

INTERIOR-EXTERIOR CONNECTION IN ARCHITECTURAL DESIGN BASED ON THE INCORPORATION OF SPATIAL IN BETWEEN LAYERS. *STUDY OF FOUR ARCHITECTURAL PROJECTS*

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Different spatial layers in the architectural structure of a building can create particular spatial relations and an architectural space that cannot be defined as an inner space or as an outer space, but one which has the characteristics of both. This space, which can be called "in between space", appears as the result of a specific design concept in which the architectural composition is created by gradual insertion of volumes one inside another, like a box that is placed inside a box, inside of which is placed another smaller box and so on. The incorporation of various layers in the spatial arrangement of volumes in certain architectural compositions can be conceived as a possible approach in connecting the interior and exterior. This kind of conceptual design distinguishes itself from the common approach by its specific architecture that offers richness, variety, complexity and unique perception of space, thereby increasing its value. The paper investigates this particular concept through the analysis of four residential houses (Villa Le Lac by Le Corbusier, Solar House by Oswald Mathias Ungers, House N by Sou Fujimoto and Guerrero House by Alberto Campo Baeza), and it strives to find out the concept's use and advantages, all with the aim of opening up new possibilities in the design of buildings and enriching the design process.

Key words: "in between" space, interior/exterior connection, spatial layers in architecture, spatial relations in architectural design.

INTRODUCTION

Discussion about *space* is a complex subject, and it seems that architects, of all people, have the most difficulties when it comes to defining this term. Many scientific disciplines such as mathematics, philosophy, psychology have been investigating the problem of space for centuries. Thoughts about space can be traced back to Ancient times.

In architecture, space is the key element, "the core of architecture" (Dursun, 2009:028:1). Organisation of space is the central task of every architectural design. Spatial structure is one of the most important factors affecting the quality of the living environment. Architects, as creators of space, have a great responsibility to those for whom they design – the users of that space, because their design can

have a great influence on the lifestyle of the inhabitants. According to Lawson (2001:8) "space creates settings which organize our lives, activities and relationships". In order to design, it is necessary to think and make detailed research about the space that will be occupied by its future users. The architect has to know how to perceive, observe and give geometrical form to something that exists in the client's imagination, which can be very demanding and challenging, having in mind that the perception of space is individual and that each individual experiences space in their own way. As Christian Norberg-Schulz (a Norwegian architect, educator and architectural theorist, 1926-2000) says: "We do not perceive the world that is identical and common to all of us ... but we see different worlds, which are the product of our special motivation and past experience" (Norberg-Šulc, 2006:16).

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Sigfried Giedion (a Bohemian-born Swiss historian and architectural critic, 1888-1968), one of the most important theoreticians who deal with the concept of space in architecture, puts the problem of space in the centre of the development of modern architecture. In his book *Space, Time and Architecture*, he distinguishes three spatial concepts that follow the development of architecture. His opinion is that the first concept of space, associated with the architecture of Egypt, Sumer and Greeks, was made by playing with volumes. In this concept, the interior space is completely ignored. The second concept, in the time frame from the Roman Pantheon to the end of the 18th century, has hollowed inward space as its primary characteristic. The third concept is some kind of a mixture of both of these, and it deals with the relationship and interaction between inner and outer space (Giedion, 2012).

The division of space into *interior* and *exterior* is common in architecture. To complete an architectural composition, it is necessary to deal with both inner and outer space, and to make a good connection between them. In the conventional design approach, the relationship between inside and outside is given very strictly. The borders between interior and exterior are clear and noticeable and the fields of inside and outside are very well defined. One can be either in a facility or out of it (Figure 1, left). Having only two opposites, inside and outside, can be compared to having only two colours, black and white. What if the range between the colours is enriched? There are many shades of grey that connect these two colours. Metaphorically speaking, the link from outside to inside and vice versa can be filled with many different shades of grey, i.e. with many other spaces that are between the outside and inside space (Figure 1, right). These spatial arrangements that are between cannot be defined either as inside or as outside space and can be called "in between" space. They relate to the architectural space that can be considered both as inner and outer at the same time. This idea of the organisation of space in architecture can be further related to a particular architectural design approach or concept which is symbolically identified here as the "box within a box" concept – the concept in which the space is considered as a mutual interplay of different spatial arrangements. It is a concept whereby the way from the inside to the outside is more complex and expressed through many spatial levels which can metaphorically be described as boxes placed one inside another (Figure 2, left).

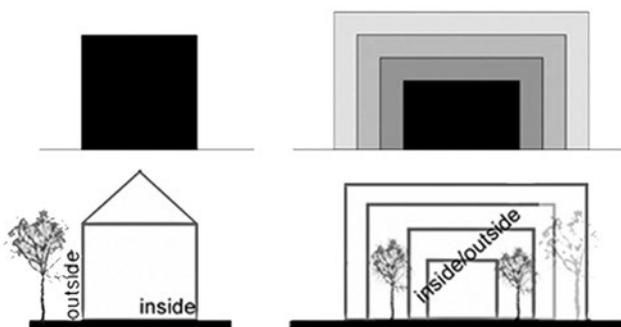


Figure 1. Schematic representation of space relations between inside and outside (common approach - to the left, more spatial relations incorporated between inside and outside - to the right) (Source: authors)

Oswald Mathias Ungers (a German architect and architectural theorist, 1926-2007), studied this idea as a theme for some of his projects (Neue Stadt, Cologne, 1961-1964, unrealized project; Schloss Morsbroich Museum in Leverkusen, 1976-1984; Deutsches Architekturmuseum, Frankfurt, 1979-1984; Hotel Berlin, Lutzowplatz, Berlin, 1977, unrealized; Regional library of Baden, Karlsruhe, 1980-1984 (Ungers, 1998; DAM, 1985)). He makes a parallel between this concept and Russian dolls, which is quite a good illustration (Figure 2, right). For him, the *theme* is one of the most important elements in architecture – the key characteristic in the conceptual design of any construction that tends to have different values from the basic design, and the *space inside the space theme* stands out as a possibility.

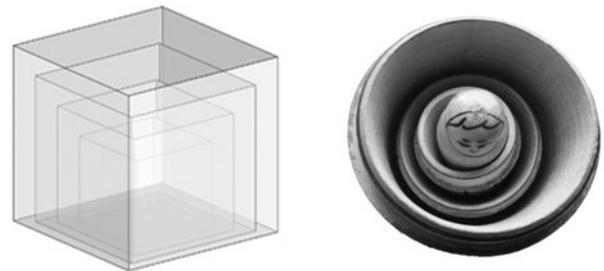


Figure 2. Box in the box in the box (left); Image of Russian dolls (right) (Source: authors)

This study deals with the concept of architectural design expressed through the spatial incorporation of volumes and the idea of in between space. A perception of space, different from the common perception, leads to the organisation of buildings through various spatial levels, which can offer many advantages. The paper investigates this specific concept by analysing four architectural projects. The study itself focuses on residential houses, but can also be extended to a larger scale, for example to multi story and public buildings, residential complexes and urban structures, which could be the subject of future investigations. During the research, each project was first analysed independently and then all the projects were put together by means of comparative analysis, in order to find their similarities and mutual elements, set aside their differences, and compare the concepts using the same criteria. This was done in order to reach a specific conclusion which could be helpful in defining one definite idea applicable in architectural design.

ANALYSIS

The four projects chosen for the research are (Figure 3): **Villa Le Lac** by Le Corbusier and Pierre Jeanneret constructed in 1923/1924, **Solar House** by Oswald Mathias Ungers designed for a competition in 1979, **House N** by Sou Fujimoto constructed in 2008 and **Guerrero House** by Alberto Campo Baeza constructed in 2005. The projects are located in different parts of the world, and designed by different architects in different periods of time, but their concepts are based on the same key element – the element of incorporating space. The main connection between them is their similar approach to the design, the same theme interpreted in different ways and with different goals, and in

between space as a leitmotif that plays a major role in their structural concepts.

The study bases its analysis on the typology, compositional arrangement and existing contextual criterion. Generally, the incorporation of space in architectural design can be observed from various aspects: from the phenomenal point of view as a phenomenon that contains the characteristics of continuity (“an object that continues to turn up inside another object describes a sequence which could theoretically carry on indefinitely, a continual process that is no longer intelligible in logical terms” (Ungers, 1982:57)); from the conceptual point of view as a clear matrix pattern for the organisation of buildings, squares, cities etc.; from the sculptural point of view as an artistic work with a particular theme; or from the psychological, or geometrical point of view etc.

Each of these projects is organised as an architectural composition that comprises a certain number of volumes, which vary from project to project depending on the particular concept: in Villa Le Lac two, in Solar House four, in House N three, in Guerrero House two volumes. The volumes

function as shells or as layers that overlap each other in order to create a complete architectural entirety. They are inserted one inside another, like a box inside a box inside a box and so on. These boxes can be conceived as different houses placed one inside another, because each of them contains certain functions. They create different spaces that work together as related parts which make up a whole. Each project is characterised by its own layers (Figure 4): Villa Le Lac – central house and green room; Solar House – stone house (central), glass house, greenery house and nature house; House N – central house space, house space and garden space; Guerrero House – central house space and front/back garden. In each project the central volume is noticeable, which is at the same time the central part of the composition, the most inner shell and the most important one. Other shells wrap around the central one and broaden its functional possibilities. All of the shells work together to create one complex structure. Observed at the individual level, the volumes have no major significance, but in mutual relationship, they create a meaningful composition that has a particular purpose.

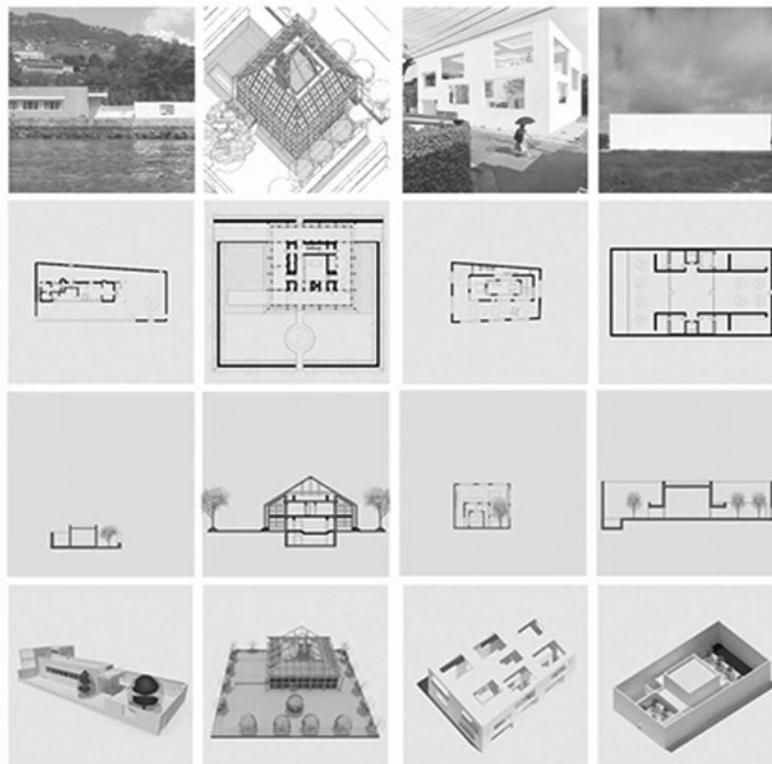


Figure 3. Photos, layouts, sections and 3D models of Villa Le Lac, Solar House, House N and Guerrero House (from left to right) (Source: authors)

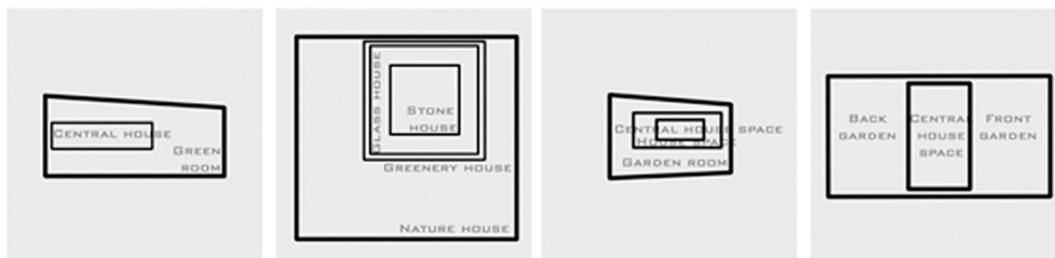


Figure 4. Sketch of different shells and spaces created within them (Villa Le Lac, Solar House, House N, Guerrero house) (Source: authors)

In order to better understand the concept, the projects have been decomposed into their component parts. The drawings in Figure 5 left present the schemes of how the different volumes overlap in each project. Although the number of volumes varies, the principle of the arrangement of the composition is always the same. In these architectural compositions, the membranes (shells) can be conceived as the main constructive elements that create the structure, the skeleton. Those membranes are circular and enclose the space placed inside them. The space inside is actually empty, a void, that searches for its purpose. The purpose of the emptiness is given through its use, which is organised through the creation of another space inside it. The membranes work as a body. They limit and constrain the space, and define its gravity fields, creating a void which should have certain functions. There are many possibilities, because the void is not observed as being nothing, but rather as being something, as being the part of the architecture placed in between. Decomposition of the layers that create the composition, shown as the scheme of body and voids, helps to better understand the structural arrangements (Figure 5, right). The composition is created by mutual shifts of different bodies and voids, which create separations and at the same time transitions between spaces from the inside to the outside and vice versa.

Contextual conditions such as the location and climate are of great importance in the development of the projects. This concept is actually a tool between the pre-existing contextual conditions at the site and the final desired goal to be achieved by the architecture. The existing contexts and aims of each project are briefly presented in the following paragraphs:

Villa Le Lac is located on the shore of Lake Geneva in Switzerland, surrounded by the perfect natural landscape, in an area with a moderate/mountain climate. The main idea of applying the concept of incorporation in this project is based on the limitation of the landscape and its adjustment to the human scale. "Landscape, omnipresent on all sides, omnipotent, becomes tiring. In conditions like this, when there is beautiful nature everywhere, it is not possible to see it anymore. The landscape has a need to be restricted, to be dimensioned through one radical decision" (Le Corbusier, 2004: 22-23). According to the author, in this case, it was necessary to close the horizons by constructing walls and to open them only at a few strategic points, which means creating a shell around the house that nests the house inside a "box" and creates a layer of in between space.

Solar House is located in the calm residential settlement of Melkerei, in Landstuhl in Germany, also in an area of moderate climatic conditions. Here, the concept is based on the idea of energy efficiency, so the theme of incorporation as the idea of wrapping protective shells around the living space, in order to achieve the thermal comfort of the central core, fits perfectly (like layers of clothes). The author introduces the concept of incorporation of spatial layers into the design consciously as a principle in order to create a prototype for a house that is able to satisfy the energy consumption needs. "The theme of the house within the house corresponds to a room protected by more than one shell, or, put another way, several spatial shells that surround a space set at the centre" (Ungers, 1982:59).

House N is located in a typical Japanese residential area within the high density city of Oita in Japan, again with a moderate climate. The chaotic environment, with many

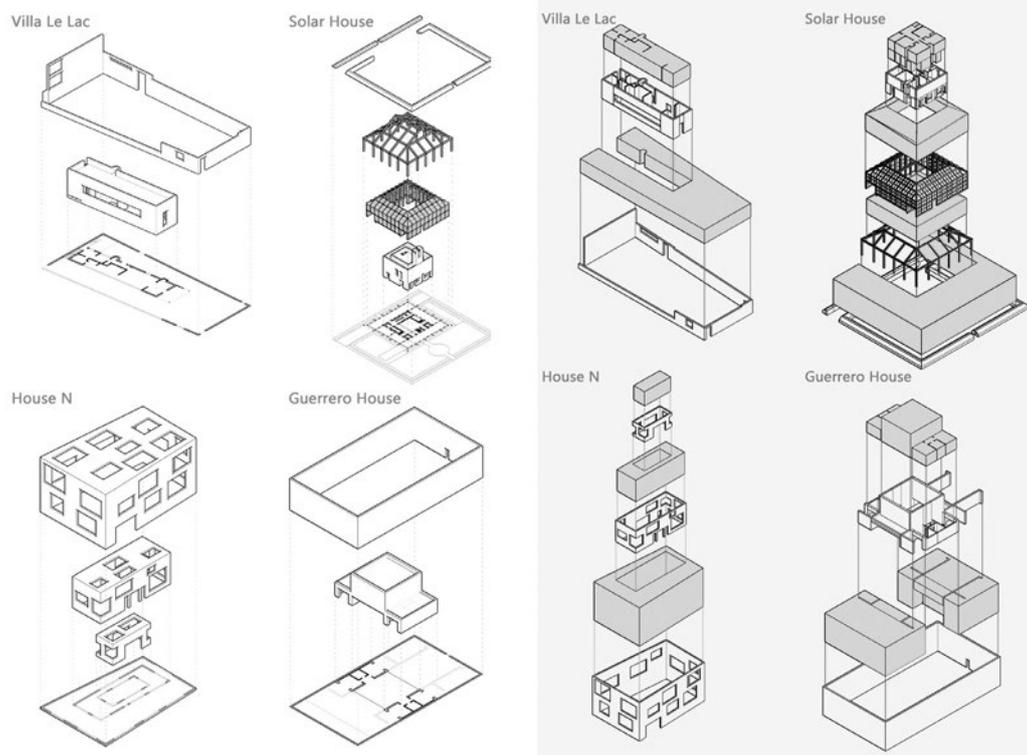


Figure 5. Axonometric view of decomposed architectural compositions - overlapping of different layers (left); Study of body and void (right)
(Source: authors)

narrow streets and a large number of houses, caused the idea of space gradation from public (city, streets) to strictly private (centre of the house). The aim can be recognised as the will to differentiate the living space from busy everyday life, but at the same time to make it a part of the same everyday life, namely, to create private space inside the human “jungle”, but not to remove the sense of being part of the “jungle”. The architect clearly explains why this concept has been applied: “I have always had doubts about streets and houses being separated by a single wall, and wondered that a gradation of rich domain accompanied by various senses of distance between streets and houses might be a possibility, such as: a place inside the house that is fairly near the street; a place that is a bit far from the street, and a place far off the street, in secure privacy” (ArchDaily, 2011).

Guerrero House has a slightly different context than the other three projects. It is situated in the southwest part of Spain, in Cadiz, a city on the coast of the Atlantic Ocean, with a typical Mediterranean climate. Such climatic conditions result in the kind of architecture more oriented towards open space, but at the same time, because of the strong sun and high

temperatures, architecture that needs to be protected and shaded. On the basis of the contextual conditions and the comprehension of architecture as an artistic expression, the concept of incorporation in this project is applied with the aim to create an architectural composition full of light and shade, or as the architect said: “the construction of luminous shadow” (Campo Baeza, 2005).

The important elements that greatly influence the architectural design of the projects are shown in Table 1.

DISCUSSION

The issue of the relation between the interior and exterior is unavoidable in every architectural project. What characterises the idea of space incorporation is the number of interrelations and gradation of the spatial layers, which make it suitable and applicable in architectural design, especially when it comes to connecting inner and outer space. In order to create a good and continuous link between those spaces, it is often necessary to find a compromise. The concept of incorporating spatial layers, i.e. the introduction of mutual relations, stands out as one of

Table 1. Overview of the main characteristics of the projects

Project	Design/construction year	Location	Location context	Climate	Conceptual idea	Number of layers	Layers	Level of transparency between composition and surrounding area
<i>Villa Le Lac</i>	1923/1924	Lake Geneva, Switzerland	- lake shore -surrounded by the perfect natural landscape	moderate/mountain	to limit the omnipresent nature and to adjust it to a human scale	2	- central house - green room	semi-transparent
<i>Solar House</i>	1979	Melkerei, Landstuhl, Germany	- calm residential settlement	moderate	idea of energy efficiency (to create a room protected by more than one shell)	4	- stone house (central) - glass house - greenery house - nature house	semi-transparent
<i>House N</i>	2008	Oita, Japan	- high density neighbourhood - typical Japanese residential area in the city	moderate	space gradation from public (city, streets) to strictly private	3	- central house space - house space - garden space	semi-transparent
<i>Guerrero House</i>	2005	Cadiz, Spain	- periphery of the city on the coast of the Atlantic Ocean - large area of flat land surrounded by local flora	Mediterranean	the construction of luminous shadow	2	- central house space - front/back garden	non-transparent

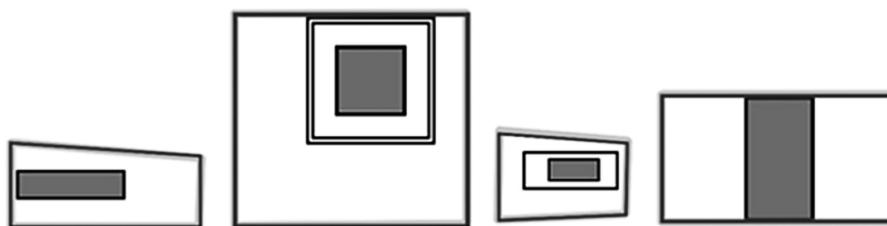


Figure 6. Schematic representation of central space and borders in *Villa Le Lac*, *Solar House*, *House N* and *Guerrero House* (Source: authors)

the possible solutions. The concept that has its roots in the earliest history of humankind, recognised as a part of urban planning and architecture through the centuries², although in most cases incorporated unconsciously, can become conscious element in projects, like in these four residential houses.

In the four examples, different motives and goals, as well as different contextual conditions (location, climate), use the same approach to architectural design independently, but with variations that create totally different architectural structures, indicating the possibility of diversity of the theme of incorporation. In the project of Villa Le Lac the main idea is to limit the powerful nature that is present everywhere around it and, if not adjusted to the human scale, can disturb the inhabitants. Here, in between space functions as a filter between people and nature. On the other hand, the theme of incorporation in Solar House has a totally different purpose. Striving to create a house which is energy efficient, in between spaces again have the role of filters, but now the filters are between heat and cold. In the project for House N the accent is placed on the gradual switch of volumes which lead from public to private space. The space is conceived more deeply and receives the characteristics of diversity and richness. Guerrero House develops itself in the

² Starting from the Egyptian pyramids, ancient planned towns, and even settlements from the earliest civilisations, Greek temples etc., through medieval fortifications to modern villas, contemporary residential buildings, museums, etc., it is possible to follow the theme of space incorporation or space wrapping. This theme (concept), has probably been applied unconsciously and with different aims: in some of the cases the application has arisen for the purpose of fortification (for example in the Settlement of Akhetaton - Tell el-Amarna, built in the first half of the 14th century BC as a village for workers, where various elements interweave in the composition and form each other – blocks inserted inside fortified walls, homes inserted inside blocks); in pyramids it maybe tends to hide the tomb and keep it in a secure position, perfectly suitable for the resurrection of the soul (the pyramids were built as sculptured tombs for Pharaohs, with many symbolic meanings. The real tomb, the room where pharaohs were buried, was usually to be found in the centre of the pyramid, from where, it was believed, the soul of the dead would easily rise up, through the top of the pyramid, to the sky, which resulted in the architectural form that includes elements of incorporation, one space inside another.); in temples it maybe has the purpose to indicate the level of sanctity and to emphasise the importance of the holy space (the most holy space is in the heart of the building, like for example in Temple C in Selinunte, an ancient Greek city in Sicily, where the space of the temple rises up on the uplifted plateau of the consecrated area, surrounded by a colonnade, where in the innermost nucleus can be found the cell and sanctuary); in some cases it has operated over the course of time and more or less by chance (for example the church Severinskirche in Cologne where five different layouts of five superimposed churches can be recognised that were built one on top of the other, over the course of the centuries, in succession, where elements of each still exist and can be distinguished (Ungers, 1982)). Generally observed, any urban town or city surrounded by a city wall, which defines its territory and separates it from the countryside, is an object within an object. Inside the city wall are buildings, arranged within squares, which is another object inside an object. Buildings can have courts, as smaller spaces ascribed inside, and so on, and the idea of incorporation can be continued to smaller spatial units. The same example, but observed in an opposite way, is the gradual growth of a city. Throughout history, towns have usually been formed around crossroads or market places as their central nucleus, with a church and town hall. Streets are set around a central nucleus, in perfect cases as concentric rings, in which residential blocks are set. As the city grows, the number of rings increases and the city zones expand which can, in theory, go to infinity.

framework of the climatic conditions presented at its site. It understands architecture as a means of artistic expression. Here, the concept of incorporation can be conceived as a tool that transforms architecture into a sculptural game that plays with light and dark – the sun and the shade. This comparison can outline key words that express the possible use of in between space, such as: limitation of omnipresent nature, energy efficient membranes, gradual gradation between city and home, the game of light and shadow.

What is noticeable at first glance of the study is that the house is not figured as an independent element, but always as a part of a larger architectural composition that comprises both internal and external spaces, and functions as a unique structure. The composition is defined with two main elements, which are its central part (the core) and external border. The central core is the main part of the composition, the most inner space that is always characterised as a real interior, i.e. the part that is very private and used the most. The external border is the line that defines the area of use and represents a division from the urban environment. It defines the total space of the architectural composition and separates the private from the public i.e. the urban environment (real outside space). Actually, in some way, it defines the users' field of gravity. Figure 6 schematically shows the position of the central core and external border in each single architectural composition. By looking at these schemes, it is also possible to make a parallel between the organisation of the building and the organisation of the city where, in most cases, there is a historical nucleus on one side, and the city wall, which in mediaeval time served to separate the city from the countryside and today separates the central zone from periphery, on the other.

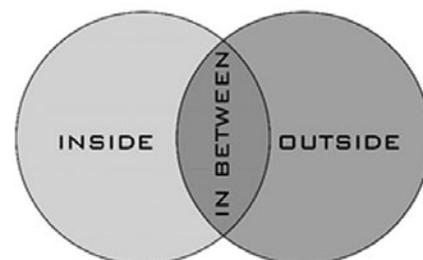


Figure 7. In between space as an intersection of the inside and outside fields of gravity – schematic presentation (Source: authors)

Between the central core and external borders the space is organised through different structural layers that operate between the inside and outside. The composition develops itself through layers (volumes) which are incorporated in gradual switch from the surrounding environment to the central part of the house. Volumes are inserted one inside another. One volume is an integral part of another and together they create the complete compositional structure. The layers between the outside environment and the central core combine the characteristics of both the interior and exterior and therefore cannot be precisely defined. They create the space that is in between, and that can, depending on the point of observation, be inside or outside (Figure 7). In between deals with different gravity fields and acts in

the game of spatial overlapping and correlations, the game between interior and exterior. Its presence gives specific character to the object, whose structure becomes more complex and richer. The architectural design here is not only about creating the house, but about creating a lifestyle. The concept expresses the characteristics of changeability and flexibility and the house blends with its users and follows their actual needs. So, on this basis, a platform for discussion can be established based on the characteristics of changeability and flexibility, and also gradualness and the level of privacy and the level of transparency, which are all related to the contextual conditions.

The area of use inside the architectural composition changes its size depending on the actual conditions. The house can gradually increase or decrease, depending on the weather conditions. The growth of the house is followed by the expansion of the field of gravity of its inhabitants. During the winter season, when the weather is cold, the house is framed inside the smallest cell – the central core. As the weather gets better, the house expands its volume, step by step. The house is never the same. It always transforms and adapts, and in this way it becomes a dynamic structure that lives together with people. Figure 8 shows some schemes of possible expansions in all four projects. The possible expansions vary from project to project, depending on the number of layers incorporated. Changeability due to the weather conditions is most evident in the project of Solar House, and then in the projects of Villa Le Lac and House N, while it can be noticed in the project of Guerrero House, but it does not have such great importance due to its hot climate. The Mediterranean climate allows the house to be used equally for almost the whole year. Here, the central core can even be used in the opposite way, as protection from excessive sun. Anyway, the exterior space can be considered as an expansion of the interior space, whereby the expansion is realized in a gradual way through spatial layers.

Gradualness can be observed better throughout the transformation of the house based on the level of privacy. There is always the most private part of the composition, which is the central core on one side, and the public space which is the urban environment on the other side. There is no sharp border between these two opposites. The line that separates private from public gradually vanishes and the link in between is established step by step, through various spatial layers of different degrees of privacy. One can have a sense of living in the city/countryside, but at the same time can feel his own private oasis. The gradation of privacy

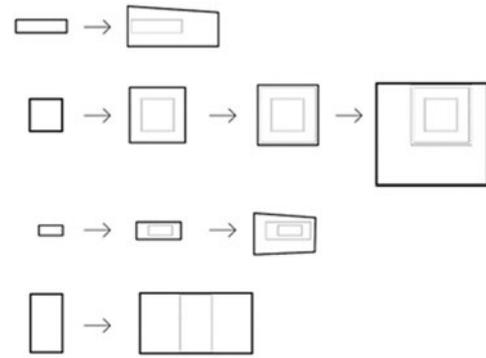


Figure 8. Schemes that show expansion of the houses (Villa Le Lac, Solar House, House N, Guerrero House) (Source: authors)

is most apparent in the project of House N, but the same element circulates through all four projects (Figure 9).

The existence of an external border is always present as a physical element that defines the total volume of an architectural composition. It has the role of separating the gravity space of the inhabitants from the external urban environment. In a way it creates an enclosure inside which the composition develops. Although it is always present, the enclosure differs depending on the degree of its transparency. Villa Le Lac allows the surrounding landscape to penetrate inside the open space of its green garden through the openings in the external wall, and even further, through the large running windows to the central space of the house. The wall is interrupted by clearly specified spots. Openings bring part of the landscape to the composition, making nature a part of it. By inserting the surrounding environment, a unique relationship is created between the location and its nature. Solar House is semi-transparent. The central core is massive and made of solid materials. It is a real, traditional house that hides inside other layers and conserves its privacy. Each layer, going from the centre to the streets, becomes more transparent (solid layer, glass layer, wooden skeleton, plants and trees). These layers work as membranes that do not totally block the views to the surrounding area, but provide a certain dose of privacy. House N gives the impression of simultaneous closeness and openness. Its shells work like strong armour that closes and strictly limit the volumes in all three directions. Perforated parts allow, on the other hand, the nature to come inside the defined area. Rain, snow, sun, wind, clouds, the sky ... all these elements become part of everyday life inside the boxes. Guerrero House has a totally opposite approach. It

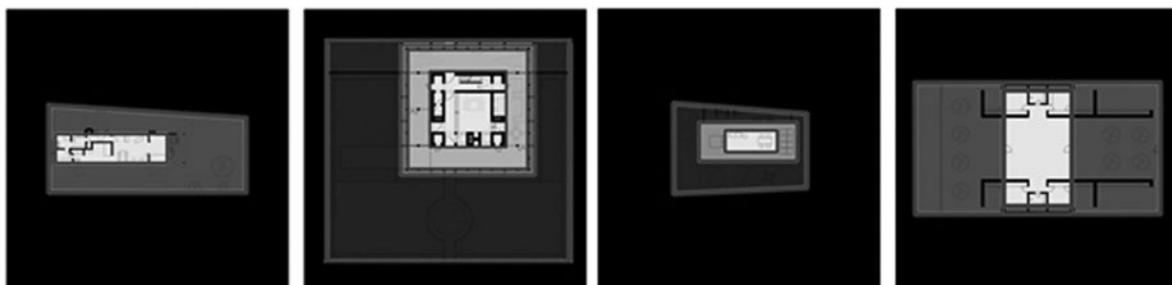


Figure 9. Schematic representation of the level of privacy in Villa Le Lac, Solar House, House N and Guerrero House. Changes go from the most private central core (white) to the public urban surroundings (black) (Source: authors)

completely closes itself from the surrounding area by high solid walls with only one small door opening as an entrance to the inside area. The only link with the surroundings is the sky; it is open in a vertical direction, through the z-axis. This introvert design has the purpose of providing conditions which will satisfy the main idea – to create the game of light and shade. The sun throws the rays from above, big walls create the shadows, and the performance can start. The architecture takes on the characteristics of a theatre and becomes an active participant. So, here, the concept of incorporation has a more poetic and artistic character.

The concept of incorporation in the spatial arrangement of the architectural composition that has been studied throughout four different cases of residential house projects is used as the main basis for the development of all of these projects. Although they have the same approach to the design concept, the goals and direction for further developing these projects are extremely different. What is common is the fact that layered space is used as an element that makes the connection between the interior and exterior, a connection that is specific and based on gradation and mutual interrelations. The different aims applied in the projects indicate the characteristic of diversity. While Villa Le Lac strives to limit the omnipresent nature and to adjust it to the human scale, Guerrero House hides itself from the surrounding environment and is only open to the sky and sun. Solar House has a strong task to be energy efficient and it uses layers as its clothes, to save as much energy as possible. On the other hand, House N deals with the relations between public and private and tends to soften the strong contrast in their connection. The layers of incorporation are used as filters between the house and nature, warm and cold, the city and the house, the light and dark. And these are just some of the possibilities.

CONCLUSION

This research on the topic of space in architecture that cannot be defined either as inside space or as outside space, but as architectural space that can be at the same time considered as inner and outer, has the main goal of elaborating the specific concept of understanding the “in between” space in architecture, which introduces a principle of design different from the conventional one, a principle of layered space. The design always tends to find something new. A conventional house is designed in a way in which outer and inner space are clearly defined. On the other hand, this approach offers different perspectives and perceptions. It strives to open up new possibilities in architectural design related to setting up a different lifestyle for the inhabitants, a lifestyle that is more versatile for them, and also to encourage new perceptions in architecture. The study tries to emphasize the value of layered space and its interplay and relationship between indoor and outdoor. The concept of spatial incorporation appears to be a very good tool in connecting external and internal space. It offers many interrelations which operate between these two opposite sides. Their relation is not as sharp as it is in usual architectural design. The outside space is rather observed as an extension of the inside space. Clear borders do not exist anymore. Spaces switch gradually, making the architectural composition more unified and unique.

Apart from the projects analysed here, which are chosen as representative, there are many other in the field of housing that deal with a similar concept. Many of them can be found in Japanese architecture, like those from Toyo Ito (White U, White O), Suppose Design Office (House in Buzen), Takeshi Hosaka (Inside Out), Shigeru Ban (Naked House), Kazuyo Sejima and Ryue Nishizawa (Moriyama House) etc. Japanese architecture is very specific and in most cases influenced by the lack of construction space, which can, though not always, be one of the reasons for the application of layered space. Also, this kind of architecture can be widely found in areas with a Mediterranean warm climate, where the exterior is used almost as much as the interior. Guerrero House is not the only project by Alberto Campo Baeza based on this concept. This architect has designed other buildings in a similar way, more oriented towards introvert design, such as Gaspar House, Moliner House, Cala House etc.

This paper is just a part of larger investigations into in between space in architecture. Further studies will deal with the same problem, but on a larger scale. Future possibilities include similar studies, first on larger buildings/residential complexes and then on the scale of urban structures. Investigations into different levels can give a better overview and more comprehensive conclusions on the topic.

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