Connecting Inside and Outside in Time-Based Dwelling

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Abstract:

Connecting Inside and Outside in Time-Based Dwelling.
This paper discusses the complex role of the façade as a mediator between private and public space. The façade performs a dual function: it is the face of the residence while, at the same time, it serves as a intermediate space. A dwelling is first and foremost a place of shelter. However, men also has a physical and psychological need of the community. The façade is the element that allows the resident to choose the degree of contact he wants with the world around the dwelling. This article presents a brief overview of the layers in the façade which determine these levels of contact and which make the façade as complex as it is. Some historical and recent concepts are discussed within the context of the search for new housing concepts. Is it time to re-define the façade as an intermediary between indoors and outdoors and as the face towards the public domain?

Key words:

shelter, private, public, intermediate space, spatial layering

Introduction

Dwelling is an activity that takes place in both exterior and interior spaces. The link between these spaces is created by the material form. Because dwelling begins outside and flows gradually into the house, it is not entirely clear where an architect should begin when designing a dwelling. The point at which a home comes to surround its occupants as a place of protection is one important aspect of dwelling design. The skin of the dwelling, more commonly known as the façade, and the roof (which can also be seen as a façade) are the points at which the transition from interior to exterior (and vice versa) takes place.

With their minimal façades and little spatial diversity, today's large residential areas tend to give the impression that the façade is an independent design object with very little spatial differentiation. Many more types of materials are available now than were in the past, and architects are prepared to use any of them in an attempt to create a striking new look for their buildings. One question remains, however: do architects consider those aspects of the façade that could be of real value to the occupants? According to Gonzales, they do not.

> 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.[1]

Architects are responsible for designing residential buildings, however, and it is therefore time to reconsider the façades of dwellings.

In addition to the need to re-think the façade, the theme of time has come to play a particularly important role in the design of dwellings. Homes should be better capable of reacting to changes in lifestyle. Some architects recommend designing less in order to offer more; this advice is particularly applicable to ground plans, which should offer users a great deal more freedom. Time-based dwellings should be designed to offer their occupants a variety of options. Re-thinking the façade in this context should be part of re-thinking the dwelling.

It is precisely because façades have become so complicated and costly that thought should be given to new dwelling concepts that incorporate and integrate the façade. If times are likely to change, façades must be able to react. Because the façade has become such a highly developed element, however, this aspect of design can push the limits of flexibility. The conversion of a façade is an expensive proposition and one that is nearly impossible to undertake, as history has shown. Façades must be capable of accommodating changes in use (e.g., the spatial relocation of living activities) without having to be rebuilt.

The main questions of this article are as follows: Is there any relationship between time-based dwellings and the façade as a skin between indoor and outdoor space? How can façades mediate between the interior and exterior spaces according to the occupant's wishes? Are changing lifestyles generating new demands in this regard?

To investigate these questions, I consider a number of aspects. First, I explain the meaning of the façade and its spatial sequences (Section 1). Studies about the environment of dwellings have helped to clarify the sequences that extend from the street to the interior of the dwelling (Section 2). After a brief historical overview (Section 3) I describe several projects that were designed as time-based dwellings (Section 4) and discuss a number of interesting methods for designing façades, how occupants use them and how such designs have failed in some projects. I conclude by addressing the question of how architects can contribute to the theme of time-based dwelling through the design of façades.
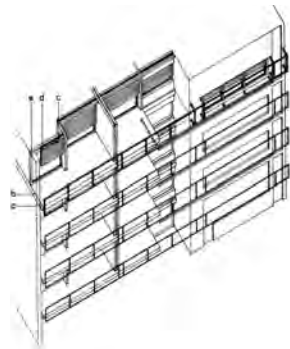
1. The façade and its spatial sequences

Closer consideration of the facade reveals a variety of functions. First, the façade is the face of a building and, as with any face, its aesthetic features are important. A façade, however, also acts as a physical filter (i.e., a complex regulatory system to make the inside of the building comfortable) *and* a social filter. A successful dwelling allows its occupants to regulate its psychological and social functions. This combination of aesthetic, physical and social functions makes the study of façades a complex endeavour that requires both sociological and architectural insight.

In this article, therefore, I distinguish between the façade as a face, a physical filter and a social filter, with special reference to the social-filter function. I focus on the spatial layering and sequences that can be found in façades, emphasizing their significance in new concepts for dwellings.

Layering in a façade involves the addition of several material layers, relatively close to each other, to form a single element. In primitive societies, people fashioned walls for their dwellings from woven cloth and mats (Semper 1851, Die Vier Elemente Der Baukunst, p.57). Later, when these

protective elements were replaced by solid walls, the woven structures continued to form an important layer. They remained as decorative elements, which were placed in front of solid walls or as patterns painted onto walls. One result of this shift in material is that the original cloth wall became an artificial wall, a decoration (Semper 1851). This is one of the first examples of layering within an enclosure.

Layering is more complex in modern-day architecture. Architectural layering can occur in every spatial dimension. The cladding that is described by Semper is a special kind of layering, which reflects the history of textiles in walls. The layers in this context are flat elements that help to demarcate space. Horizontal and vertical layers can also appear alongside each other. Architectural layering, however, covers a much broader spectrum, as it can also be understood in spatial terms. According to A.C. Schultz, 'Layering lives by the plurality of the single elements and their reaction to each other'[2]. Schultz identifies two types of architectural layering: material layering (as defined above) and spatial layering, in which different spaces and zones, horizontally or vertically adjacent or overlapping, create an overall impression that is characterized by depth, dynamism or transparency. Although spatial layering is applied primarily to internal spaces, it can also be used in façades, along with material layering.

As analysed by Franco Fonatti, the Giuliani-Frigerio House of Terragni is a classic example of how spatial layering can be used in a façade. The façade is an addition that is comprised of a number of different layers. Fonatti identifies four: the first is the metal frame on the outside, which creates the parapet walls; the second layer is comprised of the balconies; the third consists of the permeable wall; the fourth is formed by windows, sunscreens and similar

1: Franco Fonatti: Analysis of the Giuliano-Frigerio Building by G. Terragni

2: Photograph of the Giuliano-Frigerio Building

integrated or added elements. These material layers, and the spaces in between them, create a sense of depth. An observer must look twice to understand this. The layers offer a transition between inside and outside, between the public and private spaces. They can be seen as a criterion for designing and considering façades.

Spatial layering in a façade creates sequences (i.e., arrangements of spaces, one after another or one next to another), which offer residents many options for using an enclosure.

Studies of dwellings throughout history have shown that spatial layering has not always been a design tool for the façades of dwellings. Façades have fluctuated continually (and still do) between the design of a monolithic shell and that of a spatially layered cocoon that offers this sequence of different spaces. These two aspects of design have become a topic of discussion in recent years.

Peter Faller, a German architect who studied the historical development of the dwelling and compared it with time-based concepts, is quite critical of current façade design. With regard to the concepts of the Austrian architects Riegler and Riewe, who claim to develop time-based dwellings, Faller remarks that these houses have no external space, not even a terrace or patio on the basement. Faller believes that people do not want to be confined within their homes to this extent. (Faller 2002, p.258)
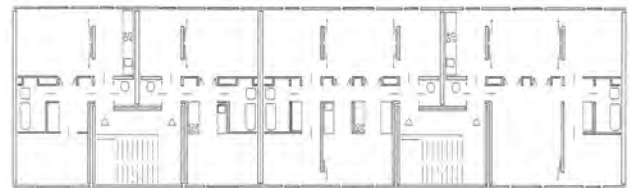
3: Riegler-Riewe floor plan in Strassgang

4: The façade of Strassgang

Do people in the 21st century really want their homes to have such spaces as an in-between? According to Peter Sloterdijk

> People create atmosphere by pressing each other, coming too close to each other. You may never forget that what we call society includes the phenomenon of the unwelcome neighbour…. 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.[3]

Now that society has become so individualistic, do we perhaps need dwellings that are even more effective in isolating their occupants from the outside world?

Answering this question requires asking the occupants themselves. This is a difficult task, and it provides little information about the desires of occupants in the future. One step towards finding an answer, however, is to learn more about the various sequences that extend from street to the interior of the home. Machiel van Dorst has conducted extensive research on the direct living environment and its influence on the behaviour of residents.

2. Connecting inside and outside

As argued by van Dorst, who has devoted a great deal of research to the built environment,

> The occupant's need to interact with his living environment depends on how he feels or what he is doing at the time. A dwelling with interfaces that move from private to public scenarios enables him to regulate this interaction.[4]

Van Dorst summarizes a number of fundamental laws for humans and their environment (Dorst 2005, p.85). The most important are as follows:

o Humans constantly want to be able to intervene in their environment;
o Humans strive to attain their own territory;
o Humans need contact with the natural environment.

In an environmental study, van Dorst identified a number of 'privacy zones' that create transitions from public to private (2005, p.123). These zones are not always clear-cut or immediately recognizable in spatial terms, but they are implicitly present for the occupant.

It is important to note that privacy zones do not act solely as barriers; they must also invite contact with the outside world. Van Dorst noticed that, when basic security is not guaranteed in residential areas, people are more likely to create barriers, thus limiting social interaction. Security, in turn, is closely related to the idea of territory. People feel a need to stake out their own 'patches' (Altman 1975 p.112-120). This aspect was particularly prominent in van Dorst's research on neighbourhood liveability. According to van Dorst, if territorial borders are readable, people will make much more use of the zones in front of their houses or apartments than they would if these boundaries are not readable (Dorst 2005 p.130). Unfortunately, there are no clear definitions for the concept of a border or of its readability.

In a study of 'living between houses', Jan Gehl mentions a number of elements that function as thresholds and others that invite interaction (Gehl 1978 p.50). The boundary between the two is fragile. Large horizontal and vertical distances serve as natural barriers. Barriers can also be perceived in elements that are not transparent and are too high to look over. Short distances can invite interaction, as can benches or similar elements that are placed in a communal or semi-private zone. The next section provides an example in which the walkway access in a housing project in the 1960s proved disastrous, as no space

Privacy zones

Public	Collective outside the building	Collective inside the building	Semi-private	Private outside	Private inside
Street/pavement public square	Driveway Pavement with kerb Communal park/garden	Stair Walkway Communal space	Bench on walkway beside the front door Bench on pavement	Enclosed front garden Balcony Porch	The dwelling

was left for the occupants to annex, and because they were too small and too long. People felt anonymous. Two lessons from this example are that the availability of space is important and that such space should be visible. The awareness that such elements should be used in the right way in order to achieve a social zone between inside and outside is also important.

Taken together, the studies that are cited above suggest that transitions from public to private are important. The exact appearance of sequences is not defined; although there are hundreds of possibilities, clear boundaries are necessary. One important dimension involves offering residents possibilities for intervening, changing or using. As the envelope of the house, the façade thus makes its own contribution to this zone of privacy. Examples of how façades have been integrated with the needs of people and their own kinds of intervention are interesting in this regard, as are examples of the durability of such façades.

As history clearly shows, people live both with and *in* façades. They wish to exercise control over this transition and their contact with the environment just as much as they wish to control the light, air and temperature in their homes.

3. Dwelling concepts and the façade throughout history

The following examples are not intended to provide a comprehensive overview of the façade throughout history. My intent is rather to consider a few striking examples of façades and their contributions to the transition from public to private in relation to the discussion about time. I discuss a number of examples of a more differentiated approach to façades and stronger indoor-outdoor ties, in addition to examples of a less differentiated approach.

One striking example is the *Place Royale*, which was built in Paris in 1607. This façade does *not* have very many spatial sequences. It is one of the first monumental residential complexes to be designed specifically to create an urban space. The façade, which is regarded as a communal amenity, was a pre-defined element to which architects were required to adhere strictly. Perhaps the most fascinating feature about this façade is that it remained in place for nearly four hundred years, even as the functions and usages changed behind the scenes. In this respect, the *Place Royale* can be seen as a perfect model for time-based dwellings.

A study of the ensemble as a whole reveals that the façade has developed very uniformly. All of the windows, which overlook both the yard and the square, are large French windows, neutral and very beautiful. Uniform wrought-iron balustrades on the exterior have the effect of small baskets

5: *Place Royale.*

6: Façade of the *Place Royale*

and are very transparent. An abundance of transparency (e.g., all of the openings are doors) is used to achieve the transformation from public to private. In earlier times, occupants could watch the ceremonies that took place in the square, even as the public observed the occupants from the square. The depth of the window niches provides enough space for one to stand in the opening and to fit interior windows or curtains. Because there is little spatial depth, individual residents are able to intervene in their own parts of the envelope. The façade is sufficiently neutral for apartments, hotels and offices to be easily secured behind it. The limits in this case are quite clear: the arcades on the ground floor, which are indeed part of the building, do not belong to the residents but to the businesses. The residents have an informal yard at the rear, where the entrance to the apartments is located.

In some respects, this example suggests that sequences and spaces within the façade can be very limited, and that the neutrality of the envelope is the key to a time-based dwelling. While this design does offer considerable freedom for various usages behind it, we should not forget that this façade was a setting for the Place Royale. The backyard of the house provided the space in which residents could engage in the activity of dwelling outside without showing themselves to the public. In this respect, it is important to consider other examples to develop a broader impression.

In contrast to the monumental residential buildings of the 17th and 18th centuries, the housing of the 19th century left little scope for aestheticism in spatial sequences from inside to outside. The housing block in the Spangen area of Rotterdam (designed by Brinkman in 1919) is an example of how functionalism does not necessarily lead to extremely

austere housing design. This example illustrates how, as a layer of the façade, a walkway can support the 'flow' of living from outside to inside, and vice versa. This project represents the first time that a gallery was built with the intention of being a street, a space to be used collectively. At the time that it was built, the street was wide enough to be travelled by milk-delivery wagons. Although the small private balconies of the apartments face this side of the communal area as well, they are on other storeys, so that the residents can decide for themselves whether they wish to sit directly in the corridor or to have more privacy while maintaining contact with the communal yard. The gallery is not anonymous, as it provides hanging baskets in which residents can grow plants, thereby annexing a part of the gallery for themselves. The entire complex was (and is) thus closed off from the rest of the quarter. This in turn allows the residents to feel that the gallery is, in effect, their own private street. This corresponds closely to van Dorst's observation that openness to the outside area requires at least a basic level of security. The next example involves a walkway that did not always meet this requirement.

7: 1919 Brinkman, Spangen (Rotterdam)

The walkway access to the ubiquitous high-rise flats that appeared throughout the 1960s proved disastrous, leading to high levels of vandalism and neglect. Such walkways were minimal and allowed no space for benches or plants. People felt anonymous. Entire housing blocks transformed into unpleasant and unsafe areas, and people moved out. An international debate arose around the loss of (traditionally) human styles of living. Spatial differentiation in the façade became a major issue. Walkways should serve as meeting places as well as a means of access, and should have the same

function as pavements. Balconies, protuberances or terraces were expected to create a sense of depth and, as in the other examples, to offer social contact zones. New themes of 'human housing' were forged in the world of architecture, including atmosphere, variation, individualism and small-scale construction.

Examples of human housing can be found all over Europe; some are characterized by participation and others by mixed functions. The *Haarlemmer Houttuinen* are an illustrative example. This development was designed by Herman Hertzberger, who built various housing projects in which spatial sequences were dominant in the façade. In these projects, the support structure served as an independent basis for creating bal-

8: 1980-82 Hertzberger, *Haarlemmer Houttuinen* in Amsterdam

conies or access zones. The balustrades were also independent layers that had enough depth for flowerboxes. These layers are clearly observable in the *Haarlemmer Houttuinen* project, which was built in the 1980s. Similar sequences can be found among the structures of subsequent decades, although the later housing projects tended towards a simpler architectural quality. Simplification caused a decline in spatial differentiation in façades, even as it introduced transparency without many spatial sequences.

In the City Building, which was constructed in Rotterdam in 2003, the wide use of glass cancels out any differentiation in the glass façade. The relationship between inside and outside is purely visual. The residential function is no longer immediately obvious to the observer. Indeed, the building looks more like an office. This example raises the question of whether an indi-

9: Rotterdam. City Building, 2003, arch. Bosch

vidualistic society needs such a neutral, adaptable box to in which to live. Investigators are becoming increasingly aware of the time factor and the (possibly) different desires of fu-

ture occupants. Time-based dwellings have become a recent theme for discussion. The main question with regard to the façade again concerns how architects can contribute to the theme of time-based dwelling when designing façades.

4. Designing time-based dwellings

How can a flexible, adaptable building style be achieved? The following paragraphs discuss a number of examples. Structures that are designed to have both permanent and variable components in order to achieve some level of flexibility are apparently the most common design for time-based dwellings.

The block of flats that were designed by ADP architects in the *Hellmutstrasse* in Zurich has a fixed structure of supporting walls. The services are located within the transparent core of the building; additional spaces within this zone can be used for such elements as glass screens and extra doors.
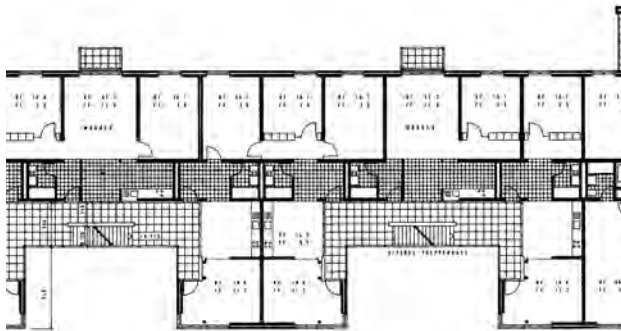
10: The floor plan of *Hellmutstrasse* in Zurich, ADP arch

11: The hybrid zone of the walkways

The rooms are polyvalent. The flats have a walkway-type access. Because both of the two main façades are orientated towards small streets, there is really no front or back garden site. Although the walkway is used by six families, the transition from outside to inside, from public to private, is gradual. This façade has four layers. The first consists of a complex set of metal balustrades for the walkway/balcony. The second layer is formed by the walkway itself, and the third consists of permeable stone walls. The fourth layer is made up of the doors and windows. The main difference between this and the Strassgang project (discussed in Section 2) is the depth of the layering that is made by the walkway, which can be annexed by each household as a private area in the outdoor space. This walkway is regarded as a semi-private zone. Because each dwelling also has its own balcony, residents can choose whether they want contact with the outside world or not. Interestingly, the other façade is quite neutral, involving a type of glass doors and balustrades to create French balconies that also offer a choice between watching and being watched.

The 'New Australia' project that was recently delivered in Amsterdam by DKV architects reacts to the outside in a comparable way, but it achieves a certain degree of flexibility in a different way. To create free floor plans, the architect designed apartments in which the service cores are positioned in the façade. A double floor makes it possible to connect the interior plumbing to the service core. Residents acquire empty rooms. This façade with the service core is relatively close to the walkway that runs in front of it. The inside-outside transition on this side – which is also the private side (there is a common garden) – occurs within a two-metre zone, which can be used as a private balcony in addition to the walkway. The main façades, which are oriented towards the neighbourhood, are not actually the walkway façades; they are the façades of the flexible rooms, which are very neutral. Like the Place Royale in Paris, where the common façade provides freedom for the dwellings behind it, these façades show minimal but useful spatial layering by using doors in place of windows with balusters in front of them throughout the project.

The examples that have been described above show that the transition from the inside to the outside does not necessarily need to occupy much depth. One important feature of the neutral French balconies is that they are situated within a neighbourhood

12: DKV (2005), New Australia, Amsterdam

in which watching is considered interesting and in which talking to people on the street is possible. The fact that this is not always the same situation is shown by the example of the Riegler and Riewe project in Strassgang, Austria (as described above). The dwellings are stacked into slabs with
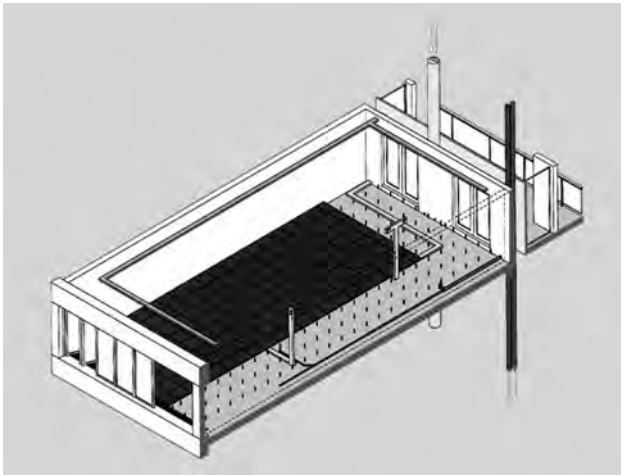
13: Isometrics of one apartment

some small public greenery on both sides and a street on one side. The two main facades are identical. They have three different material layers: the metal rails with the sliding metal panels, which function as sunscreens or privacy baffle; the permeable concrete walls and the windows; and a parapet wall in front of them. This material layering could not be flatter. Access is provided by one staircase for six dwellings – again, the bare minimum. The observer sees a very introverted building with a somewhat flexible element as a metaphor for the adaptability of the rooms. Residents are not able to stand either in or outside of the façade, and there is not much to watch.

The graduation project that was designed by Vincent de Bruijn at the University of Delft (2006) was inspired by New Australia, but it offers even more freedom. The service cores are positioned within the façade, which covers the load-bearing structure as well, and a double ceiling connects the plumbing to this service core. The floor plan is free of load-bearing walls, which normally divide spaces into units. In this way, the architect offers an enormous number of square metres that can become dwellings, a hotel or an office at the end. The service cores and the structure of columns divide the façade into a pattern of equal zones, all of which have the same depth. This depth is used to create different outside spaces. All of the façades offer a pattern of differing spaces in juxtaposition to each other: a small balcony with a glass or concrete protrusion or a French balcony. Most residents have some or all of these features,

which gives them choices. This system is maintained even for spaces in which there are walkways, offering spaces that can be annexed by residents. When converting dwellings into offices, the window area can also be used for advertisement. The façade offers a variety of transitions and tells the story of the block – a multifunctional building.
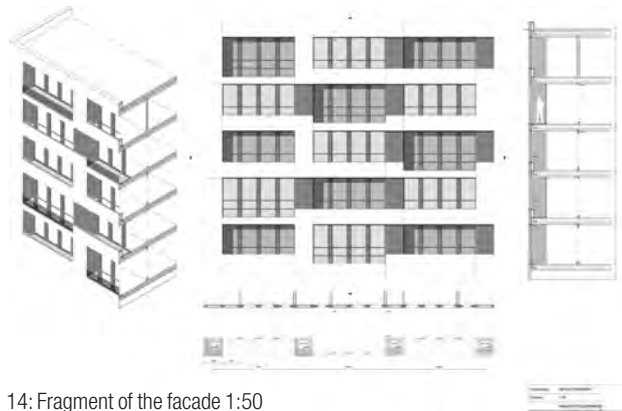
14: Fragment of the facade 1:50

15: Facade 1:200

The final example is an illustration of the Open Building approach, which was developed in the 1960s by John Habraken. This approach deploys a frame-and-infill set-up that offers residents the freedom to shape their own homes. The experimental phase for this approach is complete, and examples in Japan, Finland and the Netherlands show that it works and is still relevant. The Next 21 project in Osaka was built according to the basic support-infill principle. The architect designed façade elements that can be easily moved around to convert internal space into external space, and vice versa. Individual residents decide whether and where they need terraces and annexes, using the external space for these purposes. This creates exciting spatial perspectives; more excitingly, the ultimate form of the dwelling is truly the brainchild of the resident. This project agree-

16: Yositika Utida and Shu-Ko-Sha, 1994, Next 21, Osaka

ably combines the concept of time-based dwelling with the added benefit of a variable intermediate zone. In addition, the permanent decorative elements allow the façade to radiate unity despite its variety.

Taken together, these examples of dwellings that where designed as time-based dwellings demonstrate how transitions from inside to outside (and vice versa) can be accomplished in very different ways. In most of the examples, the façades reflect the freedom that the architect offers in the floor plan. This reaction differs, however, as does the grade of living with and even *in* the façade.

5. Conclusion

In the introduction to this article, I asked how architects could contribute to the theme of time-based dwelling when designing façades.

The historical examples that are reported in this paper and the analysis of several time-based housing projects both confirm the importance of the façade as a transition zone between interior and exterior. This hybrid zone has been treated very differently in different periods. Although more research is necessary, one tentative conclusion is that insufficient attention to the façade (as illustrated in the recent past by the minimal, anonymous walkways of the high-rise flats) can seriously decrease the user-friendliness of dwellings, and it can lead to high levels of vandalism and neglect.

The results of sociological studies suggest that transitions from public to private are important, but require clear boundaries. One important consideration in this regard is the need to offer a variety of possibilities for intervening, changing or using. Buildings that are designed in consideration of this human need can be expected to have a long life dedicated to dwelling, from the street into the house, according to van Dorst's notion of sustainability. In other words, the term 'time-based dwelling' can be applied to a much wider spectrum. A monolithic façade that has no spatial sequences at all cannot offer these possibilities.

A façade should therefore offer residents a variety of usage options (*without* major intervention) that allow the ac-

tivity of dwelling to extend from inside to outside (and vice versa); it should also meet the need that humans have to withdraw from the world. A façade that is designed to offer these options to its users will not fall victim to the time factor. Designing time-based dwellings requires architects to design façades in a different, more conscious way.

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Notes

1   Gonzales X. (2004) Barbie's new clothes. Density IV - Densidad IV p. 275
2   Schultz, A,-C.(1999) 'Der Schichtungsprozess im Werk von Carlo Scarpa', Dissertation TU Stuttgart p.5
3   Sloterdijk P. (2004). Archplus 169/170. Journal of architecture and town planning, p.22
4   Dorst Machiel van (2005) Een duurzaam leefbare woonomgeving , dissertation TU Delft

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Source of the pictures

1   Fonatti F., Giuseppe Terragni p.124
2   Fonatti F., Giuseppe Terragni p.120
3   drawing from office Riegler/ Riewe, Graz, Austria
4   Foto from office Riegler/ Riewe, Graz, Austria, Fotopraph Paul Ott
5   Binney M. (p.40)
6   Binney M. (p.40)
7   Komossa, Risselada a.o. Atlas van het Hollandse bouwblok (p.78)
8   Lüchinger A. (1987) Hertzberger - 1959-89 Bauten und Projekte (p253)
9   a&t densidad p.264
10 ADP Architekten AG
11 ADP Architekten AG
12 DKV Projectdocumentation Nieuw Australië, Rotterdam
13 DKV Projectdocumentation Nieuw Australië, Rotterdam
14 Vincent de Bruijn, Rotterdam
15 Vincent de Bruijn, Rotterdam
16 Yositika Utida en Shu-Ko-Sha, Osaka