Abstract:
Dwelling has boundaries, filters from the inside to the outside. The facade, the skin of the dwelling, is a sensitive part of the house. It has many functions to fulfill: the face of the home as a face to the public, the physical filter and the psychological membrane of the home as well. This article discusses the complexity of the facade as a mediator between the home and the city, the private and the public.

Keywords:
Cocoon; permeable; regulation; manipulation; layers; new models for the dwelling

Introduction:
This research will focus on the design of the skin of the dwelling as the filter between the inside and the outside and as the face to the public. This text should clarify the subject of my research.

The dwelling is primarily a place to shelter from the influences felt from the outside. Here in this cocoon, one can find privacy. At the same time human beings require social contact with the community: physically and psychologically. The architect is the one who designs and builds this dwelling. As Peter Sloterdijk formulates it: “The one who builds a dwelling (...) makes a statement about the relationship between (...) being outside and being inside.”

In his book ‘Building skins’ the author Christian Schittich says: “The external facades of a building are more than a protective mantle, or an intelligent skin regulating temperature and light, they also determine its very appearance. By unusual choices of materials and the use of complex technology, facades have become increasingly significant in recent years. External surfaces are being perceived as an integral part of the building and are therefore being designed as such.”

The skin of the dwelling separates the inside of the dwelling from the outside. This part of the dwelling is often called the facade, which makes the association with the face of the house (Latin: facies= face). But this is only one aspect of the skin. A successful dwelling offers the dweller the opportunity to regulate his own cocoon in a psychological and social way as he regulates the air-conditioning and the heating of his own house. The way the facade is designed has an effect! It is the one zone where the dweller should be able to react between living in a cocoon and having contact with the community. Therefore the architect who designs a facade has a certain responsibility!

I will distinguish between the different aspects of the skin in three thematically different sections:
The face, the physical and the psychological filter.

Scheme A: The skin of the dwelling – a sensitive part of the house

The face is the visible part of the dwelling to the public. The representation of the dwelling. The physical and psychological filter in most cases is a part of the face as well.
The physical filter is the whole regulatory system of the skin to make the inside comfortable.
The psychological filter gathers all spaces and elements that form a border or a threshold between the inside and the outside. This article describes the structure of the whole research and then focuses on the skin of the dwelling as a psychological filter.
1. Background of this research

New models for the dwelling

During the latter decades the meaning of dwelling has changed very rapidly. Society changed – the individualisation of people increased. In the research group “New Models For The Dwelling” which is a part of the architecture dwelling group of the Architecture Faculty in Delft, we research several aspects of this theme. How do people live today? Is there a change in living patterns? What are the changes in the dwelling itself and in society? This research “dwelling from the inside to the outside – from the private to the public” focuses on the facade as the skin of the dwelling.

Dualities through the history - The face and the use of the skin:

“At first, building skins were entirely oriented towards fulfilling specific functions. It didn’t take long, however, before people began to decorate the building skin as lovingly as they did their own clothing.”

First people built shelters against the elements, wind and rain, cold and heat. But if you look at a tent, a hut or a cave, men started very early on to add decoration to it. There is a basic desire to decorate the house, to identify with the house as a home and to show its beauty to others. Clothes with patterns and painted decoration on the wall were the first means used to decorate the shelter. In the Renaissance, facades began to separate away from houses, becoming more attractive packaging.

Looking at dwellings through history, in a broad sense, two kinds of facades can be noticed: The facade as a representative wall of a public space and the facade as a functional element, often showing what kind of rooms and what functions are behind the facade. The attitude towards the facade was a product of society at those times.

The first monumental dwelling block Place Royal was built 1607 in Paris. This dwelling was built around a 140 x 140 meter public place. The whole block had to form one representational image and therefore the facade was designed by one hand while the floor plan behind this facade was filled in by the different owners. The ground floor was accentuated by arcades and several shops. The facade formed a big decor for the Place Royal.

Other projects in Europe show the importance of the face of the dwelling as a representative decor as well - the crescent in Bath, the canal houses in Amsterdam and, with the industrialization of glass fabrication, the big glass facades in front of the dwelling to get one whole decor for the street.

Contact with the people on the street was more a formal one. Men could open the window when something was happening. Even when there was an outside space, like the loggia we know from Italy, it was very much hidden behind the decor of the facade.
The industrial age and the terrible living conditions in cities gave birth to the functional dwelling at the beginning of the 20th century. Light and good ventilation where features of the new dwelling. Until then, the city dwelling had a courtyard sometimes, then each dwelling got a balcony.

The face to the public building changed from decor for the public place to a functional facade. The window was given more different sizes, depending on the function behind it. The face to the street was quite simple and at the rear balconies or loggias were added. These balconies were more functional and minimal in size. Traditionally, the facade was determined by a horizontal or vertical order, by symmetry and it was tectonic, then everything had to be as functional and economical as possible – the place of the window was determined by the functional demands of the interior. The facade came about as a result of the interior programme of the dwelling. But balconies or loggias were often used to get rhythm into the facade. Bruno Taut used colour to decorate the skin of the dwelling, he used symmetry and rhythm in his dwelling facade. Most architects of the avant-garde built white houses without decoration.

Decades later architects reconquered decoration. The dwelling had become too anonymous. Participation of residents in the design process was a reaction to the functionalism of the 20s. In the 70s, architects like Lucien Kroll developed systems based on a module. The resident developed his own floor plan and his own facade within a framework. Sequences of balconies and terraces to have contact with the neighborhood sprouted out of the vertical facade plane.

The participation of the resident was born.

Today, neutrality and flexibility are opportunities to react on the very fast changes in our society. An example of the neutrality in the floor plan and facade is the dwelling in Graz Strassgang designed by Riegler and Riewe, architects in Austria. In this plan, the inhabitants of the ground floor don’t have their own garden, there are no balconies, just very small French balconies at every opening. Facade and floor plan are neutral, offering possibilities for the resident to change the functions of the rooms inside. Nevertheless, in its quietness and minimalism, the face is dynamic as well. It can be very closed to the public space, like a cocoon, and it can be open as well. It would be interesting to interview the residents to find out if they have enough space outside and what kind of space they would like or prefer.
Today our information age gives us views through screens as well as through windows. We are overwhelmed with information. The resident can enjoy it or react by cocooning.

How will the relationship between the facade and the public be in the future? Is there any prognosis to be given about the dwelling skin of the future? Do we need sequences from inside to outside or do we need the closed cocoon?

This very brief and surely incomplete overview about history was meant to give you an idea about the tendencies that can be found by studying the dwelling’s skin. The relationship between the facade and the public depends on society and the attitude of the resident.

Recent discussion about the facade:
To continue the study about dwelling skins I looked at the discussion about the skin of the dwelling today. The following text is meant to give a summary of the discussion that is going on now.

➢ The trendy skin

In the last years the facade of the dwelling has undergone different changes. Looking at the facade of the dwelling in 2000 you can see what Xavier Gonzales criticizes: “To compensate for the uniformization of the body of habitat and respond to desires for difference expressed by the future buyers, weary architects have little by little abandoned experimentation in living space to concentrate on envelope and appearance. They vary supply in formal terms, playing on different materials and styles in the same way as ready-to-wear clothes makers react swiftly on fashion trends.”

There is overabundance of standardization in dwelling design: the surface area of flats, for example a four-room flat, varies between 73 m² and 88 m². The same happens with the floor spaces of the rooms. There is a standard in load bearing systems as well. Even the non-structural components like kitchen furniture are standardized. It appears that the facade is the only element where architects can be free to design, within the standard construction of course.

There are many more materials available, architects try to use everything to make a special face for their building, but do they really take notice of the aspects of the facade that could be valuable for the residents? Gonzales says no: “Architecture has lost the sense of its social ambition and is concerned with little more than décor, a wardrobe, a marketing product designed with clearly identified commercial targets in mind.”
➢ The permeable skin
Another author, Peter Faller, who studied the historical development of the dwelling and compared it with new dwelling models, is very critical about the current design of the dwelling facade as well. Looking at the dwelling concepts of the Austrian architects Riegler and Riewe, which pretend to develop new dwelling models, Faller noticed the minimal contact between inside and outside, which is left in these houses.
Faller thinks that there is a desire to have contact with the outside and that there must be opportunities which make this contact possible. We can call this a soft border. A skin that makes it possible to let the inside come out and the outside come in: a permeable skin.

➢ The impermeable skin
Do residents of the 21st century really need this soft border? “We do not need the All-House any more but the Unite d’habitation, a conglomerate or a stackable amount of dwelled in cells.” 6 Everybody needs his own cell, a capsule you could say, protecting and isolating himself from the other. Everybody lives in his own cell, separated from the others, like living in an apartment building with only singles.” 7 Peter Sloterdijk says in an interview according to his trilogy “Sphären”: people have their own capsule and all these capsules create a kind of foam.

The term “foam” can be compared with density. “People create atmosphere by pressing each other, coming to close to each other. You may never forget, that what we call society, includes the phenomenon of the unwelcome neighborhood. …You should write in praise of isolation. This would work on a dimension of the community that accepts, that people have a never-ending desire of non-communication.” 8 The need for privacy is a matter of fact and it always has been. Society has become a very individualised one. Do we need dwellings that are much more isolated from each other? We already have the media-facade, that hides everything that is happening inside. At the moment that the desire for daylight decreases in dwelling, or when we built patio’s inside, electronic pictures and videos could determine the face of the dwelling, like Times Square in New York, or at Piccadilly Circus in London.

➢ The high-tech skin
During latter years, the facade as a highly-developed element of the building has gotten more and more attention. One of the reasons for this is the discussion about low-energy houses. We need to be careful with our resources. At the same time we have all got used to a comfortable dwelling in the physical sense as well.
Exhibition halls, office building, hotels show a development towards a skin that has integrated installations for ventilation and heating. The reason for this is the desire to get free and flexible spaces inside. The Centre Pompidou used the installations as a motif for expression. In a very basic way the terraced houses in the South of England also tried to keep their rooms free by placing the chimney into the front facade. This became a motif in the street-scape. In both cases, the facade is more for the street than for the owner.
The need for flexible houses I have already mentioned. The need to keep the floor plan free from installations and heating is necessary to realize this. A project in realization shows this more clearly. To get free dwelling floor plans, the architect DKV built apartments in Amsterdam where the main piping is kept in the outer wall. A double floor makes it possible to connect sanitary interior plumbing with the main piping. The resident gets an empty room. The facade is anonymous. It could be an office as well. As anonymous as it is, it could be a “Centre Pompidou” face as well. It depends on the designer and the place.

2. Purpose of the research - research questions

Within the search for new kinds of houses for the dwelling, houses that are able to react to the changes in society, I investigate if and in what way the face of the dwelling has to be redefined. The research will focus on the design of the skin as a psychological membrane and as the face of the home as a face to the public.

What architectural innovation might be suitable for the dwelling of the society of the early twenty-first century? How will the facade of the dwelling look?

- History:
  How has the facade been defined in the past? What kind of elements and spaces did men use historically for the dwelling’s skin?

- “New houses for the dwelling”
  Dealing with the main item of the research group, new houses for the dwelling, the question arises whether there are already models that call themselves “new” and how do they deal with the facade of the dwelling?

- The permeable or the impermeable home:
  How should we represent our dwelling to the public? Do we need sequences from inside to outside or do we need the closed cocoon?

3.0 Methodology

The research will be design related. This means that it will describe and analyse existing designs with a known context. The designs will be compared to each other. Function (even ability to change or manipulate), form, structure, material, will be part of this analysis. The results have to be evaluated and interpreted. After evaluating and forming conclusions, new models will be developed and reflected against the analysed projects and results.
3.1 The different layers of the skin

To build up an analytical framework I divide the facade into different layers. Therefore I look back to the 19th century, when the discussion about the facade as a décor (and the question about the style of this décor) and the wall as a support came up. Semper distinguished between the enclosure (Umfriedung) and the roof, which is meant as the structural framework of the house. He meant two different things using the word “enclosure”: the surrounding wall that is meant to refer to the territorial wall and the wall that encloses the roof. The wall that encloses the roof increased from woven wall mats to solid walls. To keep the decoration which the mats had themselves, other “surrogate” dressings came up. A new layer arose, the “surrogate” dressing layer which could be found on both sides of the wall. How to deal with this surrogate dressing was the question that arose in those times.

Semper’s layers will serve as a basic for this research. Looking at the contemporary skin of the dwelling, there is this wall behind the dressing. Mostly not only a wall of stones but a very complicated technical wall that has to fulfil physiological requirements. There is a layer dressing on the inside and on the outside. The territorial wall as Semper knew it already, is nowadays the wall around the garden. It is the very outer border of what the resident calls “my house”.

To build up an analytical framework, I want to transpose Semper’s layers to today, adding more layers. I cluster the elements as follows from inside to outside:

- Interior covering
- The enclosure/the functional wall
- Exterior covering
- The border space/ with “Border” elements that connect inside with outside and vice versa
- Territorial wall

Scheme B: The analytical framework of the skin

- Interior covering means the material that is clad to the wall inside like textile or paper.
- Functional wall means everything that is necessary to carry the wall itself and the roof above it and everything that protects the inside from the climate outside (insulation, ventilation)
- Exterior covering means the material on the outside of the functional wall that has nothing to do with the construction. It is the material that can be seen by the public.
- Border space means all the places where one can go from inside to outside and vice versa. This can be an opening in the wall, a window, the entrance, as well as a space that is positioned directly in front of the wall or behind the wall (balcony, winter garden).
- Territorial wall is the surrounding wall, the very first element of every settlement. It shows territorial behavior, what is “mine”, to the stranger. The territorial wall is mostly not a part of the facade. It is the garden wall or the hedge. I will ignore the exception when the territorial wall becomes a part of the facade.

Where to categorise the lighting? It is in a way a part of the function of the wall to let the light enter. I prefer to place it into the category of the border space. The window, for example, is the place where the outside (e.g. the light) comes in.
3.2 Research part One and part Two

This research will focus on the facade as a psychological filter between the inside and the outside and as the face to the public. Part one will examine the psychological filter with the aspects of privacy and contact. It investigates the border space, the threshold between inside and outside. Part two examines the design of the face. What do you want to present to the public and how do you want to do it? At the end both parts will come together and will hopefully bring new ideas about the facade for the home of the future.

3.3 Part One - The psychological filter

Analytical framework

Referring to the framework of the skin, the border space is the main layer of the psychological filter within the skin of the house.

I differentiate between entering the home as an activity to going from the public domain into the private and vice versa, and taking steps to the outside via border spaces like the balcony or the terrace. The main entrance is the place where even a stranger comes to the home. The entrance can be just a point, a hole in the wall like a door, or it can be a process with several sequences and articulations in the facade. The architects Ika and Andreas Ruby analysed entrances and came to the following differentiation: an entrance is a threshold that can be anticipated or delayed. Anticipation means the threshold lies outside the building and is followed by the entrance in the facade. Delay means the threshold lies inside the building and the first entrance is in the facade. Transition means that the entrance can be both, anticipated and delayed.

The other border spaces deal with privacy in a very broad sense. The resident has to handle visual and acoustic privacy versus visual and acoustic contact. They also deal with darkness and light, with quietness and noise. I will analyse these three categories. They all deal with closeness versus openness. In this article, the first will be described.

- privacy versus contact
- darkness versus light
- quietness versus noise

Scheme D: The analytical framework of part one:
**Privacy versus contact**

The definitions about privacy vary depending on which discipline writes about it (psychology, sociology, anthropology, political science, law, architecture).

Some writers emphasize the person. The “keep-out” character of privacy. Others emphasize the control character, the freedom of choice to be accessible for others or not. This study uses as its basis, the definition and the framework of Altman (1975). Irwin Altman defines privacy as selective control of access to the self or to one’s group. Selective control means that this is an active and dynamic process in which privacy can change over time and with different circumstances. Altman also distinguishes between desired privacy and achieved privacy.

- **Desired privacy** is the extent to which the resident wants visual privacy in his home from outsiders.
- **Achieved privacy** is the extent to which the dwelling meets the desire for visual privacy.

If desired privacy and achieved privacy are the same, the optimum is reached, there is a good balance. In this case the control mechanism has worked very well.

The two extreme situations, when the balance is totally lost are isolation and crowding.

- **Isolation**: When the achieved privacy is more than the desired privacy
- **Crowding**: When the achieved privacy is less than the desired privacy.

The following scheme, made by Altman, illustrates the status of privacy.

![Scheme F: Overview of relationships among privacy, personal space, territory, and crowding.](image)

People use special mechanisms to get the desired level of privacy. They can tell that they want to be alone (verbal behavior), they can let the body speak (non-verbal as Altman explains: body language, for example to turn around, suppressing emotional expression) they can use territorial elements to make a border or line of demarcation (a hedge, a wall). These mechanisms are called interpersonal control mechanisms (Altman). At its best, the desired privacy is the achieved one. This is the optimum.

This scheme shows the links to architecture as well. Except the verbal and non-verbal behavior, the mechanisms deal with architecture. Non-verbal behaviour can be an expression in the psychological sense, but it can be the use of architectural elements as well. To close the door or draw the curtains is one of the basic mechanisms to get more privacy, to put large greenery on the balcony so that you cannot see everything is another example. Architectural elements can help the resident to manipulate his privacy. Researching the spaces where people come out of the home also means examining the openness and closeness of this spaces and the possibility of being able to manipulate it.

![Scheme G: the openness or closeness of border space](image)
Form of the analysis part one:
The dwellings I choose for my analysis have to be comparable. (place, stories, orientation, access system)
The main entrance and the border space in the facade will be analysed in the same way:

1. theoretical
   - the design of the border space
     - Selection of border spaces
     - Are there any sequences from inside to outside or vice versa?
     - Openness – Closeness - and its effect
     - Are there possibilities for manipulating the border space?

2. field study
   - The actual use of the border space, sequences and manipulation

3. Interview
   - The desire of use of the border space
     - Formulation and Selection of questions
     - Is the desired visual privacy, light and quietness the achieved one or not?

The main study of part one will deal with border spaces, thresholds in these dwellings and what kinds of spaces can we find. Are there sequences and is the resident able to manipulate them? What is the effect of openness versus closeness? Are the border spaces really used as in the drawings (field study) and do these spaces fit in with the desires of the resident?
The main study of part two deals with the design of the face. What do we present to the public and how?

4. Conclusion
Every home needs openings like doors and windows, every residents needs privacy so that he can be himself. But what kind of openings and thresholds does he need? Let me return to the question I asked in the beginning: What architectural innovation might be suitable for the society of the early twenty-first century? How will the relationship between the facade and the public be? How should we represent the facade of the dwelling as a mediator between the home and the city? Is there any prognosis to be given about the dwelling skin of the future?
I am not yet able to give an answer, still the research is just started, but I believe that the process I mentioned during the history goes on and that the time in which we live brings its own interpretations as it always did.
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