity to the 19th century, the measurements were related to the human body.

Last but not least, a crucial aspect that reflects the identity of space is represented by the personal and collective experiences related to it: the memory and the tradition of the place. It is important to understand and define the elements that are more or less visible in the architectural projects and that the properly fit and function within it.

Finally, the architectural project becomes important not only through its three Vitruvian attributes: firmitas, utilitas and venustas, but also through the ethics and the collective consciousness.

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ENDNOTES

[1] Τα σπίτια είναι κολλητά το ένα στο άλλο, με αυλές που έχουν ελάχιστες διαστάσεις. Το ένα σπίτι συχνά επεκτείνεται πάνω από το διπλανό του η πάνω από το δρόμο, η χρησιμοποεί το δώμα του διπλανού του για αυλή. Αυτό δημιούργησε ένα κωδικοποιημένο εθιμικό δίκαιο που εξυπηρετούσε τις πραγματικές ανάγκες του κοινωνικού συνόλου, μεγιστοποιώντας την αξιοποίηση του χώρου. DELLA-ROKKASN.T., TodikaiontisNaxoukatatoushronoustisTourkokratias, EpetirisEtairiasKykladikonMeleton, Z, 1968 (ΔΕΛΛΑ-ΡΟΚΚΑΣ Ν.Τ., Το δίκαιον της Νάξου κατά τους χρόνους της Τουρκοκρατίας, Επετηρίς Εταιρείας Κυκλαδικών Μελετών, Ζ, 1968)

"The houses are placed in a row and have small courtyards. Many times, the house extends over the neighboring house or over the street, or uses as backyard the terrace of the neighboring house. Spaces overlap so space is used more efficiently. Lighting and ventilation are provided through skylights placed in the terrace. A customary codified law is created in this way that serves the community's needs and leads to maximizing the use of space."

[2] «στέκουν στα χωράφια σαν πέτρινοι σκοπιοί, φρουρώντας τις προσβάσεις που κάποτε υπηρετούσαν» RADFORDA., CLARKG., Kyklades – OikismoistinEllada, Atena, 1974 (RADFORDA., CLARKG., Κυκλάδες – Οικισμοί στην Ελλάδα, Atena, 1974)

"they dominate the fields as stone guardians, guarding the entrances that they once served."

[3] Ο περιστεριώνας είναι ιδιόμορφη κατασκευή που συναντάται και στις Κυκλάδες, κυρίως στην Τήνο. Περίτεχνα διακοσμημένοι εξωτερικά, είναι κτισμένοι σε μέρη προστατευμένα από τον άνεμο και με ανοιχτό χώρο μπροστά για να ξανοίγονται τα περιστέρια, στις ρεματιές, στις πλαγιές, αλλά πάντα κοντά σε τρεχούμενα νερά και πηγές.
Η κύρια όψη τους είναι στραμμένη προς τη ρεματιά. Καθόσον οι περιστεριώνες δεν είναι ποτέ στραμμένοι στο βορρά, όταν η θέση τους δεν προσφέρει καλή προστασία από τους ανέμους, υπάρχουν ένας ή δύο πλευρικοί τοίχοι πέρα από τις γωνίες του κτιρίου με μήκος από 0,75 έως 2.50 μέτρα και έτσι δημιουργείται αντιανεμικό φράγμα. Πολλοί περιστεριώνες έχουν δύο ή τρεις ορόφους ύψος και όταν συμβαίνει αυτό το ισόγειο είναι μεγαλύτερων διαστάσεων, ώστε να αφήνει αύλιο χώρο στο πάνω πάτωμα.
Ο περιστεριώνας είναι σύνθετο κτίριο, καθώς χρησιμοποιείται από τον ιδιοκτήτη ως εξοχική κατοικία, σταύλος, αχυρώνας κλπ. Η πόρτα εισόδου είναι ξύλινη χωρίς ρωγμές ή σπασίματα για να μην μπαίνουν μέσα οι εχθροί των περιστεριών, όπως τα φίδια, τα ποντίκια και άλλα ζώα αρπακτικά. Ο ιδιοκτήτης κρατά τα κλειδιά για να μπαίνει μέσα και να συντηρεί το χώρο. Το εσωτερικό είναι ασοβάντιστο σε αντίθεση με το εξωτερικό που είναι πάντα σοβαντισμένο. Το πάνω μέρος των τοίχων είναι χωρισμένο σε μικρά ανοίγματα μικρού μεγέθους για να μπαινοβγαίνουν στο κτίριο τα περιστέρια. (http://el.wikipedia.org/wiki/Περιστεριώνας)
"Peristereonas" is a particular structure from the Cycladic Islands found especially in Tinos. With rich exterior decorations, it is built in areas which are protected from the wind and with a large open space in the front to facilitate access for the pigeons, on edges, on slopes, but always near to streams and springs. The main facade is parallel to the edge of the valley, and the building is never oriented to the north. When the place does not offer optimal protection against the wind, one or two walls are built on sides at the corners of the building, with lengths between 0.75 and 2.50 m aiming to create a barrier against the wind. Many of these buildings have two or three floors and in this case the ground floor is wider to allow a courtyard upstairs. It is a complex building, which has different functions on the ground floor depending on the owners' needs: holiday house, barn or stable. The

entrance door is wooden without openings to protect the pigeons from snakes, rats or other predators. The interior, in contrast to the exterior, is not plastered. The upper part of the walls has small openings to allow access for the birds."

[4] *"Only in the 19th century are mentioned by travelers that indeed toured the islands, the so-called "Peristereones" from Andros and Tinos, the only remark being that this custom was brought to these places by the Venetians. However, why wasn't this practice also brought to the other islands under Venetian domination?"*

Μόνο στο 19ο αιώνα αναφέρονται από τους περιηγητές, που έκαναν πραγματική περιήγηση, οι περιστερεώνες της Άνδρου και της Τήνου, με μόνη παρατήρηση ότι ή συνήθεια αυτή μεταδόθηκε από τους Βενετούς. Γιατί όμως δεν πέρασε και στα άλλα ενετοκρατούμενα νησιά; GOULANDRI Bl.Nt. – XARITONIDOU Tz., Peristereones sthn Tino kai sthn Andro, Atena, 1977 (ΓΟΥΛΑΝΔΡΗ Βλ. Ντ. – ΧΑΡΙΤΟΝΙΔΟΥ Τζ., Περιστερεώνες στην Τήνο και στην Άνδρο, Αθήνα, 1977)

"Only in the 19th century are mentioned by travelers that indeed toured the islands, the so-called "Peristereones" from Andros and Tinos, the only remark being that this custom was brought to this places by the Venetians. However, why wasn't this practice also brought to the other islands under Venetian domination?"

[5] «Από πού επηρεάστηκα; Από την Ακρόπολη και την Αγια-Σοφιά.[…] Τελικά έφθασα στην Αθήνα και είδα την Ακρόπολη. […] Ανακάλυψα τότε ότι η αρχιτεκτονική είναι το παιχνίδι των όγκων, το παιχνίδι των περιγραμμάτων, εκατό τοις εκατόν επινόηση, που εξαρτάται αποκλειστικά από τη δημιουργία εκείνου που ζωγραφίζει. […] - Και πώς, κύριε Λε Κορμπυζιέ, τοποθετείσθε απέναντι στην ελληνική αρχιτεκτονική;[…] Οταν πήγα στην Ακρόπολη στην ηλικία των 20, ή των 21 ετών, όταν πέρασα επτά εβδομάδες μπροστά από τον Παρθενώνα, είδα ότι οι Ελληνες είχαν κάνει κάτι συναρπαστικά παράδοξο: αυτό ήταν μάρμαρο σμιλεμένο σαν ζάχαρη, ένα φανταστικό κατασκεύασμα που από ξύλινες κολόνες είχε γίνει μαρμάρινο με τα τρίγλυφα και όλες αυτές τις λεπτομέρειες είχε γίνει με τόση τέχνη που μπορούσες μόνο να βγάλεις το καπέλο σου. Μπορεί να πει κανείς ότι ο Παρθενώνας δεν είναι λειτουργικός αλλά αυτό δείχνει πόσο περιοριστική είναι η έννοια του λειτουργικού. Και ο Παρθενώνας είναι σίγουρα ένα από μεγαλύτερα έργα της ανθρωπότητας. - Οπότε πιστεύετε ότι ο Παρθενώνας είναι λειτουργική αρχιτεκτονική. Οχι, όχι, να το θέσω αλλιώς: είναι λειτουργικός γιατί μας συγκινεί.[…] - Σας έχει επηρεάσει άλλη αρχιτεκτονική πέρα από την ελληνική; Οχι. Μελέτησα πολύ τη γοτθική αρχιτεκτονική. […]Ο Καθεδρικός της Παναγίας των Παρισίων είναι καταπληκτικός, είναι ένα πολύ όμορφο πράγμα μόνο που η καρδιά μου είναι στην Ελλάδα και όχι στο γοτθικό. Γιατί το γοτθικό είναι προϊόν μιας σκληρής, σχεδόν επιθετικής νοοτροπίας.[…] Η αρχιτεκτονική ως το επιδέξιο, σωστό και συναρπαστικό παιχνίδι των όγκων κάτω από το φως. Αυτό σημαίνει ότι πρέπει κανείς να διαθέτει γλυπτικές ικανότητες και να είναι ποιητής και την ίδια στιγμή να γνωρίζει σε βάθος την κατασκευή....» FILLIPIDIS Memos, Le Corbusier, To Vima, 17/03/2002 (ΦΙΛΙΠΠΙΔΗΣΜέμος, Le Corbusier, ΤοΒήμα, 17/03/2002)

"Where was I inspired from? From the Acropolis and the Agia Sofia.[…]Finally I arrived in Athens and I saw the Acropolis.[…]I found then that the architecture is the game of the volumes, of the contours, 100% invention, which exclusively depends on the creativity of the one that paints.[…]

- *And how, Mister Le Corbusier, you stand opposite to the Greek architecture? […]*
- *When I went to the Acropolis, at the age of 20 or 21, when I spent seven weeks in the front of the Parthenon, I saw that the greeks created something fascinating: is was in marble, sculpted like sugar, a construction that from the wooden columns became from marble with the triglyphs and all those details, it was made with o much art that you could only take off your hat. We can say that the Parthenon is not functional, but this thing only shows how restrictive is the notion of functional. So the Parthenon is surely one of the greatest works of mankind.*
- *So you think the Parthenon is functionalist architecture.*
- *No, no, let's consider it this way: it is functional because it touches. […]*
- *Did other architecture influence you beside the greek one?*
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SOME ASPECTS OF THE SOCIALIST LIVING ARCHITECTURE IN BUCHAREST

MArch. stud. Felix PĂLEA[*]

Abstract

Bucharest, the largest city of the country today, has a population of more than two million inhabitants. Most of them live in buildings erected during the socialist regime as a result of the intensive program developed with the declared purpose of solving the housing needs of the people.

Large scale mass housing, very criticized at present, was a program developed under full political control with a national character and it was planned in all its aspects in order to solve the housing problem of those times. The typological uniformity of the residential buildings of the period represented the principles of equality among the members of society. Everybody lived there and the absence of the private property on the land meant the creation of a truly open city where any open space was public space.

Keywords: *Bucharest, architecture, socialist housing, typification, prefabrication, urbanization.*

Chapter 1. The architecture and urban planning as tools for social change

Once the political system was changed in 1945, new goals were imposed for the imminent development of the country. The capital, Bucharest, could not be left aside and consequently it was decided to be transformed into a socialist city, the house of the new socialist man. Architecture became one of the means to produce the necessary social changes by creating a new space in which the people could be urbanized, as well as ensuring healthy living conditions through building new dwellings and the creation of a proper urban space.

During the Soviet influence, the socialist realism was soon imposed as a reaction to the modern, cosmopolitan architecture of the interwar period that was considered to be a symbol of the capitalist past. The socialist realism was forced on in order to ensure the creation of a representative urban environment with a good functionality and an efficient construction. It did not leave important traces however as, excepting for a few examples that followed the Soviet models with reinterpretations of some specific details, the period in which it was imposed was really short. Instead, it can be observed the performance of the architects to transform the ideological restrictions into a series of experiments that made use of the knowledge they had. After November 1958, the Romanian Workers Party Plenum and February 1959, the Union of Architects Plenum debated the principles of the economic approach of the construction field and the Romanian architects turned their attention back to the modern architecture as a process of

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reconnection to a state of normality, also considering the common idea of both modernism and socialism related to the full historical breach from the past. The modernist ideals and the modern architecture found a good support in the Bucharest political regime getting a new chance, although with a consistent delay. The modern architecture seemed at that moment a good option for shaping the new socialist world, since it represented a fundamentally new concept, scientific-based, of creating a new world. The modern architecture of the interwar period, with its simplicity yet elegance of the architectural expression, with a lack of ornaments represented a model to be followed in designing the large housing projects in the seventh decade of the century. The 1960s resumed models of the local functionalism, mixing the Bauhaus austerity with Le Corbusier visions, in an auspicious ideological frame. That was the moment of the maximum flourishing of the modern architecture as in less than ten years, after the 1971 Nicolae Ceaușescu speech, there will be produced an alteration of it, due to chiefly the measures of supplementary adornment of the facades, simultaneously with the stricter and stricter requirements regarding the costs reduction. The eighth decade was the beginning of the no return to the aesthetic setback.

Chapter 2. Socialist urbanization

During the socialist period, the political regime made important efforts to industrialize and urbanize the country. As a consequence, the highest increase of the urban population occured during the socialist regime, between the 6th and 9th decades, as a result of the rapid development of the industry and the corresponding urbanization programs. Between 1948 and 1992, the percentage of the urban population in Romania increased from 24.3% to 54.3% and the number of inhabitants in Bucharest doubled:

Table 1: The evolution of the urban population of Romania and Bucharest between 1948 and 1992[1]:

Year	Nr. of Inhabitants in Bucharest	Total population of Romania	Total urban population in Romania (millions)	% urban population in the total urban population	% inhabitants of Bucharest in Romanian population
1948	1 041 807	15 872 624	3.7	24.3	6.5
1956	1 236 608	17 489 450	4.7	27.1	7.1
1966	1 451 942	19 103 163	6.2	32.6	7.6
1977	1 807 239	21 559 910	9.4	43.6	8.6
1992	2 067 545	22 760 449	12.4	54.3	9.1

Although Bucharest was not significantly affected during the World War II, the living conditions of a large part of the population were poor. Despite the fact that there were different programs regarding the

development of accessible dwellings before the war, in 1948 a percentage of 35 of the houses were inappropriately built, 60% had no access to running water and 40% were not connected to the public sewerage network[2].

The intensive industrialization promoted by the political regime after the World War II meant the development of the industry and the city that amplified the migration towards it, thus creating more pressure on the existing housing with negative consequences due to excessive overpopulation.

After 1945, the housing problem became a state problem and ceased being a result of the free market development but one of a long-term planning considered through five-year plans with the specified completion of the problem in 1990, according to the political documents.

The centralized character of the economy, with the state being the sole owner of land and all the industrial and financial assets, required a series of actions regarding instrumentation of the activity of the existing architects[3] and urbanists that were educated in a different economic and political system in order to ensure their cooperation in building the new socialist world.

Chapter 3. Professional instrumentation

The freelance status of the architects was abolished as a result of the 23rd of February 1949 disposition so that, by 1950, the traditional architecture-construction system had already been replaced by the state owned design and building sectors as a result of the architects incorporation into the state design institutes. On 13th of November 1952, at the Central Committee of the Romanian Workers Party and Council of the Ministers Plenum, the Decision regarding the construction and reconstruction of the cities and the instrumentation of the activity in the architecture field was adopted, through which it was established the State Committee for Architecture and Construction (C.S.A.C.) as a central institution. This institution had the declared attribution of instrumenting, directing, advising and controlling the urban systematization studies and designs, the construction and reconstruction of the cities as well as regarding the designs for public buildings and housing projects and to stimulate the use of new materials and advanced building technologies[4]. As a local instrument of the State Committee for Architecture and Construction, the Direction for architecture and urban systematization was established, associated with the Local Council of the Capital under the chief architect[5], later reinstrumentized in the Direction of Architecture and Urbanism (D.A.U.) within the Ministry of Constructions and later in the State Committee for Architecture and Construction (C.S.A.C.) as an independent institution. In its subordination, there will be the Bucharest Design Institute (Institutul Proiect București – I.P.B.) and the Architecture and Urban Systematization Office (Serviciul de Arhitectură și Sistematizare – S.A.S.), reinstrumentized through the decision no. 1678/1959 of the Council of Ministers in the Direction for Urban Systematization, Architecture, Constructions Design (Direcția de Sistematizare, Arhitectură și Proiectarea Construcțiilor - D.S.A.P.C.), later becoming the Institute of Studies and Design for Constructions, Architecture and Urban

Systematization (Institutul de Studii și Proiectare pentru Construcții, Arhitectură și Sistematizare - I.S.C.A.S.). For typified constructions, the Design Institute for Typified Constructions (Institutul de Proiectare pentru Construcții Tipizate - I.P.C.T.) was established, where there was a department for social and economic studies since its very beginning; teams comprising of architects, engineers, sociologists and economists performed studies for the substantiation of the design themes for housing and social and cultural buildings.

Through the same 13th of November 1952 decision, the Popular Republic of Romania Union of Architects was established and its first president elected was Arch. Duliu Marcu. Within the National Academy, the Scientific Institute for Architecture was established, with attributions in instrumenting researches and studies for preparation of the new scientific staff.

Chapter 4. Education in architecture

The amendment of the Education law in August 1948, through decree no. 175, introduced a new, main criterion for allowing teaching and studying in the high education system: "the clean record" that meant in fact an analysis of the candidates from the political and social viewpoints. As a result, in 1953, there were only 10% students with an "unclean record" and in 1961 about 50%[6]. In 1949, The Bucharest Faculty of Architecture was incorporated into the Bucharest Constructions Institute until November 1952, when the Institute of Architecture was founded. The same 1948 law instrumented the Middle Technical School of Architecture, renamed in 1955 as the Technical School of Architecture and City Construction that was a source for good technician-architects that added a lot of value in the designing institutes.

Chapter 5. The legislative framework regarding the housing development in socialism

The laws approved between 1950 and 1955 targeted the stimulation of the housing construction in various associative forms, based on state credits; the same for the issuing of the first regulations for architecture and urban planning (systematization) along with the approval of The Decision regarding the construction and reconstruction of the cities and instrumentation of the activity in the architecture field in 13th of November 1952 at the Romanian Workers Party Plenum. With only a few amendments, this legal framework remained in effect until around 1965 when the first interventions were performed, to correlate the existing laws to the specific conditions of the country, to adapt the housing production to the requirements of the future beneficiaries and to integrate the funds belonging to the population into the financing mechanism. The improvement of the legal framework continued after 1970 along with the inclusion of the residential field in the national general construction activity. The legal framework on which the entire designing and building activity was based was constituted by: the law regarding the

development of the housing construction (9/1968, 4/1973 amended in 1980) along with the systematization law (58/1974), investment law (9/1980), the land fund law (12/1968, replaced by the law no. 59/1974), the streets law (37/1975), the environment protection law (20/1973), the constructions safety law (9/1977) and a series of decrees. The essential technical, functional and economic elements of the residential field were specified by a number of 1958-1959 Party documents and the decision of the Council of Ministers no. 146/1960 regarding the provision of the dwellings with a corresponding qualitative standard. The housing design regulations were improved later through the decisions of The Council of Ministers no. 1650/1969, 1669/1969 and 585/1971.

At the same time one should not forget about the important role played by the ”work instructions” given by Nicolae Ceaușescu in influencing the designing activity. In most cases, the amendment of some laws and regulations were announced in advance by various speeches held at Party congresses, debates at Union of Architects Plenums, builders meetings and so on.

Chapter 6. Architecture publications

Even though the access to the Western information was strictly controlled at first, a lot of architecture and urban planning books and albums were published along that helped spreading the information.

In 1948, the first issue of *Arhitectura-construcții* journal was published later renamed *Arhitectură și Urbanism* as the instrument of the Scientific Association of Engineers and Technicians in the Popular Republic of Romania and Construction and Construction Materials Industry Ministery. In 1953, the publication was renamed as *Arhitectura R.P.R.*, the instrument of The Union of Architects and as the instrument of The Union of Architects and the State Committee for Architecture and Construction (C.S.A.C.) of the Council of Ministers between 1960 and 1965. Since 1965, the publication has been called *Arhitectura*, the instrument of the Union of Architects and the State Committee for Architecture, Constructions and Systematization until 1971 when it becomes the instrument of the Socialist Republic of Romania Union of Architects solely. Once the issue 3/1989 was published, the journal defined itself as only the publication of the architects in Romania.

Chapter 7. The influence of the available technologies and materials on the housing architecture of those times

Solving the housing problem for the masses implied an action at the national level, under the supervision of the political authorities, in a carefully planned manner. The constructions field was given a key role in the development of the national economy considering its importance in the continuous and essential changes of the population lifestyle. Following each Party congress, through directives, larger

volumes of constructions will be required. It can be appreciated that a great importance was given to the quantity in general, as an easy quantifiable element of development, due to its visibility for the large masses of the population. In order to achieve these goals, it seemed obvious to implement industrial methods of construction opposed to the traditional ones.

Housing construction turned into an industrial process that included prefabrication in order to minimize the construction time and related labor, with the final goal of decreasing the costs. In Bucharest, after a series of experiments, the use of large prefabricated elements became the standard for the most of the blocks of flats built during the period. This method was initially used only for buildings with up to five stories but it was later extended to buildings with up to eleven stories. It consisted in assembling large prefabricated elements representing interior and exterior walls, floors cast around or in the corners so that to create a structure able to resist to both vertical and horizontal loads produced by gravity, earthquakes and wind. The first such structure was achieved in 1956 in Șos. Giurgiului and it had five stories[7]. The studies made at that time in labs and on the site provided enough information for designing an efficient technology, able to allow the production of a large number of apartments based on this system. So, in 1960, the technology could be used for the first time to erect the buildings with eight, nine stories in Mărășești Blvd and Calea Griviței.

But the construction industrialization had the obvious effect of the typological diversity limitation, namely typification. The replacement of the traditional technologies with prefabricated elements in the general context of economic requirements created new limitations for the architects, especially related to the technical capabilities of the equipment[8] used on sites, thus emphasizing even more the monotony of the new buildings and their constitutive assemblies. On the other hand, the required efficiency in using the large cranes implied a characteristic way of designing the new assemblies: linear buildings, parallel or perimetrally instrumented. Even though the prefabrication meant a reduction of the staff involved in the building activity, their qualification increased as a necessity given by the complexity of the labor.

On the other hand, it is evident that the lack of variation of the architecture of the collective housing was a result of the little diversity of the available construction materials, the lack of advanced technologies and the qualified labor force. The most used material was the concrete and its derivative products as they were a symbol of durability and also easily produced by the national industry. The steel was scarcely used and usually as component parts of the structural elements.

Chapter 8. The socialist solutions to the housing problems

The socialist city was meant to glorify the new, non-segregated society. According to the official documents, the socialist city, contrary to the capitalist one, was not the result of the arbitrary development, based on exploitation with huge differences between its center and its outskirts.

The architects and investors interest for the collective housing dates back to the period before the World War II as a result of the pursuit regarding the solution to the housing problems for the large

masses. The first working class compounds were initially designed in accordance to the conclusions of the studies performed in the fourth decade, thus suggesting the avoidance of building collective housing with more than three stories and eight apartments. It was suggested though to be built in the spirit of national architecture.

Right after the war, the first blocks of flats are built for the working class following the functionalist values: linear buildings positioned according to the heliothermic axis, built with common technologies of the moment as it is the case of Ferentari and Vatra Luminoasă.

Image 1: the first blocks of flats: Ferentari (the first two on the left) and Vatra Luminoasă
(Sources: postal card, Arhitectura 6-7/1954)

The November 1952 decision of The Council of Ministers imposed the Soviet formula of the cvartal, an urban block built on a surface of 5-10 ha separated by roads. The cvartal was composed of one or more premises containing low-rise collective houses with a terrain usage percent of about 25-30% of the surface of the cvartal and about 300 inhabitants/ha, structured by positioning the buildings in monumental urban compositions in accordance with the rules of socialist-realism. Most of these urban blocks were integrated in the existent urban fabric with some peculiar integration issues resulted from the consideration of the existing order of the integration area. Stylistically speaking though, this compositional approach meant obliteration from the modernist path. The use of these urban blocks created a dense network of streets.

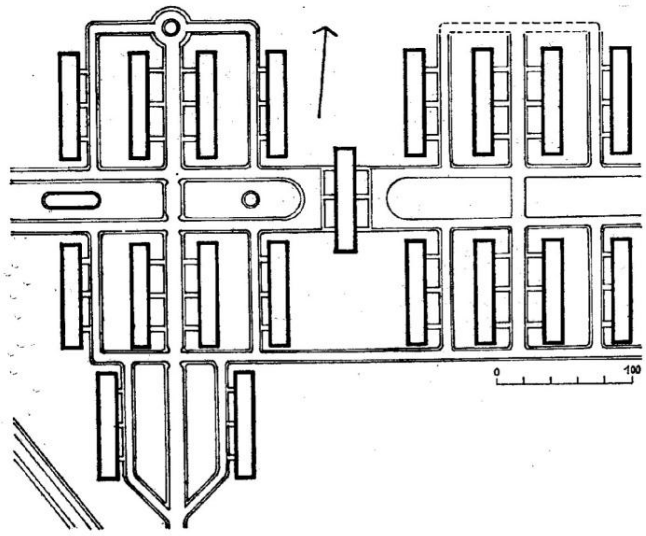

Image 2: Ferentari (1945 – 1949)
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

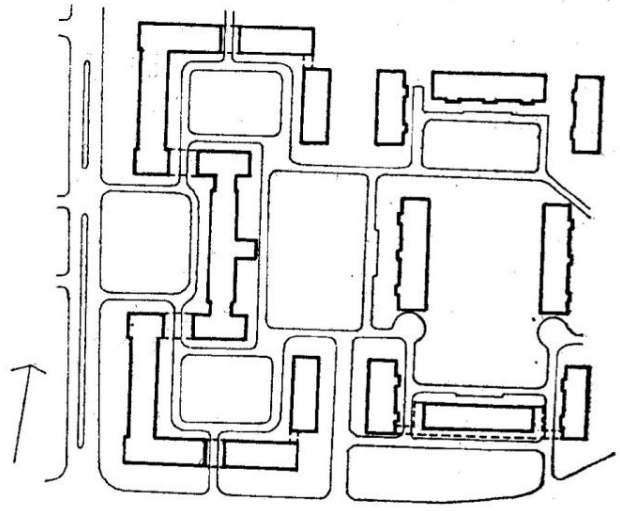

Image 3: Drumul Taberei cvartal (1952)
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

Since the beginning of the socialist reconstruction program of Bucharest, systematization plans for the main streets and squares of the city have been created, taking into account the necessity to set its urban cohesion. Although the importance of the building meant to ensure its cohesion was considered, the final decision was to mainly use blocks of flats. It might be mentioned here, as one of the first examples to reinstrumentize a large, central public space of the city, the ”Romarta Copiilor” building whose architectural vocabulary belongs more to the 30’s than 50’s. This one shows a good solution of the time in what regards the representation of the monumentality required by such a place using the small elements of the dwelling units. But, the first large intervention in the city center can be considered to be the Palace Hall and its assembly. This is a fine example of the academic modernist architecture that clearly shows the characteristics of the future buildings in the seventh decade.

The reconstruction of the important streets or the construction of the new ones were good opportunities to experiment with new materials and construction methods in developing more and more industrialized methods.

The third congress of The Romanian Workers Party, 20- 25 of June 1960 in Bucharest, decided to start construction programs for the large projects of collective housing estates, usually located on the empty fields on the outskirts of the city. They also decided the objective to solve the housing problem by 1975 and its consideration as a fundamental element when issuing systematization plans. The urban systematization activity was instrumented by the decision no. 1678/1959 of the Council of Ministers through which it was decided to restrict the surface of the city with the purpose of a better use of the land; that meant a better zoning of the city with improvements over transportation, green spaces, living

conditions of the people and less of the chaotic development in Bucharest. When considering that one of the features of the socialist city is the collective character of daily activities, i.e. the merge of individual necessities with the collective one, it was decided to implement the micro districts as structural units able to optimally, functionally and economically solve the housing assemblies.

The first large collective housing projects were launched before 1965: Balta Albă, Titan, Berceni, Drumul Taberei. Defining for the functional composition of these assemblies was their division into complex structural units imposing the distribution of the socio-cultural facilities on geometrical criteria, minimizing the importance of the social components[9]. So, according to the international practice at the time, the compositional solution was characterized by a dispersed layout of the elements producing residual spaces that proved to be difficult to properly maintain, due to the dissipation of either the local administration responsibility or the dwellers' or both. The disappearance of the ordering role of the street, so important in our urban tradition, meant the reduction of the social contact between the community members.

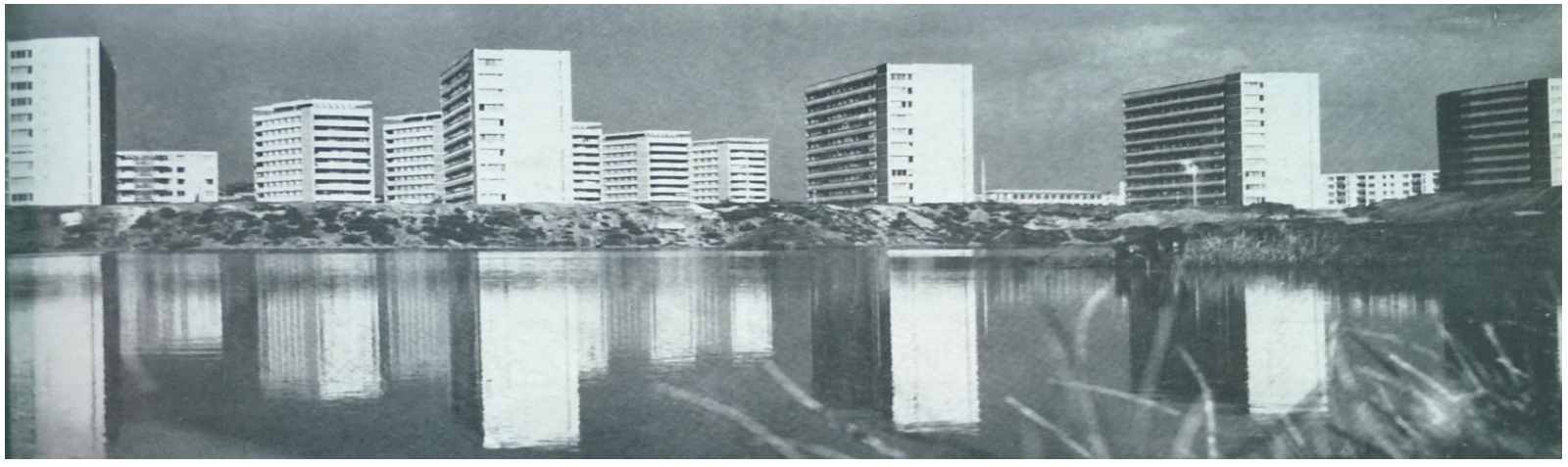

Image 4: Balta Albă neighborhood, a fine example of the free urbanism.
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

In the opening speech at the third conference of The Union of Architects in 1971, Nicolae Ceaușescu expressed some critics regarding the way of conformation of the built streets, sustaining that the buildings were placed randomly and clear streets and avenues[10] were not existent; he was emphasizing in fact on the un-economical use of the land that implied an extension of the city against the farming lands. Consequently, after the introduction of the 58/1974 law, a process of building denser housing projects started in conjunction with creating clear street fronts and reviving the role of the commercial street in structuring the new housing complex.

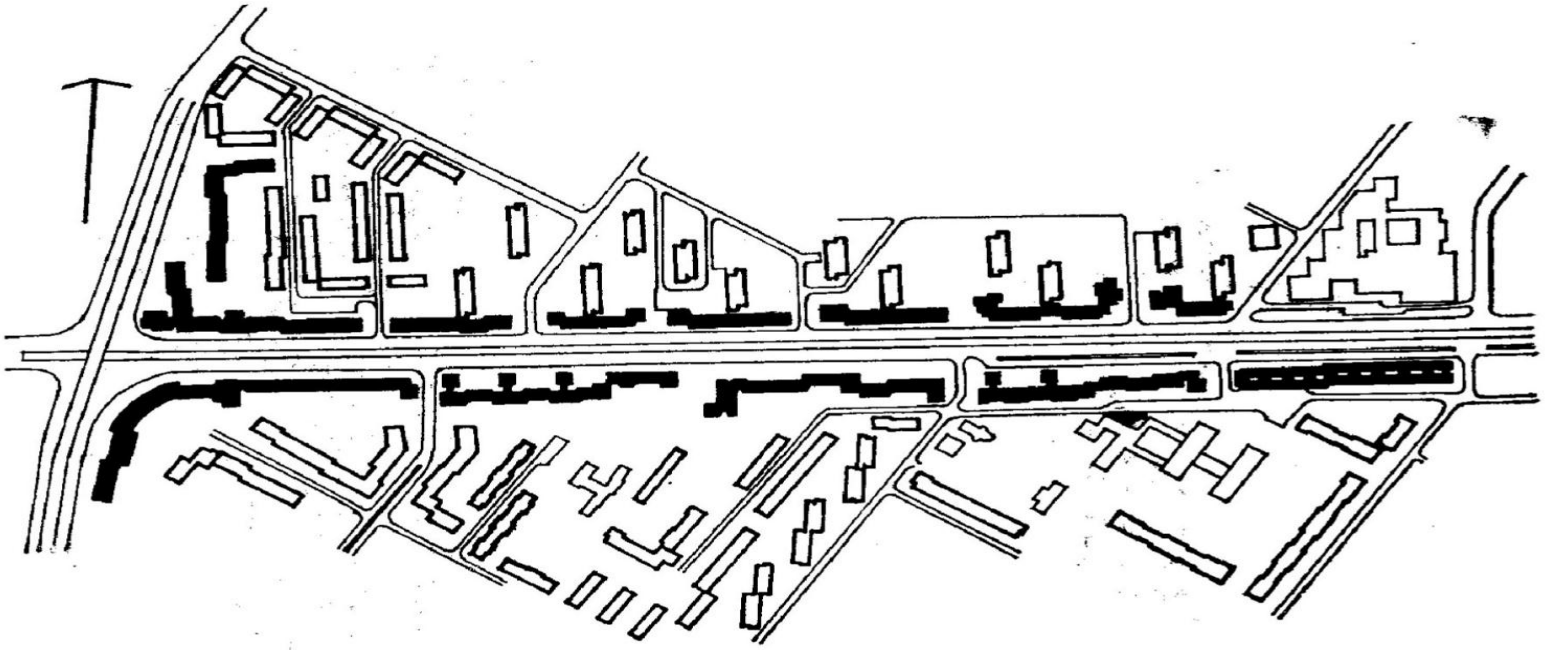

Image 5: Iuliu Maniu Avenue: an example of a "plated" avenue built in the 1970s.
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

Along the period, the free plots of land available in the city center, along the main streets, were the first ones to be used in developing new apartment buildings as it was easier to use the already existing municipal infrastructure. In general, these buildings were built using specific designs, according to the time architecture, paying an increased attention to the integration in the existing built context. These new insertions are good examples in what regards the evolution of the time architecture with means of expression varying from simplified realist-socialism to modernism and the architecture of the 80's. It is appreciated that, at least in the last part of the interval, these specific situations were the ones where the architects had the chance to explore new possibilities of designing apartments differently than the typical ones but still in accordance to the limits defined in the national regulations. These insertions were in many cases a test bed for the future large projects and they had a specific treatment by the authorities at that time. In the same category of new insertions we have the densification projects of the existing housing estates as a result of law 58/1974 regarding urban systematization and the recommendations of the decision no, 1650/1968 of the Council of Ministers.

Image 6: Example of insertions along the socialist epoch: Kogălniceanu Square, Elisabeta Avenue, Magheru Avenue, 21st of December Square.
(Sources: Arhitectura 4/1959, Arhitectura 5/1960, Arhitectura 5/1969, Arhitectura 1-2/1980)

One of the critics brought into attention by Nicolae Ceaușescu at the third conference of The Union of Architects in 1971 was related to the observation that the architects did not take into consideration the rich and valuable traditions of the national architecture and its specifics[11]. There will be significant effects on the subsequent architecture projects especially after the 1977 earthquake. On 22nd of March 1977, during the regular meeting of the Central Commitee of the Romanian Comunist Party, it was decided to rebuild and to modernize the city of Bucharest by building a new political and administrative center of the country, new streets and new social, cultural and art monuments. The legislative framework existed at that time and it was similar with 1974. On 29th of October, the Law 58 was ratified in regards to the territory and urban and rural settlements systematization that recommended building the new housing projects starting from the center of the settlement towards the periphery, providing high enough densities in order to confine the building areas[12]. It should be noticed that the approval process of the architecture and territory systematization became more centralized in comparison to the specifications stated through the November 1952 decision of the Councils of Ministers. The result was an action of intensive change of the city structure meaning, among other interventions: the demolition of about 580 ha for the construction of the House of the Republic (Palace of Parliament, today), other national administrative buildings, a large housing assembly and a network of new streets, instrumented in relation to the new Victoria Socialismului Avenue (Unirii Avenue, today). The ninth decade of the century can be characterized by an intensive use of land and a high degree of prefabrication with a consistent lack of variety, due to the imposed typification and the rush to build.

Image 7: The large building projects of the 1980s: Vitan and Calea Moșilor.
(Sources: Cristian Malide for the first left foto, Dan Vartanian)

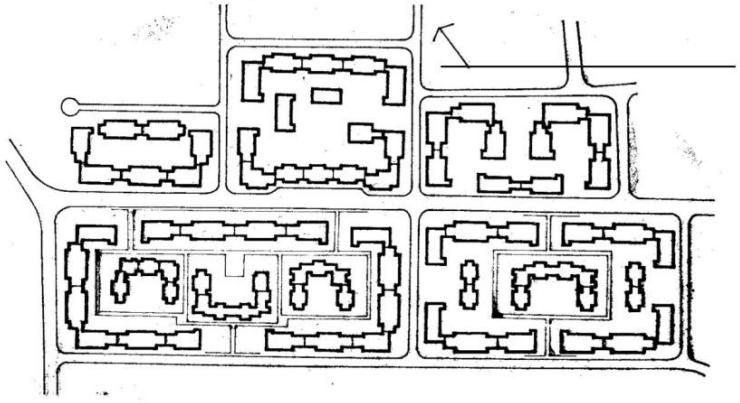

Image 8: Crângași (detail)
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

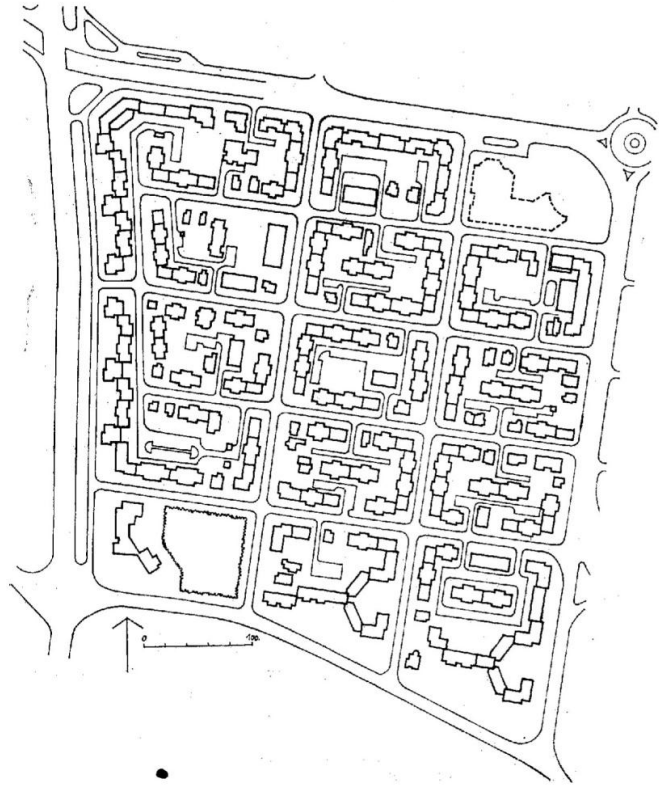

Image 9: Aviației neighborhood
(Source: Peter Derer, Locuirea urbană, Bucharest, 1985)

Chapter 9. Typologies of apartments

The housing problem consideration as a national interest, under the state full control generated an abiding pursuit regarding the continuous improvement of the living conditions of the masses in conjunction with minimizing the building costs. The first projects aimed to primarily satisfy the quantitative needs, consequently using a reduced number of apartment types - mainly of two rooms. The diversification problem was dealt with in many studies and analyses of the designing institutes seeking correlation of the urban population increment, the existing housing fund qualities and the necessities regarding its replacement, the demographic structure of the population (size and family structure) and also the sociological considerations. It was evident the need to establish different themes able to provide, in accordance with the economic requirements, a growth of the number of apartment types to help restoring the disparity related to necessities. So, according to these studies, the idea emerged to firstly increase the total comfort through an intermediate stage of the social comfort improvement, namely to provide within reasonable limits, for each family, a comfortable dwelling in order to replace the unhealthy or worn-out ones.

The economic and social situation of the country influenced the way of solving the dwelling problems of the time but in general, there was a concern for typification of the buildings, i.e. simple shapes, low material consumption, simplified structures, efficient use of the land as well as a reduction of building and exploitation costs.

During the above period of time, the dwelling units were composed of one to five living rooms and the corresponding facilities (kitchens, bathrooms, storage spaces, halls, doorways, balconies, terraces etc.). They varied from the dimensional point of view as a consequence of the financial possibilities of the moment and in relation to the regulations in effect. Considering the living necessities and the manner of using the dwelling, the apartment's plans were made taking into account the statistical data and the predictions regarding the family structure, paying attention to the differences given by age and gender. This is how the necessary number of housing units in a specific ensemble, the number of rooms per apartment, as well as their destination and size were decided.

The 1958-1959 Party documents and the decision no. 140/1960 of the Councils of Ministers strictly limited the surfaces of the housing unit and set a minimum for the needed facilities and finishing, while defining the economic framework of the housing design by setting the maximum price for each type and size of apartments. In 1960, there were four types of apartments but in 1968 the number was nine as a smaller module increase was introduced – the one person room (1/2 conventional room). As a result of this new dimensional series, the two-room apartments got to have two variants (1 ½ and 2), the three rooms got two variants as well (2 ½, 3), and the four-room apartments came in three variants (2 /2, 3 ½ and 4). At the end of 1968, when the political decision imposed a growth in the number of dwellings that were supposed to be built without increasing the budget accordingly, the solution was to introduce a new category of apartments that offered similar living characteristics but at lower prices. The price cut also

implied a reduction of the habitable surfaces per each apartment and a simplification of the sanitary facilities and auxiliary rooms (sometimes very strict as in the case of the category IV apartments and one-room apartments)[13]. However, after 1969 (as a result of the effects of the decision no. 1669/1969 of the Council of Ministers) the minimum habitable surfaces constantly increased and all apartments were equipped with full sanitary facilities, the kitchens got to be larger and supplementary storage spaces were added.

The way of instrumenting the space, its facilities and technical equipment impacted the comfort of the apartments built during that period. The studies conducted for creating new apartments took into account the need for satisfying the functional requirements of the dwellings, considering the evolution of the social life of the individuals with consequences on either increasing or decreasing the component spaces. Initially, the sanitary norm of 8 sqm of habitable surface for each person was considered, with a minimum of spatial comfort but, in time, this parameter continuously evolved and reached a level of 12.50 – 14 sqm per person, with the main room vacant. Inferior and superior limits of the habitable and usable area of any apartments were set in compliance with instructions regarding the minimum surfaces for each type of the room as such: 16 sqm for the main room in the case of 2-3 person apartment, 22 sqm for those with 6-7 persons, 10-12 sqm for the other rooms and 8 sqm 2 for the one-person rooms. In general, the bathrooms had minimum dimensions and they were ventilated either through windows or through ventilation shafts. The dimensions of the kitchens varied considerably through the period from about 4 sqm at the beginning to about 8 sqm in the 1980s, as a result of the evolution of expectations regarding the lifestyle: in the 1960s, people believed in the modern way of life where the food was provided as a pre-packaged frozen meal or in such a way that little preparation was required in the kitchen[14].

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10. ***. Arhitectura R.P.R.: 4/1959, 6/1959, 2/1960, 6/1960, 3/1961
11. ***. Arhitectura: 6-7/1954, 4/1970, 2/1971, 3/1978

Endnotes

[1] The source for the data regarding the Romanian population: Gabriel Pascariu, *Structura și dinamica sistemelor de așezări umane în procesul de planificare teritorială, PhD. thesis*, pag. 43, Bucharest, 2010. Data for 1948 are taken from *Arhitectura magazine no. 1/1976*, pag. 16. Data for Bucharest: Dănuț Radu Săgeată, *Deciziile politico-administrative și instrumentizarea teritoriului*, Top Form Publishing House, București, 2006, table 46, pag. 170.
[2] According to the 1948 census.
[3] In 1944, about 400 architects in Romania.' (according to Zahariade, Ana Maria, *Architecture in the Communist Project. Romania 1944-1989*, Simetria Publishing House, Bucharest, 2011, pag. 23).
[4] See the text published in *Arhitectură și urbanism* magazine no. 11/1952.
[5] The Chief Architect position was established by the 1952 decision of the Council of Ministers. They were, in the cronological order: Pompiliu George Macovei (1952-1958), Horia Maicu (1958-1977), Alexandru Budișteanu (1977-1983), Paul Focșa (after 1983).
[6] According to Zahariade, Ana Maria, *Architecture in the Communist Project. Romania 1944-1989*, Simetria Publishing House, Bucharest, 2011, pag. 29.
[7] See the article *O clădire experimentală din panouri mari*, Eng. M. Drimer, *Arhitectura R.P.R.* magazine no. 2/1960, pag. 24-28.
[8] Among the first equipments there were the tower crane ZB 45, the Eng. Roth crane and the reversible M-15. By using these pieces of equipment, the building had to have the following maximum characteristics: 12 m and 5 storeys for the Eng. Roth crane, 10 m wide and at least 70 m length using the reversibile crane. Using the tower crane, they could build 8-storey buildings. In time, the equipment evolved but it requested the same kind of restrictions.
[9] See Peter Derer. *Locuirea urbană*, Tehnică Publishing House, 1985, pag. 150.
[10] See *Arhitectura* magazine no. 2/1971, pag. 4.
[11] See *Arhitectura* magazine no. 2/1971, pag . 4.
[12] Law 58/1974 regarding urban systematization of the teritory and urban settlements, art. 9.
[13] See the text *Aspecte generale ale diversificării locuințelor*, Dr. Arch. Mihail Caffe, *Arhitectura magazine nr. 4/1970, pag. 18-19.*
[14] See the text *Locuințe în piața noii Săli a Palatului*, arh. A. Moisescu, *Arhitectura R.P.R.* magazine nr. 4/1959, pag. 34.

PRIMARY AND MIDDLE SCHOOL ARCHITECTURE PROGRAMME

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Abstract

This architecture programme is a reflection of the changes in several fields such as socio-economic and demography, industry-related, locally, nationally or internationally.

The design evolution has been closely related to standards, codes and regulations, the changes in the teaching/learning methodology, the ICT paradigm and continues to keep up with human evolution or little humans, in particular.

The architectural body should present itself in such a matter as to create an impression of warmth, security, familiarity with a sense of ludic, so that it intrigues the viewer to explore it and to learn/discover the school curricula.

Taking sustainability into account, new schools consume fewer utilities, save reusable resources and can generate profit, being financially through convertible function spaces such as the gym-conference hall-cafe-auditorium.

Subject to current public, private or industry-related debates, this programme persists in its metamorphosis.

Keywords: *school, sustainability, sustainable school, primary school*

Introduction

Defending identity, dignity and morals, virtues that every individual should have to contribute to the enhancement of the universal human values, School represents the most important institution involved in forming each individual's personality.

By shaping personalities through instruction and education, School represents the Witness of Truth, Freedom and the Genius of the Era in which it functiones, yet it's not a silent, passive Witness but one actively involved in the evolution and transformation of each society. Thus, regardless of the economic status or state organization, School reflects the evolution and the historical development of every nation and contributes to the building of a common future with every professor or alumnus.

School has had significant influences in Romania's history, joining Romanians through written and spoken language, even before the territorial union of all Romanian Countries.

Al. I. Cuza's Bill for Mandatory Primary Education imposed for the first time the requirement to have primary schools (grades I-IV) in cities and villages, thus creating equal chances for all the children that became equal through the right to read and write in Romanian.

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Beyond its specific architectural features, the school, as a programme, includes knowledge regarding its target audience and the educational activities implied, permanently having to maintain the relationship with the student, using a design that celebrates the ludic.

New psychological and teaching approaches are being researched and applied on a daily basis, thus testing the architects' abilities of designing a building for the future, one that can in turn influence the teaching environment and the system enclosed within.

For the child, school becomes an extension of the space at home, of the bedroom and the playground and becomes the first architectural programme that can influence his/her psychological development. Most of the times, the building itself, the group of colored walls and child-sized furniture are associated with the experience of learning, of going to school. Beside the pragmatical aspects of layout design, envelope solution, finishes etc. the success of a school can be measured in the capacity to offer a positive experience in itself, as an architectural body (irrespective of the subject taught in class).

I. Short history

I.1 School before the 1930s

Some of the first examples of schools and design codes belong to E. Robson, architect and theoretician, whose ambition was to develop the London public educational system, between late 19th century and early 20th century.

Although in some countries the public educational system had been developing since the Enlightenment era, the theoretical principles of the design and educational process had still not been combined to create the design basis of the school programme. Existing papers on 'Schools' would approach the subject either from a strict architectural point of view (with an emphasis on the construction style, not on planning) or from a pragmatic one, highlighting the hygiene and safety measures for students.

After traveling to the US, Switzerland and Germany, in 1874 Robson published *School Architecture Practical Remarks on the Planning Designing, Building and Furnishing* of *School Houses.*

After undertaking numerous studies, Robson concluded that the Northern light is most favorable to classrooms and set a standard of minimum 0.22 sqm. of glass surface per 1 sqm. of floor.

Basically, many elements were taken from the German educational system which was more advanced in point of organization. Robson included in the UK, the Prussian system of class and age segregation. Until then, in the Victorian classrooms, more classes (for students of different ages) took place in a large classroom. In Europe, the overcrowded and relatively impersonal schools were the most common; in the UK, the schools reflected the rigor of the Victorian system. The exterior could be in Beaux-art, Gothic or Colonial Revival style, as appropriate.

At the turn of the century, specialized articles (Briggs 1899, Hamlin 1910, Mills 1915) focus on (beside the layout studies) standards and codes regarding illumination, ventilation and heating adapted for schools.

Even if acoustics isn't yet an interest, there are some mentions of soundproof floors to reduce steps' noise.

Ventilation, heating and air quality

Due to the Industrial Revolution, automated air ventilation systems became a commodity.They were present in schools and the ventilated air necessary was 30 cubic feet per student in Massachusetts (Mills

1915); this quickly became a standard (ventilation was also supposed to help heating) but wasn't supposed to fully replace natural ventilation/lighting (Hamlin 1910).

Lighting

The lack of electrified lighting made natural light more important thus resulting in more regulations at that time compared to today.

Building orientation on site

There is the rule of having light and ventilation on the left side of the pupil; also new standards regard the ratio between the window surface to the outer wall surface (40,50%-Hamlin1910) or to floor surface (¼),while others regulate the distance between the window and the ceiling-6 inches (ibid), general dimensioning of the furniture (3,3 ½feet) and sill height (3,3 ½feet) for the student to be able to "rest their eyes at times", impossible to do with a sill higher than 4,4 ½feet."(Idem).

The first codes regarding fluorescent illumination appeared in the 1930s when this was already commonly utilized.

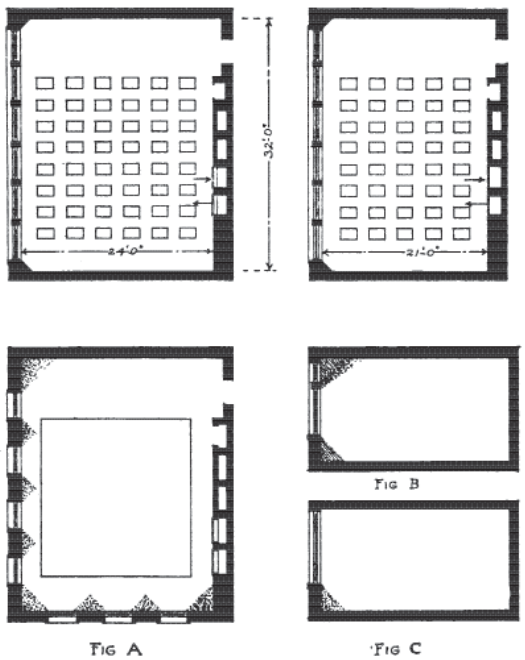


Image 1. Diagramme (Mills 1910) with the proper way of furnishing a classroom (40 pupils) and the incorrect one (48 pupils); also a diagramme about proper (fig. C) and incorrect (fig B) lighting.
(Source: Lyndsay Baker –A history of school design and its environmental standards, 1900 to Today)

National context

In the past, schooling was accessible to the privileged and along with the public schooling system, a private home- tutoring one prospered. Heating was done using terracotta stoves or petrol fueled units.

Schools founded by members of certain ethnic /religious community were often designed by foreign architects, thus differentiating themselves from others.

The upsurge in the school building area was slowed down by historical and socio-economic circumstances (riots and WW1). Economic recovery and political reforms (the allotment of peasants) supported the need of building more schools. Using foreign architects and academic exchanges (accessible to the financially privileged) led to the uprising of significance given to education and more attention given to school – boarding high school as an architectural programme.

In the rural areas, for the underprivileged classes, education was conditioned by money and, usually, reserved for males. An alternative for these (girls and underprivileged) was and always will be religious/monarchial training.

In Romania one could opt for either Sunday School or the permanent version, that functions under the supervision of the Church (here Orthodox, Catholic- Roman or Greek). A similar case is that of Ireland that for centuries relied its education on the collaboration with the Catholic/Protestant Church.

The early teens were obligated to choose a trade or crafts by enrolling for an apprenticeship at a specialist (with his/her own shop/business) or going to a crafts-and-trades school.

I.2 The progressive era

The educational system is going to change thanks to instructors like Maria Montessori (Italy) and John Dewey (the US) who promote a student-oriented education ("Child centered learning"), a concept that will later on represent the foundation of contemporary schooling.

This concept led to a movement called "open air school" featuring works of innovative architects such as Elli Saarinen- Cranbook Boys School (1925) and Alvaro Aalto's Tehtomaki School (1937), but also Richard Neutra numerous 30s modernist schools.

Hille named them functional buildings because the design played great consideration to the quality of fresh air, outdoor activities and learning and the motto "Mens sana in corpore sano". Even so, the row placement of perfectly aligned desks revealed the same predominant teaching method –that of the teacher standing in front of the classroom and teaching, reciting the lesson. An example of this architectural style is also Impigton Village College, the 1936 design by Gropius and Maxwell Fry–a combination of high school and adult craft-and-trades school.

The image of the classrooms with an almost entire wall consisting of a window area became iconic since the 30s and continues to be considered a standard to this day.

The "open air school" movement had a major impact on the 30s architecture and forced professionals to rethink school as a programmed.

Holy, in his 1935 "Needed research in the Field of school and Equipment article states:

"...in the past, and to a great extent at present, the process of education has been largely a sitting-at-a-desk one with the major emphasis on textbook study.... The broadening curriculum, the more active methods of learning, and emphasis upon doing and working with things rather than merely studying books- all have focused attention upon the importance of the physical environment and the supply of materials necessary for this changed type of work" (p. 406).

Also in the 30s, "open air school" created the premises for the analysis of the psychological effects school, as an architectural object might have on the pupils' development.

I.3 Post WW2 period

In 1949, the October issue of Architectural Forum (US) was entirely dedicated to school design with special considerations given to acoustics, lighting, ventilation and heating codes and regulations. The postwar demographic boom meant that a new school had to build (codes made schools more than 10 years old obsolete) which ultimately became a 10 billion $ investment for 10 years and a total of 20 billion for 2-3 million pupils between 1945 and 1964.

The new constructions followed the modernist principles, were made with new, cheaper technologies–had more than one floor, terraced structures included in the walls, glass &metal curtains or using concrete and brick (Tanner and Lackney 2005, page 12).

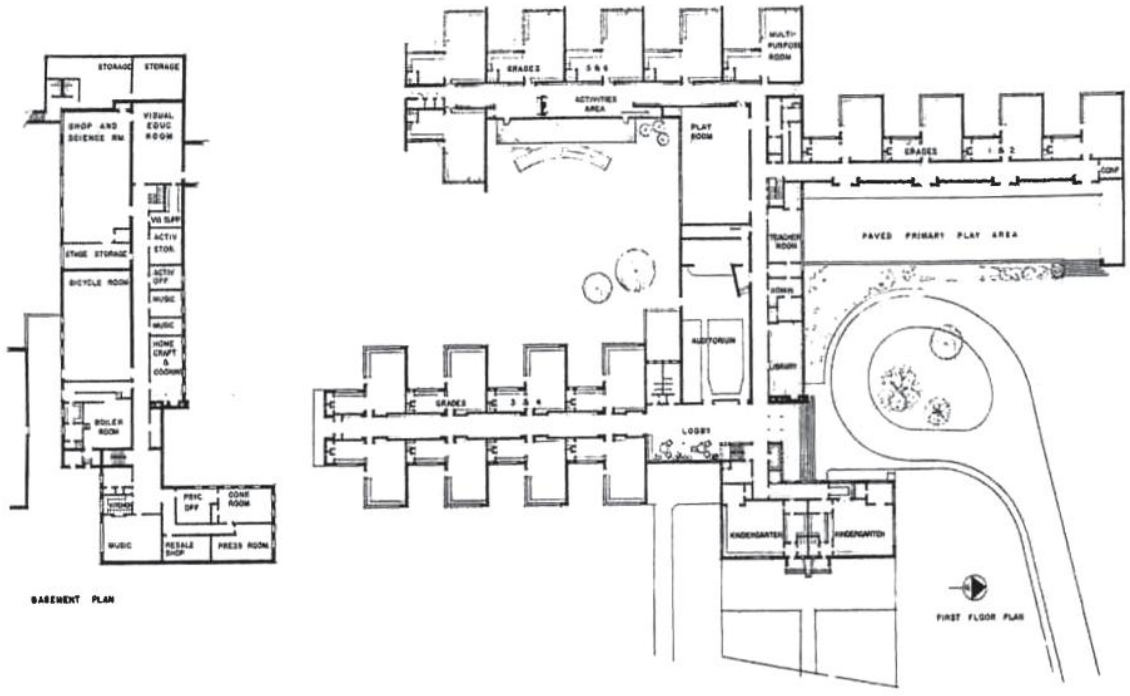


Image 2: An emblematic example for this programme is the Crow Island School, designed by Perkins & Will Architects. (Source: 1. Kliment, Stephen A., Editor- Building type basics- Elementary and Secondary schools)

Current codes and regulations

Ventilation, Heating and air quality

Several research studies contributed to the improvement of the current regulations, for example the 1920 standard of 30 cfm is lowered to 10 cfm, after a research undergone by ASHRAE (page 12) that concluded that under 10 cfm, the used air can be detected through smell.

Lighting

Fluorescent illumination totally replaces the petrol fuelled one, also becoming the main topic of many researches, some with scientific value but most of them being part of the marketing strategies.

Hanon (1946) points out some criteria used in illumination studies such as the ratios with window surface, the material finishes, light intensity and lighting objects placement.

Light control becomes a must also due to new teaching methods such as the use of photo slides or video camera feed, ultimately including curtains and blinds for this purpose.

Acoustics

The issue from Architectural Forum focuses on acoustic design as being the exclusion of background noise as well as the sound transmission in optimum indoor conditions.

Luce, 1942 page 52 -"creating optimum sound conditions in each room requires meeting these 4 fundamental conditions: 1.sufficiently low level of background noise; 2.adequate separation of succesive sounds (reverberation control); 3.proper distribution of sound within the space; 4.sufficient loudness of sounds

As the authors themselves notice, the featured "theoretical " regulations are not the same as the ones present in practice and in the then schools, for they became part of the current practice decades later.

I.4 The impulsive period 1960-1980

Named so by Hansen & Hansen's study on constructive trends in Norway, this period can be also described by the decline in student body (demographically influenced) that imposed the need of schools' future adaptability to demographic fluctuations.

EFL (Education Facilities Laboratories) is founded, a Ford sponsored organization that focused on researching the field of school programme design.

Parallel to the ongoing debate about the influence of the built organism (school) on the pupils (mainly powered by teachers and psychologists), the architectural forum discusses the possibility of new experimental projects meant to promote special types of design/concepts, such as the open plan school. EFL supports the School Construction System Development Program project which also involves constructors and the whole industry in the research/development process.The newest technologies in the field are prefabricated components.

Lastly, the participation of the academia–researchers from Stanford University and the University of California, Berkeley to name a few-contributed to the reputation of this experimental constructions' programme.

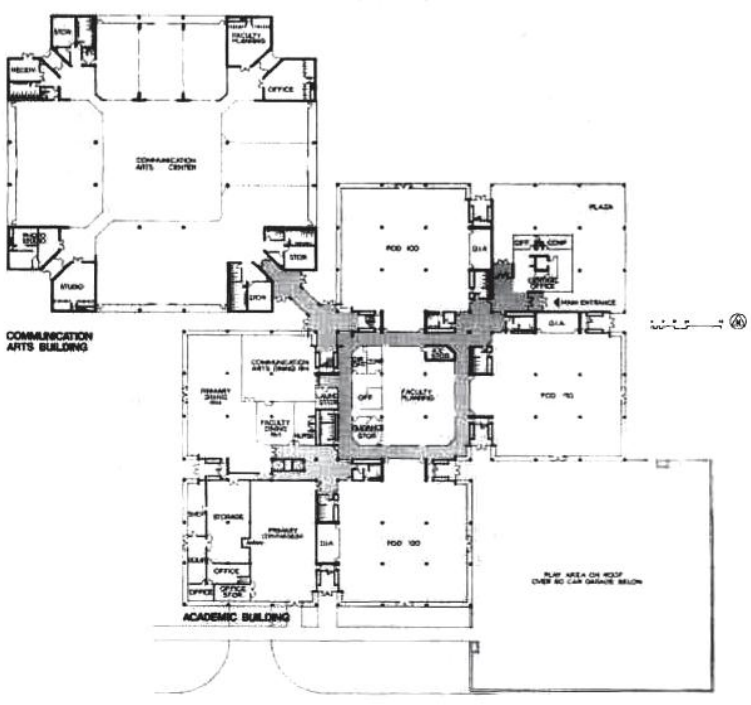


Image 3: Plan Disney School – Perkings & Will Architects
(Source: 1. Kliment, Stephen A., Editor- Building type basics - Elementary and Secondary schools)

Energy standards

The 1973 worldwide Energy Crisis contributed to the harshening of energy consumption standards in general and imposed a thorough analysis for public buildings in particular.

In the US, for example, the renovation of old schools meant bringing them up to new energy codes followed by several information campaigns about moderate consumption of household resources. Air conditioning had to be used moderately making the standard of 10-15 cfm become a 5-25 one (depending on state and climate).

Lighting has been the subject of several controversies from natural lighting versus artificial one (dominant opinion) until the questioning of necessitating natural lighting itself.

The psychologists and educators opinions regarding diminished academic performance were contradicted by several architecture researches led by McGuffey (1982) and the US Ministry of Defense on underground school buildings.

National context

In Romania school design was influenced by the 1966 generated demographical boom leading to the need of more schools and/or overpopulation of the existing ones

The architectural design of the projects was assigned to the national project institutes and the same school design project could be built several times, in order to maintain a quality standard and to save time.

In parallel, the architecture universities teaching was supporting both "common„ school design projects but also "experimental school" design projects.

The technologies often used included prefabricated construction parts / blocks.

I.5 1980-Today

Psychological and sociological studies helped identity several learning disabilities (ex. ADD) along with bringing greater understanding about certain disabilities/illnesses that ultimately led to the design of special schools or the change of existing spaces in schools in accordance with their needs. Also, public information campaigns helped raising awareness about the difficulties of disabled people and their integration in the educational environment.

From the architectural layout point, these issues concern space accessibility (for those with motor disabilities) and interior design solutions (niches in big classrooms or independent classrooms) in which students benefit from equal studio conditions with a specialized instructor.

National context

In Romania, the educational system suffered several reforms, as a consequence of democracy instauration.

Most of the work done in the educational system was concentrated on bringing schools to adequate standards (reconditioning) and on doing minimum maintenance operations (sanitizing, painting with acryl or washable paint).

Schools in rural areas were given a special attention while the ones from the urban area were extended by adding gyms (EU funds were available in both cases).

Sustainability

A major aspect in architectural design is the concept o sustainable development which evolved (from the 1972 Stockholm to the 2002 Johannesburg Declaration) towards the term of sustainability, including social, economic and environmental dimensions.

From all energy–efficiency grading systems, LEED (since 1998) is behind a code/guide to design sustainable schools- Collaborative For High Performance School, which, although initially focusing on California schools, quickly became an inspiration for the whole building industry.

II. Concept

II.1Highlights

The architects' strategies for organizing spaces when designing a school must account for several factors, even in the concept design stage.

These factors are: route, building exploration, internal circulation flows, school size, teaching methods, cost and efficiency, natural lighting, site access.

Route, building exploration

What are the main access points in the building, who is using them and how many are they? In most cases, student access points are separate from the instructors' access points.

The first functions connected to the access points should be study related or should a general distribution space (with socializing purposes like an atrium, partially cafe) be present?

Can some functions serve the community also? Then, should there be a separate access point for the public? Some functions as the gym or auditorium /conference hall can be used to host extra-curricular activities and festivities over the year. In the same time, school management can temporarily lend these functions for different activities as such cultural (conferences), sports-related (local sport club training) or festive (weddings, in rural areas) ones.

Under these circumstances, the functions in question can have a separate public access, directly from the school courtyard or closer to the parking/access on site.

Internal circulation flows

Which are the most frequent circulation paths a student used on a regular day? What is the farthest distance a student has to go through? Scenario: take a student out of each classroom and make them go to the farthest laboratory situated at maximum distance from his classroom.

Can the student get to destination in the same time a break lasts (5-10')? Is the path he/she is following as clear as possible or is it tortuous and one might have difficulties learning it?

School size

What is the approximate number of people using the space at the same time? How many students are expected to enroll in a year? One might choose to work with 30, legally the maximum number of students per classroom, or be realistic and get a higher one, the case in rural areas where joining different classes is a current practice.

How many teachers are using the teacher's orderly room/common office?

Teaching methodologies

What are the teaching methodologies employed by instructors and students using the classroom /space?

Efficiency and cost

How many sq. meters are being used as circulation in each room? Using minimum circulation flows, yet optimum from a traffic control point of view, lowers exploitation and maintenance costs-less areas to heat, clean etc.

Natural lighting – Most spaces have to benefit from natural light.

II.2. Functional Plan Layouts

The number of functional plan layouts for this programmes are almost unlimited. Even so, most configurations can be reduced as combinations of a few layouts. The presentation below is an enumeration of the most commonly used ones.

Layout A-Centralized resources on a double (circulation) flow

The essence of this layout consists in the fact that all functions/important resources (for all users) from auditorium/conference hall to the administration related spaces, all are centralized around central axis, with minimum circulation spaces. By distributing the classrooms in at least 2 wings (one side and the other of the main circulation) subgroups of spaces can be created (a subgroup can function for example for students of a certain age).

Layout B

Unlike layout A, the main resources are at the end of the main double flow circulation, distributing classes on one side and the other of the main axis. If as a layout, the success of this solution can be compared to the one on A, in designing the actual floor plan, one must pay attention to the length of this circulation, not to turn it into a long, uninteresting path for the passer-by.

Layout C- Interior courtyard with classrooms distributed in different wings (also double flow circulation).

This solution is ideal for a generous area site and can be related to contemporary examples thanks to its advantages. The access points from the interior courtyard can be easily secured and the oscillation between the built environment and the interior courtyard helps create niches that can be addressed to different age students. In the same time, all classrooms are naturally lit and a misfortunate positioning on site can be cheated (Especially, for Northern light exposure for reading rooms/laboratories).

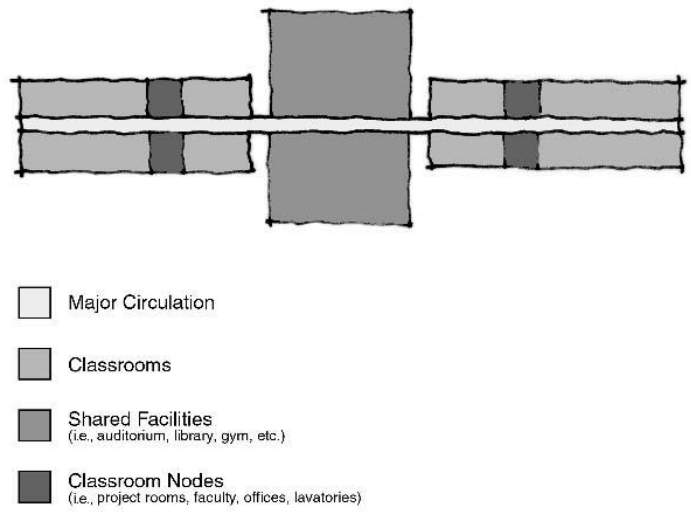


Image 4: Layout A-Centralized resources on a double (circulation) flow
(Source: Dudek Mark-A design manual -Schools and Kindergartens)

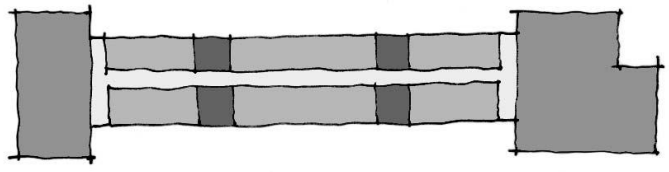


Image 5: Layout B
(Source: Dudek Mark-A design manual -Schools and Kindergartens)

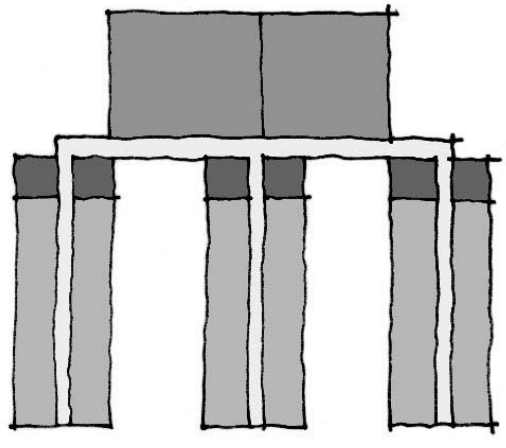


Image 6: Layout C
(Source: Dudek Mark-A design manual -Schools and Kindergartens)

Layout D- Centralized resources on a single flow circulation

This is a compact solution that distributes classrooms around an interior courtyard, giving a sense of privacy and creating a visual connection between classes, even though situated at opposite ends of one another. The main functions are situated on the short side of the courtyard or according to their proximity to the access points.

Layout E

In this case, the circulation is used to separate different functions - on one side classrooms are distributed and on the other common use spaces. All spaces including circulation ones are lit naturally and the problem with the access point for the gym /auditorium is solved (student access toward these functions is done inside the school, while public access points are directly connected to the exterior). (Note: it may seem that not all spaces are naturally lit, but functions as the gym are greater in height and benefit from zenithal lighting)

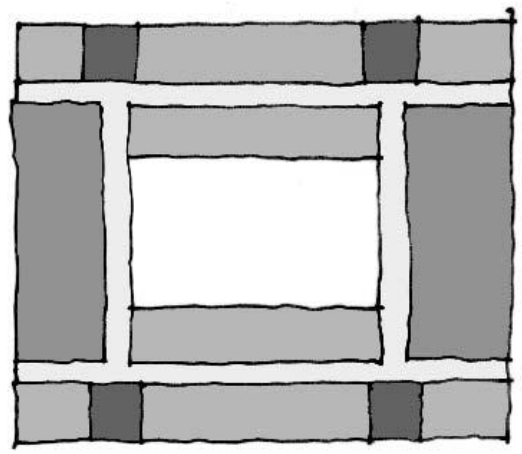


Image 6: Layout D
(Source: Dudek Mark-A design manual - Schools and Kindergartens)

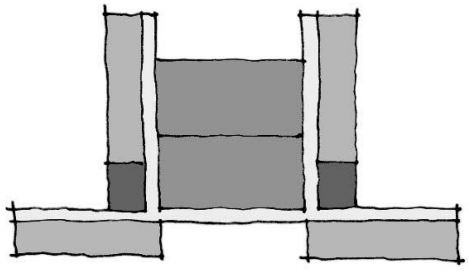


Image 6: Layout E
(Source: Dudek Mark-A design manual -Schools and Kindergartens)

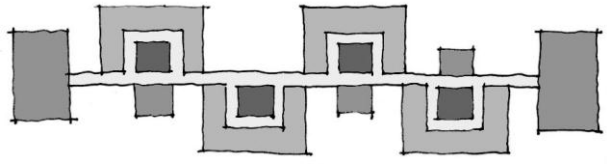


Image 7: Layout F
(Source: Dudek Mark-A design manual - Schools and Kindergartens)

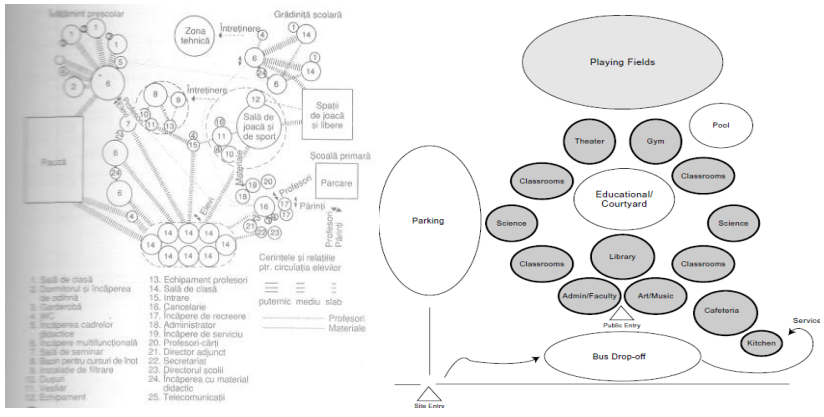


Image 8: Site
(Source: Dudek Mark-A design manual -Schools and Kindergartens/Neufert)

II 4. Case study – the evolution of a project from layout design to technical plans

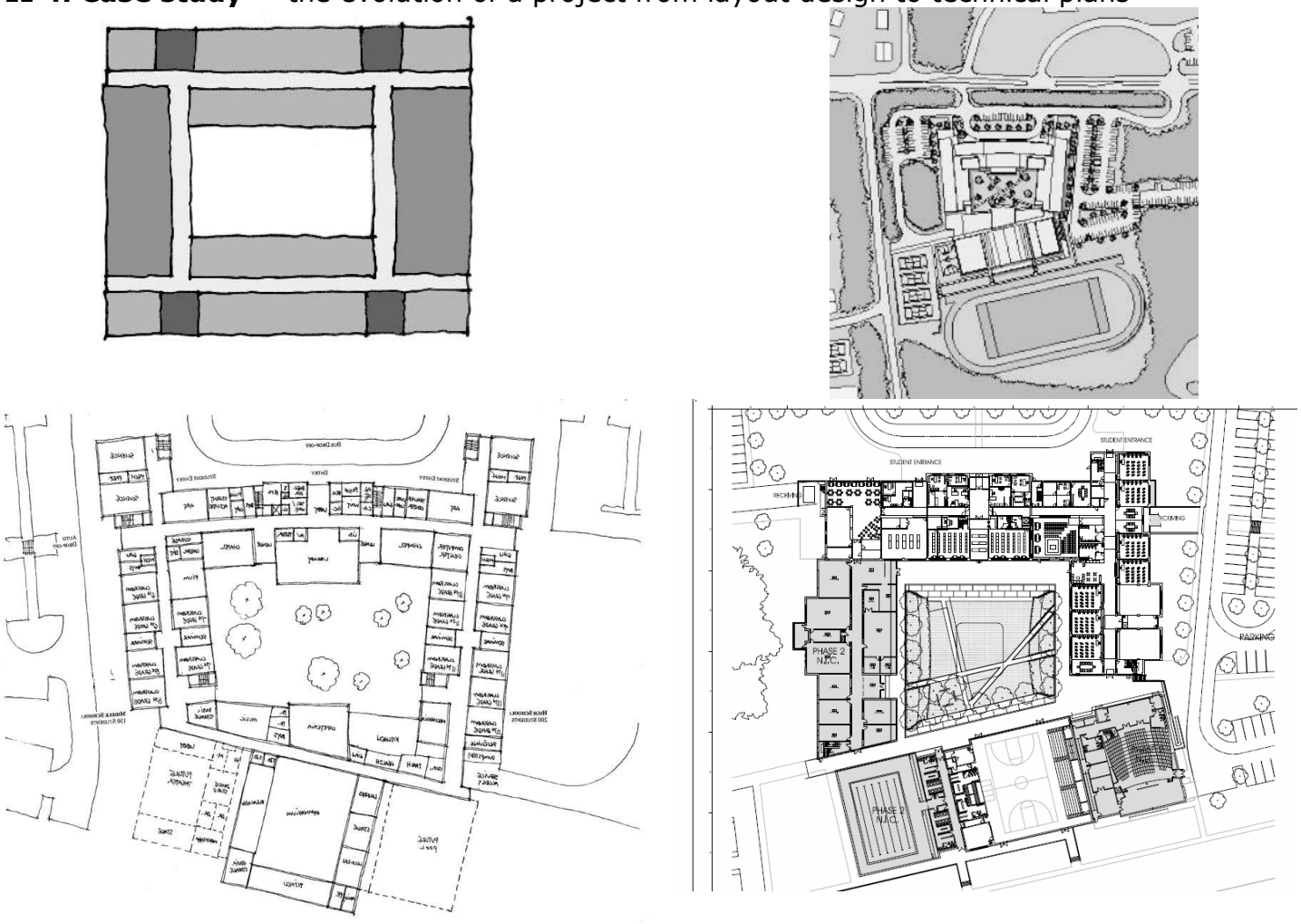


Image 9: The Solomon Schechter School, Westchester, New York
(Source: Dudek Mark-A design manual -Schools and Kindergartens)

III. Plans

III.1 Codes and regulations

The basis of designing school projects is represented by various codes and regulations, which vary from country to country. Some codes and regulations regard: regional/ comunal data about the regional development plan on the area/city/schooling infrastructure, rezidential studies, circulation flow studies, guides for indicating minimum surface requirement per function per users, technical detailing.

School grounds design

It includes sport fields, green spaces and spaces associated to other extra-curricular activities, access points, and proximity to public transportation or school buses, pedestrian and motor circulation.

Site dependent conditions permitted functions in relation to building size: 25 sq.m/ student, secondary school 22 sq.m/stud., complete programme 25 sq.m/stud.

Space distribution and design is elaborated according to the number of students enrolled in a year, the no. of shifts in a day, the type of schooling, requests regarding school related areas and functions.

Also, space distribution models are provided in codes and regulations. The basis is represented by requirements of how the spaces work together:-organization and functioning during a whole day or half/third of a day (depending on no. of shifts), classrooms for theoretical or professional study-pedagogical /didactical purposes

- the relationship between rooms, between related subject matters,
- spatial possibilities and demand -technical material basis, lighting, ventilation, HVAC, electricity, water& sewer.

Indications about minimum surface areas can also be found in Neufert (annex 1).

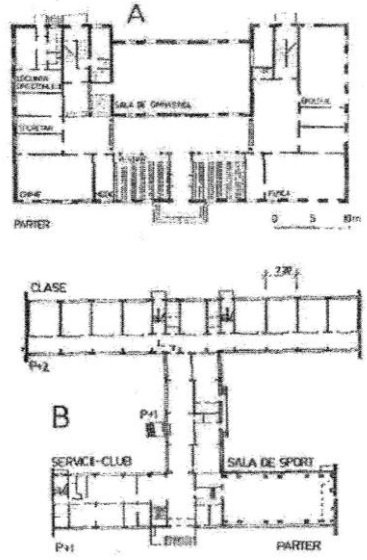


Image 10
(Source: Neufert)

III.2 Plan classification

Monoblock type

Ex-standardized project, the modular construction unit (same dimensions) allows entire prefabrication of the building; arch. Platonov, 1950, USSR. (Image 10)

Compact double circulation flow type- results in compact volumes with minimum circulation, according to the site, difficulties in cardinal point orientation may arise; arch V.Karfic, 1967, Bratislava (Image 11)

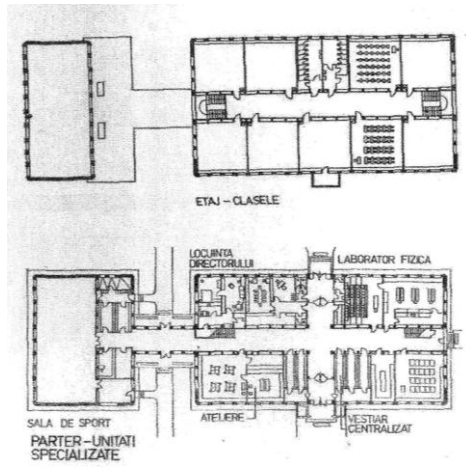


Image 11
(Source: Neufert)

Interior courtyard –double flow circulation type –first used in Switzerland, enables billateral lighting in the classrooms with minimum circulations; Primary school in Zurich, arch Ramer and Paillard 1957 (Image 12)

Pavilion type - stands out due to the distribution of functions according to site topography; most circulations are covered; Primary school Basel, Switzerland, arch. P.Haller (Image 13)

Exploded pavilion type

Arch. Eva & Nils Capei, Copenhaga-built on a network meant to use industrialized construction technologies (Image 14)

Types of functions

The classification of functions used in the school programme:

1. dedicating to teaching/learning activities - general (classrooms), specialized (labs, workshop)
2. administrative – for teaching staff (principal's office, teachers' lounge, personal teacher office)
3. that serve the first 2 categories (storage spaces, rest rooms, technical spaces)

III. 3 Classrooms

Classrooms – a square configuration is suggested, in some cases rectangular, of a minimum area of 65-70 sq.m. (about 2-2.25 sq.m/student), possibly furnished in the sides for a free and orientated placement.

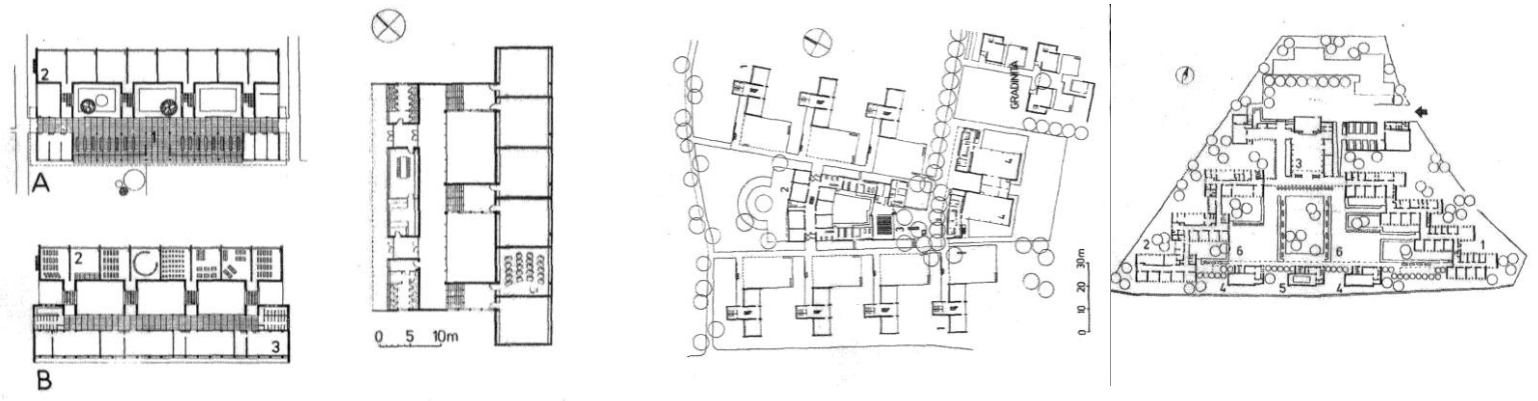
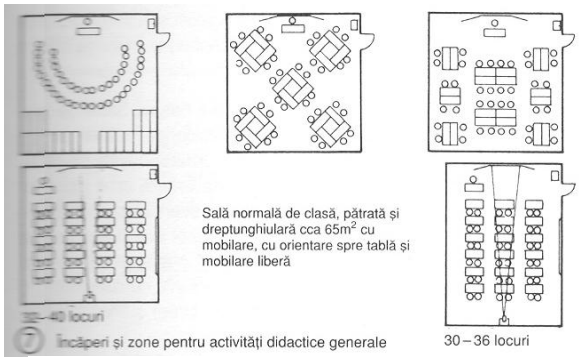
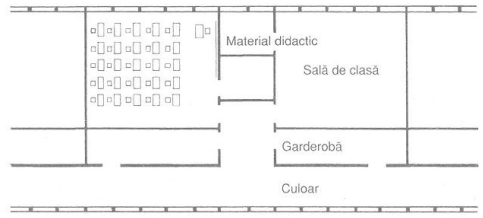


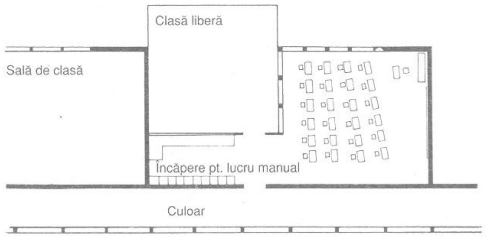
Image 12, 13, 14
(Source: Neufert)



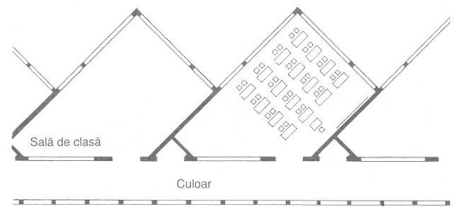
7 Încăperi și zone pentru activități didactice generale



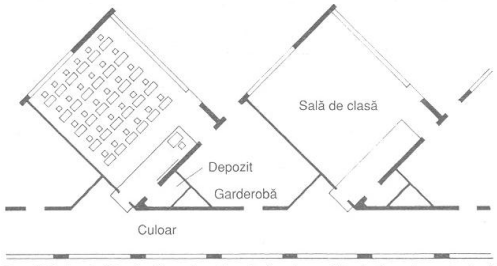
1 Sală de clasă luminată și ventilată pe două laturi peste garderobă și culoar, extinderea culoarului a cîte două clase, încăperi pentru materialul didactic
Arh.: Yorke, Rosenberg, Mardall



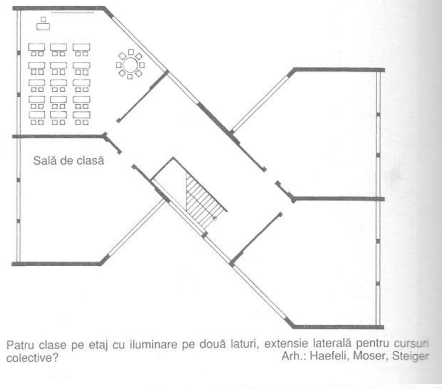
2 Îmbinarea sălii de clasă cu clasa liberă și încăperea pentru lucru manual, propunere de rezolvare tip.
Arh.: Neutra



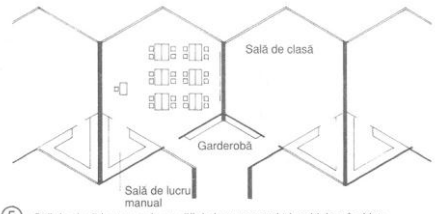
3 Conformarea planului în formă de zimți de fierăstrău, există pericolul deranjului reciproc
Arh.: Carbonara



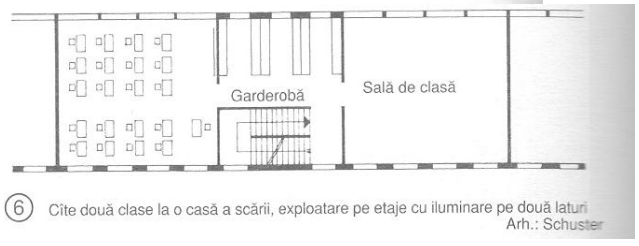
4 Sală de clasă luminată suplimentar prin ferestre poziționate în partea superioară, fără a permite vederea din spate. Extinderea culoarului aferent fiecărei clase cu garderobă și spațiu de depozitare
Arh.: Carbonara



7 Patru clase pe etaj cu iluminare pe două laturi, extensie laterală pentru cursuri colective?
Arh.: Haefeli, Moser, Steiger



5 Săli de clasă hexagonale cu săli de lucru manual triunghiulare închise
Arh.: Brechbühlen



6 Cîte două clase la o casă a scării, exploatare pe etaje cu iluminare pe două laturi
Arh.: Schuster

Image 15
(Source: Neufert)

An alternative to individual classes are the group ones-combining 2-3 classrooms to result in a common space for both teachers and students that makes lectures and debates possible; it can be separated using mobile walls/screens with adjustable heights.

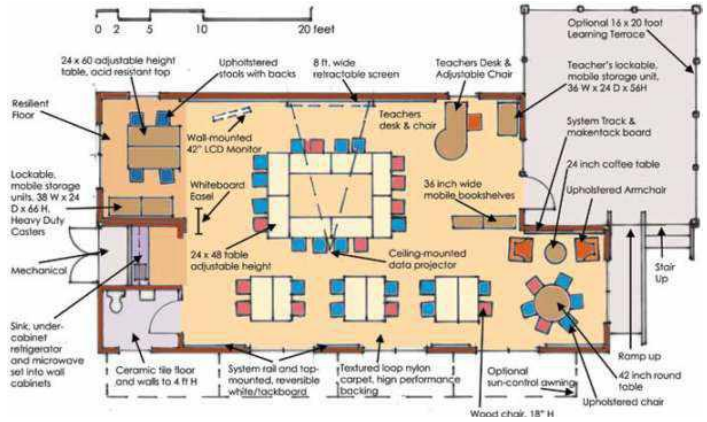


Image 16
(Source: Ford, Alan-Designing the Sustainable School, Images Publishing, 2007)

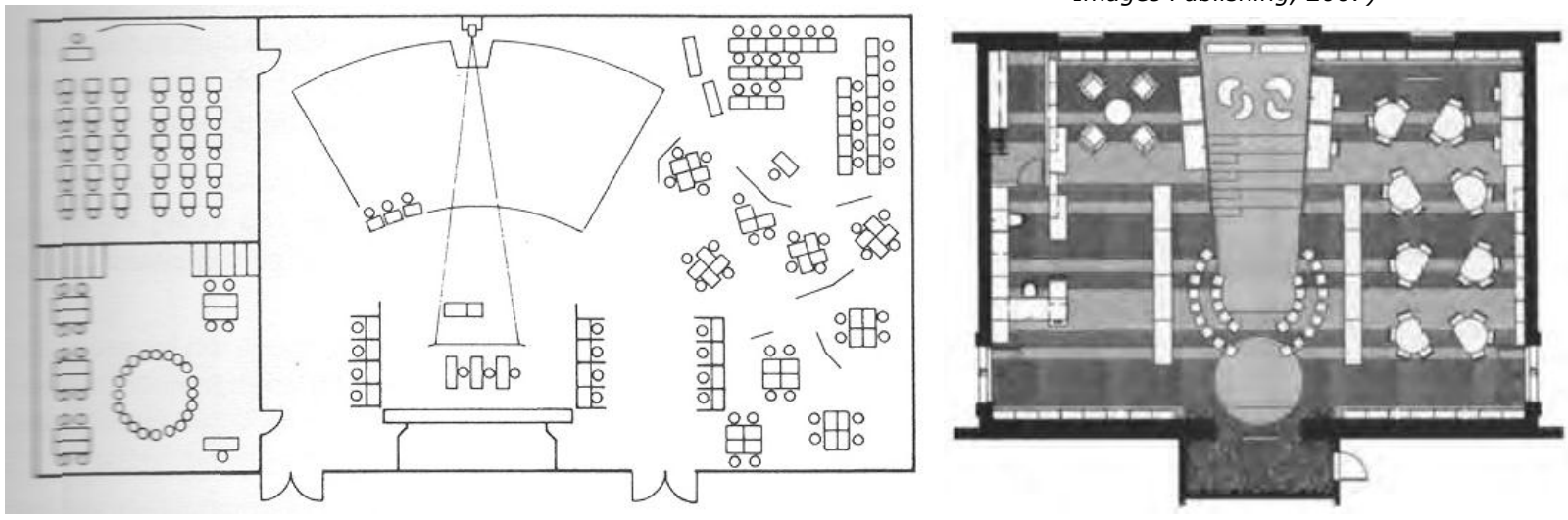
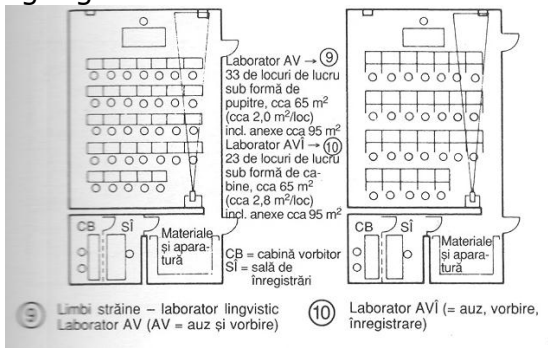


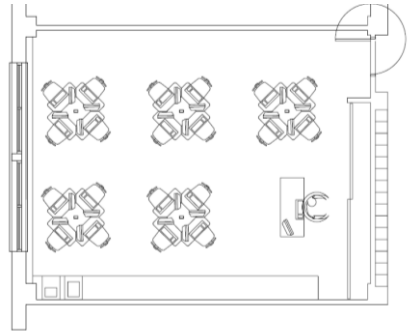
Image 17
(Source: 1. Kliment, Stephen A., Editor- Building type basiscs- Elementary and Secondary schools, 2. Neufert)

III.4 Specialized classrooms

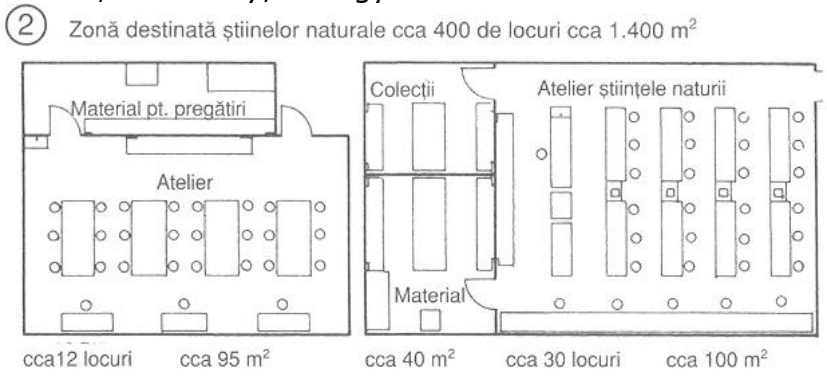
Foreign languages Laboratories



ITC lab - Source: Ford, Alan-Designing the Sustainable School



Science, chemistry, biology laboratories



Arts and music rooms

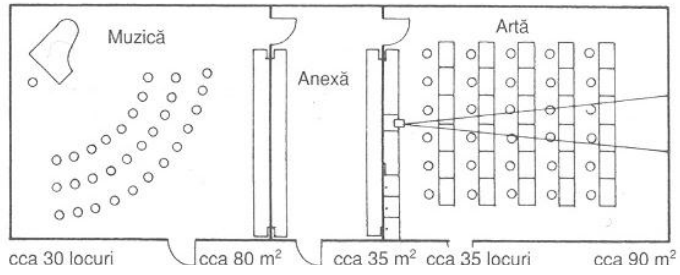


Image 18, 19, 20, 21
(Source: Neufert)

IV. Current debates

IV.1 Public versus private

In the attempt to create equal conditions for all students, the often imperfect public system is compared to the private one that can offer their beneficiaries a greater material environment and higher standards learning conditions, including architectural objects that stand out through their contemporary approach in design.

The financial differences between classes are also visible from school standpoint.

Private learning institutions become exclusive and also differ from public ones by semantics as "Learning Center".

Moreover, the private funding given by select communities is behind several investments in "experimental schools" and other schooling institutions that can compete on a material basis with universities.

At the opposite end, public school, in an attempt to serve the community not only its students tends to become a community center in which facilities such as the library, gym or amphitheater can become entirely public (autonomous, but still attached to the school/center)

IV.2 New versus renovated

In the process of bringing old school back to contemporary codes and regulations, the possibility of function or programme conversion must be taken into consideration.

If in the past schools were built to last a lifetime (and indeed those built this way are solid in general), the sustainability standards and the concept of "Lifecycle analysis" draw attention on the energy consumption of the architectural organism.

Thus, the investment in a new, sustainable school should not be compared only with the investment of renovating /reconditioning an old school, but also a long term analysis should be considered as well.

IV.3 Standardization, as the solution

The necessity of producing a design up to codes, with a minimum budget and on time brought back to debate the issue of standardization in architectural solutions.

It is the case of some US and Canadian cities, in which a certain architectural project (pre-approved by the municipality/state council)–the "standard"–is adapted to the requirements of the beneficiaries (the community) with the help of another architects. In the time efficiency of the whole process, an important part is played by prefabricated construction parts/blocks, mostly made with contemporary concrete technologies.

Also Catalunia ad to produce a certain number of schools and kindergarden, mostly EU funded, and succeeded doing so using prefabricated envelopes.

IV.4 Stationary or mobile – ICT (Internet & Computer Technology)

The existence of ICT has a major impact on the way users (humans) find, use and exchange information. If this phenomenon was less noticed when "the information" had a physical space attached to it (at least conceptually speaking) – the office or the

Internet-café - ,modern smart gadgets destroyed these boundaries challenging the need of physically having architectural programmes that serve "information", school being among them.

If a book exists in PDF format, set on a shelf in a virtual library, why should it be necessary for it to stand "physically" on the shelves of a school library or the pupil's desk for that matter? The probability of getting a Ganga Math Exercise Book on an Ipad is still minimal, but teaching methods involving ICT are current practice.

As "the office from home" became a habit, soon the concept of "the school from home" will emerge.

Or at least "classroom from home" can be taken into consideration, since in the private academic area (MIT, for example), online classes visualization programmes of are available, not to mention online classes and certifications for preuniversitary studies (private high-schools 100% online) or college degrees obtained 100% via the internet.

V. Adjustements in the Romanian System

V.1 The "After School" programme

School serves the community it's integrated in and the local and national modifications (socio-economic, demographic and the like) are felt in the evolution of this architectural programme.

For example, an increased divorce rate cumulated in work related immigration abroad can be associated with an increase in single parent families or in families in which kids are taken care of by grandparents and the parents are absent. These phenomena reflect the parents/tutors need to leave the kids in a safe, supervised environment for a longer period of time than the one provided by school classes.

Thus, in the last few years, numerous "after school" clubs were organized following private initiatives. Their activities mostly consist of giving classes/workshops that are complementary to the "public school"curricula and may vary from music to sports classes but can also include classes for enhancing academic performance.

From many aspects, the "after-school" programme can be compared to an upgraded version of "Palatul Copiilor" or "Scoala de Arte si Meserii", being given the opportunity of developing into an architectural programme of its own, following the example of Western countries.

The school schedule in one shift (as the Romanian one) can assimilate the "after-school" programme, the student being held in school longer (both academicals classes and hobby ones).

V.2 The "Step-by-step" programme

In translation "pas cu pas", the programme brings a change in the learning–teaching methodology, working with a small group of students (20 at the most) and 2 teachers, on a timetable that includes morning classes, lunch break and recess time followed by homework time supervised by the same teachers.

Although this public programme is supposed to compete with the "after school" one (public vs. private), the two of them are essentially different from a curricula point of view.

The architectural programme itself had to be reconsidered by introducing a small kitchen or even lunch room, in the case of multiple "step-by-step" classes.

Lacking an equivalent in the secondary school, some students (from primary "Step-by-step" programme) have issues adapting to a regular 5^{th} grade class. A complete pre-high school "step-by-step" programme education is available in the private sector.

V.3 "0" Grade

A newcomer to the Romanian education system, this grade wishes to be an adaptation phase for preschoolers, coming from kindergarten and going to primary school, in a different building with a different teaching method.

Physically, the "0" grade classroom's position in the general layout depends on finding a free classroom between shifts, in already crowded schools or kindergartens and this being a new addition, the code it complies to are still school design ones. The furniture isn't adapted to preschoolers' size and the furniture layout of the existing furniture is difficult to manage in an ordinary classroom, since the teaching methodology foresees work in small groups, not with benches aligned in rows.

In the ideal case, a generous classroom (of the dimensions of a physics laboratory, current codes) should be able to be divided (through various furniture placements) in different work areas.

Even by Hamlin (1910) criteria, the sill is too high and isn't coordinated with bench sizes so no preschooler would be able to glance out the window.

VI. Case studies

Sustainable schools

A recent study done on LEED certificated schools shows that these consume up to 30%- 50 % less water, reduce the greenhouse effect by 35% and other usual (utility) waists by 50-90 %, with a 2% increase in initial investment compared to a "regular" school. There are practially no excuses not to design sustainably. Sustainability should be a mandatory criteria, not a bonus given by the architect or constructor to the beneficiary and also one of the starting points of the conceptual design phase because, beyond the technical layout solutions or mechanical and installation parts involved, the designers goal should also be the social dimension of sustainability by creating an unique experience of going through and exploring the architectural organism that, in the school's case, has to be fun as well. The other dimensions–economics and environmental–were the first to be related to durable development, accentuating the use of regenerable resources and smart water, electricity saving and consumption, thus reducing pollution and meeting energy efficiency standards.

VI.1 Rolle Primary School, Rolle, Switzerland-

The presence of a special topography was used in favour of the design and the lighting of the partially buried spaces is done zenithally. The attic is treated with vegetation as it presents itself as an extension of the environment.

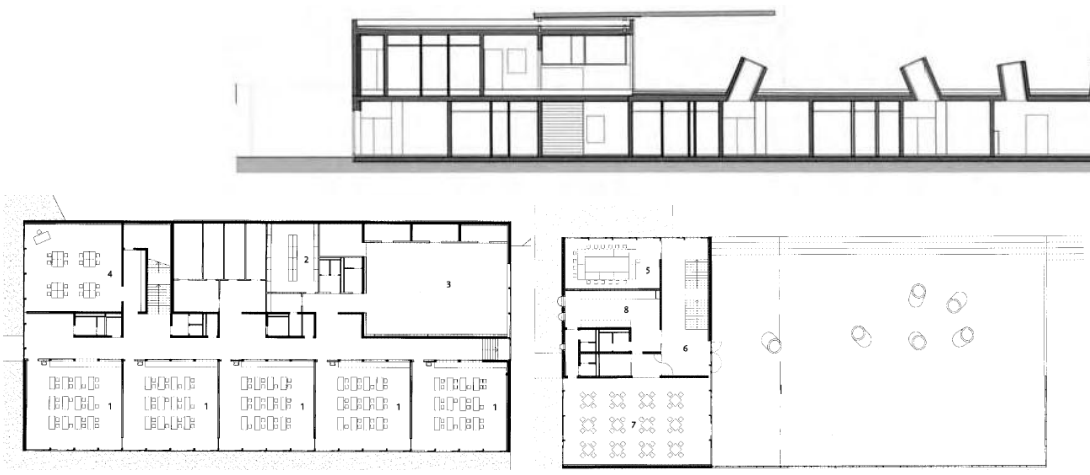


Image 23
(Source: Neufert)

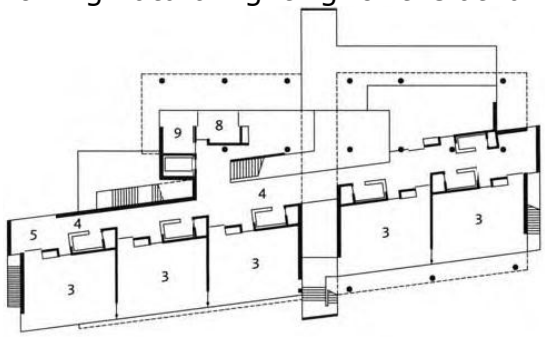
Light scoop funnels | East elevation emphasises three horizontal bands | Corner details with bubble windows | Main entrance canopy with views back towards the old school

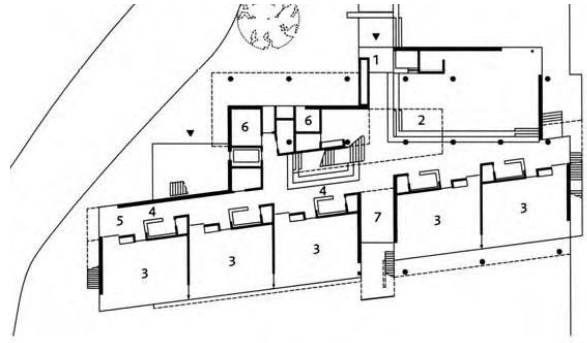
Image 24
(Source: Ford, Alan-Designing the Sustainable School, Images Publishing, 2007)

VI.2 Montessori Primary school

De Eilanden Architects, Amsterdam, The Netherlands

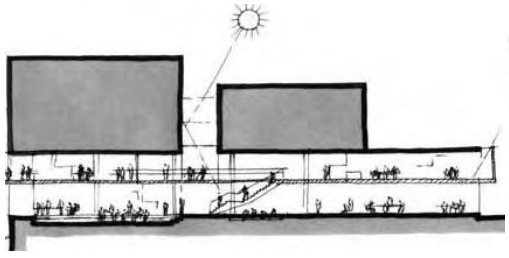
The volume benifits from a particular attention because by separating it into 2 cubes a largo is created, thus allowing natural lighting for the atrium and on multiple sides for the classrooms.





Ground floor plan

1 Entrance
2 Foyer
3 Classroom
4 Corridor
5 Lobby
6 Storage
7 Library



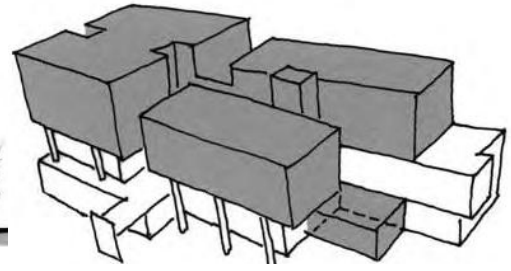


Image 24
(Source: Ford, Alan-Designing the Sustainable School, Images Publishing, 2007)

VI.3 Hachoresh School, arch Zichron Yaacovr, Israel

With a plan deriving from the exploded pavilion type, the classroom cells follow an existing topography, giving each user a different perspective than his classmate's. Circulation is concentrated on an interior courtyard that can become an extension of the classroom, as well as being a playground and lousier spot.

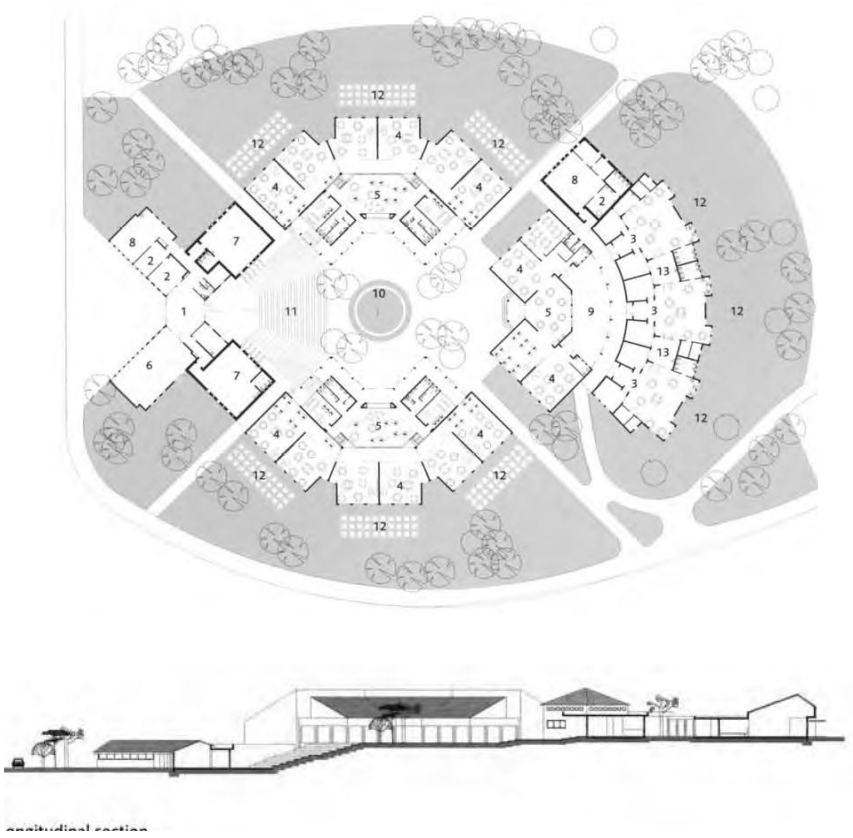


Image 25
(Source: Ford, Alan-Designing the Sustainable School, Images Publishing, 2007)

VI.4 Hector Garcia Middle School –Dallas, Texas, Perkins & Will Architects

On a narrow urban site, the design succeeded to naturally light classrooms on 2 sides, one of them directly and the other indirectly, depending on the cardinal points.

Conclusions

Because the education process is subject to constant change, in the architectural programme "school" has to be able to keep up with the changes but also with the sometimes antinomical demand of students, teaching body, government, private sector, the architects and designers are the ones responsible to reconciliate tensions creatively.

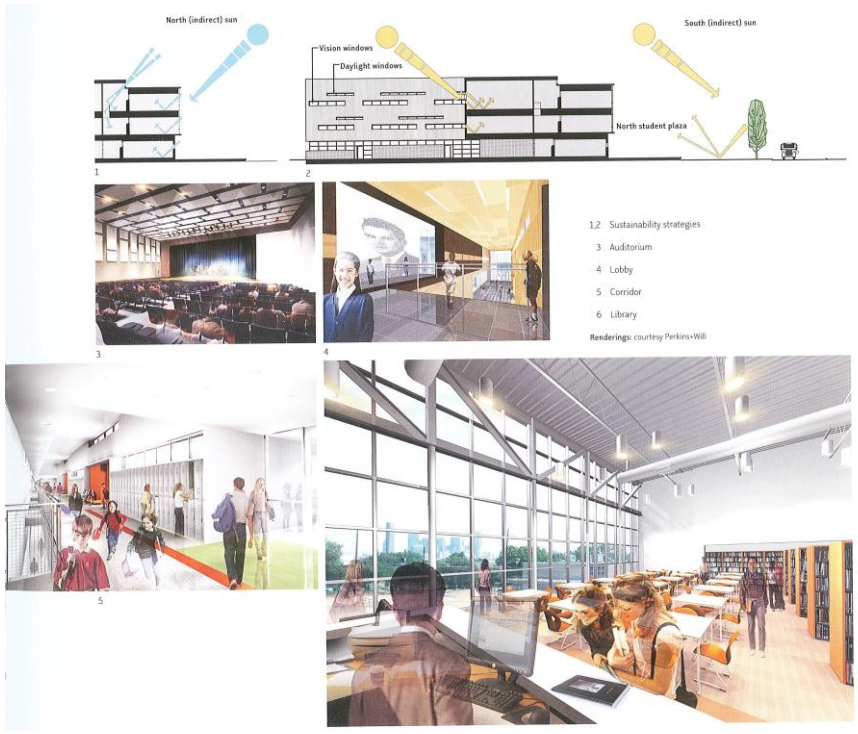


Image 26
(Source: Ford, Alan-Designing the Sustainable School, Images Publishing, 2007)

Centralization – Decentralization

Which should be the authority in charge with deciding about design projects, layout configurations of schools? If the finances are given by the Ministry of Education, then they should decide on how the money is spent, but what if the money came from the Municipal/State Council, then this would mean the community gets to decide? What if all schools were financially independent and autonomous, then could school management choose an architectural design projects that's economically sustainable and can generate future profit?

National codes-individual needs

Does the use of standards and code regulations inhibit the expression of new approaches? The quality enhancing code regulations and standards follow the concept of sustainability and at least theoretically shouldn't annul the designers creative license.

Long vs Short-term

School, as a design, should be flexible on the short-term and adaptable on the long one.

New technologies experience

Especially in the case of vocational majors, a lot of instructors come from a long experience as practicing professionals, aware of new technologies and begin a career as instructors. School design should provide these types of instructors and the ones using traditional teaching methods the opportunity of giving students the maximum of the teaching experience. "The Discovery School" is a project begun in partnership with the Discovery network, but relies on the fact that all students should have Tv's.

Individual-community

Every student is part of an intellectual and a social community. The school, as a design, should reflect this duality. Safety and private spaces should alternate with public spaces and permeability, yet the school and its grounds/campus should communicate with the city.

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