Challenging the definition of boundary

Relationship and transition between inner and outer space in contemporary architecture of private homes

Architectural studies: The genesis of metropolitan spaces

Doris Nielen

Lily Ronen

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Humans shape the world in cities, streets, houses and rooms to fit our needs and notion of aesthetics. In 'framing places' Dovey explains, that the world is structured by the decisions of many individuals, partly designers, which together have given the world its appearance. (Dovey 2008:1)

Architecture is the art of creating the conditions needed to fulfil the human needs; it is a cultural affected art that can develop differently in various parts of the world based on the local needs and culture of the society. Architecture is place dependent.
Dwelling is one of the most basic, essential types of architecture and one of the oldest existing. Dependant on culture and technology available to the society, dwelling has remained the most demanded and varied type of architecture.
In western civilizations the home functions not only as a shelter, but also as a physical and psychological anchor. Physically, the home in the western society is a permanent structure in a defined place that provides shelter and protection. Psychologically, the home is a private domain, an anchor in the surrounding that provides a sense of belonging; to a community, a city, a culture a nation.

The balance between the private and the public is a main issue in the architecture of private homes. This essay deals with the definition and development of the boundary and the transition within the boundary, that separates inside and outside. The transition between private and public in the architecture of homes.
Based on the analysis of Martin Rauch's Clay House (illustration1), and the help of related literature, the development of the definition of boundary and with it, the relations between inner and outer space will be explained in regards to the character of spaces.

1 *Clay House, Austria.*

Creating space

> *"Thirty spokes converge upon a single hub;*
> *it is on the hole in the centre that the purpose of the axle depends*
>
> *We make a vessel from a lump of clay;*
> *It is the empty space within the vessel that makes it useful*
>
> *We make doors and windows for a room;*
> *Bit it is these empty spaces that make the room habitable*
>
> *Thus while the tangible has advantages;*
> *It is the intangible that makes it useful"*
>
> Lao Tzu, circa 550 B.C. (Van de Ven, 1987: 3)

Space is defined as the height, depth and width within which all things exist and move. Space is everything. It is our universe, our undefined surroundings, even beyond the earth's atmosphere. But space is something absent, something we cannot touch, something that can only be defined by other, physical elements.

According to Benhams essay on 'Environmental management' for primitive cultures that relate no importance to substantial structures, like nomads, space is defined as the area within reach. In ancient times, cities developed around a water source. Villagers set their tents around the tent of the wise man. The safe distance during the night was within the distance that allows light from the campfire.

In western civilizations, structures are used to fulfil the physical and psychological environmental needs of society. In such a society it is more common to refer to space as the void created between solid matters (Benham 2009 : 152).

Space is not a tangible matter. The streets and the public squares are spaces, they are defined by very clear boundaries: buildings. The rooms in a house are the voids between the walls of the house. The way space was used in the ancient times shows that space is a psychological boundary. In today's society space is the area defined by tangible materialistic boundaries. In order to create space, a set of boundaries is created to allow a 'void' between them and to create the distinction between two areas, outside and inside. To create space is thus to create boundaries and to separate.

According to Heynen seeing architecture as a space between boundaries is quite recent. It was only from the second half of the nineteenth century that architects related to space as the central idea in architecture. (Heynen 2004: 782)

According to Leupen, with the architects and artists group 'De Stijl', founded in 1917, started the notion that space is everything and everywhere. Instead of 'creating space', they started to see architecture as an art of marking off parts of the universal space. (Leupen 2005: 58)

Sense of place

The architecture of private houses deals with the creation of a space to live; a space that provides shelter, privacy and protection. A space to live also means a sense of belonging. Setting boundaries for a house means framing a part of a greater space, taking a piece of land, marking it and building walls around it to make it your own; 'domesticating' it. It is a way to control the personal environment, to tame the great outdoors to fit our needs, to help us feel protected, sheltered.
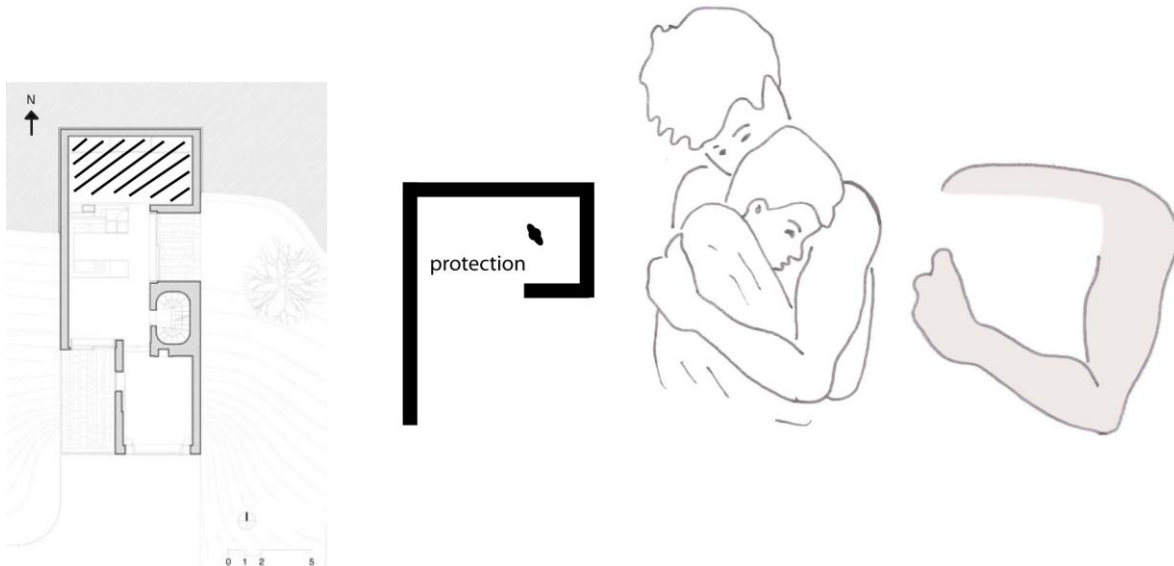
2 *Floor plan first floor of Clay House, analytical drawings.*

The example above shows us the way architecture can protect us. The boundaries of the space make an enclosing gesture. Light has its entrance from above but there is no direct view to the outside. The space is open, but sheltered and private.

The house as a unit can be seen as a space within a space. It is located in a landscape, a street, a neighbourhood, a city, a country; it has an environment or in other words, a place.
Christian Norberg-Schulz in his text about 'genius loci', defines place as the combinations of elements of an environment with its own character and identity. In ancient Rome, everyone and everything had a guarding and directing spirit. The same applied to places, which were also defined by their spirit. It was an important issue to live in harmony with your environment; it meant that the relationship between the inhabitants of a place and the spirit of the place was good. This is what was called 'genius loci'. Only when the 'genius loci' was in harmony it was possible to really be sheltered and 'at home'. This 'genius loci' has been developed by a combination of elements in the environment, formed by the multitude of happenings truth history, which have shaped the place. Within the time and the things that have occurred on a place, the 'spirit of the place', the 'genius loci', has been developed.
The architecture is responsible, according to Norberg-Schulz to bring the character of a place to life. That way the architecture becomes a part of the place and the place becomes a part of the architecture. (Norberg-Schulz 1979: 530)

The sense of place is also a means of orientation. It is easy to relate to the elements of nature as an orientation point. It is also common to use other buildings as a means of orientation. But the definition of a place is always in regards to what is around it.

Boundaries

Architecture equips people with tools to regard their surroundings in many ways. To build a wall, means to set a boundary to define space. In doing this a statements about both sides is made. A completely solid and closed boundary isolate the inhabitants from their surroundings. Creating openings in the boundary is a different statement. The structure that is build, the house, takes a position toward its context.

A box creates a very rigid separation between the inside space and the outside space, but the definition of space does not have to be a very rigid one, it is hardly ever just a closed box. Using just one or two elements could be enough to grasp the feeling of a space. Illustration 3b is an example of a space created with only a roof construction and some linear elements holding it up. The space is defined by the roof; there is no physical separator between the area that is protected and the area that is not, the feel of inside and outside remains, but the relation between the inside and the outside changes considerably. The inner space is open to the outer space. The movement between the two is free and there is nothing blocking the sight in either direction. Some combinations allow us to give a direction to the space (illustration 3c).
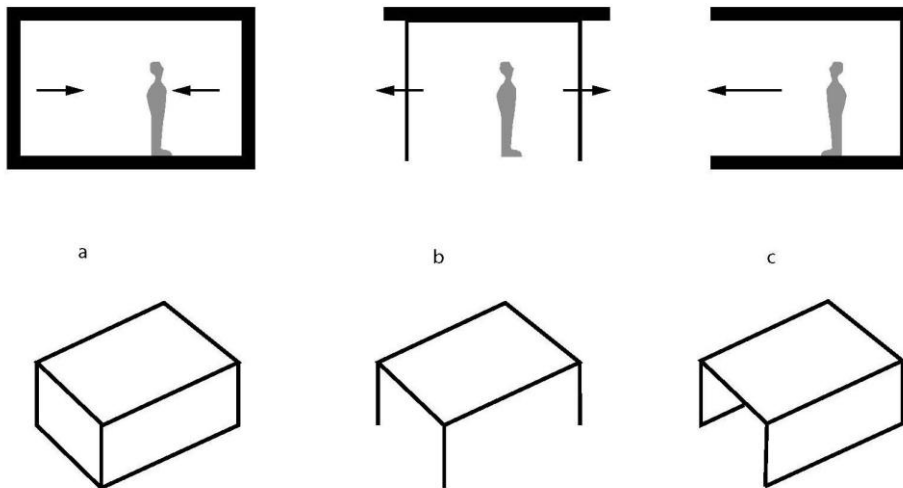
3 *boundaries wall and roof*

The boundary is thus a separator which contains windows and doors; it is where the connection is made. The before mentioned elements of wall and roof have a dual role; they separate but they also function as the structure that holds the opening. A door is also a boundary, one that allows passage. A window is also a boundary, one that allows view to the outside from the inside and vice versa.

4 *Clay House – influence of the context*

On the plot of the Clay House, Illustration 4, the house on the one side faces the road on the other side just the mountain. It has influence on the placement of the different types of rooms. In the illustration the yellow rooms are more public, the living room, kitchen and study room. The blue rooms are more private, they are sleeping and bathrooms. The house is the place for shelter, safety and comfort and to come to rest. On this specific location this needs could be disturbed by the road. When for example a sleeping room is placed on the side of the road, which in the example of the Clay House happens on the second floor, the boundaries that closes this room turns away from the road, they open to the side. The choice of the boundary relates with the context of the place and the character of the space, that the designer wants to create.

 The boundary must allow a passage between the inside and the outside spaces. The most interesting phenomenon is when the definition of the boundary itself is being questioned. It can be done in a form of a window, a door or an opening. And those openings create the transitional space between in and out. Those openings challenge the role of the boundary, they protect the user from the outer space, but they no longer create the strict separation between the inside and the outside space.
If in the past the house was a centrically experience, it now opens its limits to the outside world, the space is expanded to incorporate the inner space in the outer space. The Transitional Space between in and out.

5 *Clay House, entrance ground floor through the garage*

The theory of van Eyck brings the importance of relativity. Van Eyck said that architecture is full of polarities, such as unity – multitude, part – whole, big – small, outside – inside. (Heynen 2004: 785). To exploit the transition between the polarities makes a richer, more poetical architecture. Within this transition the other polarities can appear as well. In the Clay House of Martin Rauch, Vorarlberg, a gradual transition is made in the entrance of the house, illustration 5. The entrance, which functions also as an outside garage, allows the visitor to enter the volume of the house before entering the inside space; forming a space which is inside and outside at the same time, an in between space. The same transition is made between the darkness of the inside and the light of the outside or vice versa, during the night. A transition is also made between the small inside space and the big outer world and between the part of the world, the house, and the whole of the universe.

Transitions can also occur between internal rooms in a house. Moholy said that a modern design of space isn't adding heavy volumes next to each other or the shaping of voids. He put the focus on energies of spaces which penetrate each other within which borders blur. He said that architecture is about spatial relationships. (Heynen 2004: 784)

On the first floor of the Clay House, illustration 6, the living room in the centre offers various relationships, both external illustration 6a, and internal in illustration 6b.

The three rooms are connected with open borders; there are no walls between the rooms. This allows a flowing movement between the spaces. The separation is created with the help of subtle elements. The southern room is connected with a little stair to the main living room; separating the space behind the stairs from the main space eliminating the need to use a closed wall. The stair is the transitional space between the rooms. The northern room is set aside with the kitchen standing in the space, and the closing gesture of the shape of the walls. The last arrow points to the stairs, and the spaces on the upper floor. The main stairs is in this design made as a space in itself. This space forms the transition between the first and the second floor.

The first floor in this way forms one connected space within which three different characters of space are created, useable for different purposes.
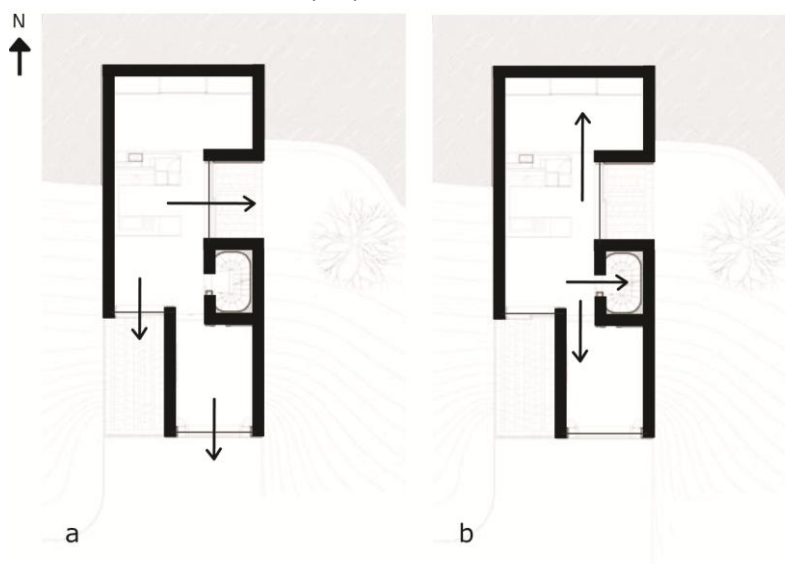
6 *Clay House – first floor, outside relationships - inside relationships*

Light and direction

Another way to create a sense of place is to use light. The daylight is one of the greatest tools of orientation available: we always know where the sun rises and sets. It is also an indication of time. The sun is always highest in mid-noon. Sun has always been a source of warmth and light and was always searched in the making of openings in the house.

According to Pieter van der Ree's article 'Licht und Bewusstsein' from 2006; the first houses in history didn't have much light inside. The hut was a circular structure with an opening in the middle of the roof. This opening was placed just above the fireplace to let the smoke out. In the past the hut was most of the time used in the evening. The light from outside wasn't really the issue. People went inside for the evening, to shelter. The light that did matter was the light of the fire inside, this was the light that determined the direction of the space. The people were cooking and eating around the fire and in the evening the people sat around it and talked. The space was oriented to a collective centre point where heat and light came from (illustration 8a).

In the middle ages, started 5th century, there was a big change in the interior. The chimney was introduced, a much more efficient way to get the smoke out of the house. Now the fireplace was next to the wall and the smoke outlet didn't provide the entrance of light into the room anymore. The window was introduced but many times there were just shutters, open during the day but closed in the evening. Later glass was introduced, it was very expensive and difficult to create big surfaces, the windows were small and constructed of little glass parts next to each other. Still, with this introduction of glass, the inside space became much lighter. The orientation of space changed as well. In the middle ages inside space was not just used for the night anymore. People also spend time in the house during the day and made working places inside. The light became important, and the way it enters during the day, determined the way the space was used. The functions of different rooms were affected by light, so strongly that some rooms were used during the day for household work and during the evening as a sleeping room. The function literally derived from the presence of light, daylight in the room.

It´s important to notice that the function of the window, the hole in the volume, has remained almost the same during time despite all the developments in the technology of constructing the windows,. The main function of the window was and still is to allow light to come in and to open the room to the view. The shape and placement of the openings determine how the light enters the room, and the light makes it possible to experience the space.

With the development of glass a movement started in which the inside space became lighter and lighter. For the first time people could look through the windows of the house into the outside space. In the Renaissance, 14th -16th century, interests turned from the religious world more and more to the visual sensory world. It's notable that in the same time the houses turned open to the outside world as well.
The movement continued and had its highest peak with the Farnsworth house of Mies van der Rohe in 1945. The window became so big that the entire wall consisted of glass and the inhabitants lived in a completely lighted and visual open space.

With the development of light and glass there did not just happen a change in the lightness of the inside space, there was a big change in the orientation of the space as well, from inside to outside.

The buildings of the past were focused to the inside but the house of Mies van der Rohe totally to the outside. At the same time, it almost became the outside, as you can look through the building. The border between inside and outside is made as little as possible. It's a completely different attitude to the outside world. (Van der Ree 2006)

7 Farnsworth house – Mies van der Rohe

Thanks to the technology of today, openings are able to be up to a size of an entire wall. Maximise use of light and view, also a much bigger scale of possibilities, tools for the designer to create connections between the inner and outer space, are made possible.
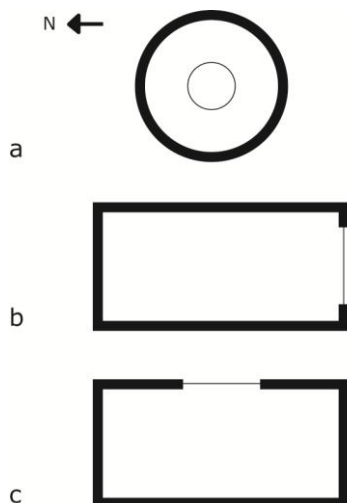

8 Floor plans of spaces

The way light enters a space has a big influence on the character of the space; It gives a direction. On illustration 8b the direction of the space is clear, the shape is elongated and the light comes from the south. The elongated shape gives the space a southern orientation, making the room long and narrow.

In illustration 8c, in comparison, the shape is the same but is experienced differently due to the location of the opening. The shape is still long and narrow, but the light coming in creates a contrast with the natural direction of the room and gives a more balanced, wide space.

9 *Clay House – Martin Rauch*
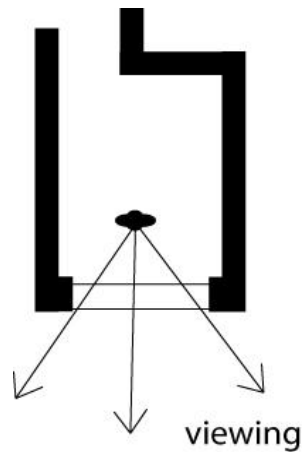
10 *Clay House – study room, ground floor.*

The possibility of large openings make the aspect of view more important. On Illustration 9, the top window on the right; the room behind this window is about viewing the outside world. The view and the entrance of light give the space a direction. The closure, the safety is behind you and your eyes follow the landscape.
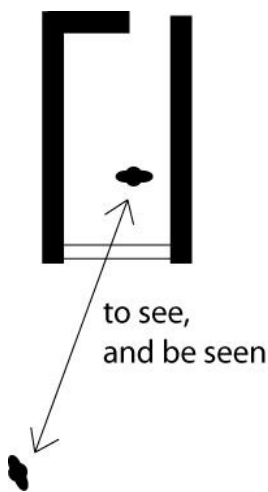
11 *Clay House – analytical drawing of the room*

The same space on the ground floor means the introduction of a new element, illustration 11. This space is about viewing, but because it is placed on the ground floor another aspect occurs; a relation with the people on the street is created. There is a tension between insiders and outsiders. The relationship is about seeing and be seen. A tension that is created due to the fact that real contact is impossible, people are not visitors but are able to enter the private space with their eyes. An insider does not want to be looked at, be displayed, but does enjoy the view on what is happening in the street. There is a feeling of power involved here, the power of the person on the street being able to watch the private spheres of the inhabitants of the houses. It is enjoyable to walk on the street and look into the different interiors of private homes.

When you place the same space on a higher level, the first floor, or just a couple of meters higher, the insider gets a more rich feeling because now the inhabitant can look down to the people on the street, which cannot see the inhabitant.

Finally; architecture is the art of creating the conditions needed to fulfil the human needs. Within the architecture of private homes people need a separated space which suits their needs for shelter, an anchor in the surrounding that provides a sense of belonging. In order to create this space boundaries have to be made. Boundaries that provide shelter and safety, these boundaries make a transition between the inside and the outside, the private and the public. The most interesting phenomenon is when the definition of the boundary itself is being questioned. Exploiting the transition between the polarities makes a richer, poetic architecture.

Within the border, windows and doors have to be made. The main function of the window is to allow light to come in and to open the room to the view. The placement and possibilities in size of the openings have developed through history. This development has changed the orientation of homes from the inside to the outside.

In the way the boundary is shaped the sense of place is important. Place is the context, the environment. Place is referred to as the sum of all the elements from the surrounding that relate to the building. The sense of place forms the identity related to a home.

The light, the view, the landscape and the architecture around a building are all elements that contribute to the sense of place and make it unique. Incorporating those elements in the architecture, making choices about the character of a boundary and how it relates to the context, give the space its character.

Space, place and identity are the key words in the contemporary architecture of private homes. Space enables the experience of the architecture. Designers define the boundaries to a building in order to create the spaces within and without; spaces that create shelter, safety and transition between the private and the public, as well as between the inside and the outside.

The mentioned elements of space, place, context, boundaries, light and view influence the character of a place and the relationship between inside and outside spaces.

When entering a space, the character of the space tells a story.

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Image sources:

Illustration 7; *Farnsworth house*; Herons' House, www.heronshouse.com/Post%20Construction/The%20Farnsworth%20House.htm (2010), (05-01-2010)