

What has been of *terraces*?

(An analysis linking previous historical *terraces*' projects with a current prototype)

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Abstract

Adolf Loos presented at “Salon d’Automne” (Paris 1923) his Hotel Babilonia, an authentic ziggurat made by habitation units. This project was the last of a research line focused on the “terrace” dream: the possibility of generous completely outdoor terraces for each of the apartments. Since then, the issue of terracing in staggered shape buildings has been historically recurrent.

In modern times multiple prototypes of terraces have been developed advancing different argumentations: harnessing the sun light –Innocenzo Sabatini in Rome–, or, on the contrary, preserving the houses from the extreme sun radiation –Le Corbusier in Algeria–, developing the holiday habitat –Bonet Castellana in Mar de la Plata and Sáenz de Oíza in Alcúdia–, etc.

Which are, currently, the arguments to support staggered shape buildings and the adequate housing programs that would make the most of them?

Looking at arguments, a terrace implies: a) an extra outdoor living room, b) the possibility of developing suburban housing activities in urban houses, and c) psychologically, the possibility of future expansion space. Moreover, from our point of view, there is a suitable housing program that would improve residents’ life quality if terraces are included, that is housing for elders.

In this sense elderly people, in a Mediterranean climate, appreciates having a generous sun terrace. This has been contrasted visiting other buildings for elders, who not only make much use of terrace but also keep them full of plants and life.

This article analyses the process of research and design of a building for elder by the authors, promoted by VIMUSA, a public Catalan institute, establishing parallelisms with historical models. The first part of the article identifies the parameters for comparing historical and current staggered buildings. The second part analyzes the prototype designed paying attention to four of those parameters: 1) Site possibilities; 2) Types of apartments; 3) The terrace; 4) Technical solutions. Finally, we summarize our designing experience in six key points developed in the conclusions.

1 Staggered housing: Typological study of some cases

It is known that certain areas in the world, where annual rainfall rates are very low and where the local construction system is based on adobe, houses with terraces have been built since antiquity. In some of these cases the terraces were used as the home access. Taos village, for example, in New Mexico is a primitive case where terraces and houses entrances were linked.

However, it was in the beginning of the twentieth century when terraces were included as a substantial part of the discourse of modern housing, in part due to the new technological capacities to make waterproofing on flat terraces. Based on this historical background and looking at the wide range of ideas that emerged from this new technical improvement –used for example in the famous "toite jardin" designed by Le Corbusier– we have focused our article on studying some cases in which the staggered shape of the building is an excuse to provide a quality outside space for the houses. We are not then interested in those buildings where the staggered shape is used to adapt the volume to a terrain slope.

1.1 Adolf Loos, the terraces and the housing quality

As we have mentioned at the beginning of the article, from our point of view, Adolf Loos was the one who made the first approach linking the shape of the building to the possibility of obtaining private outdoor spaces for social apartments. In 1923, he presented a housing project for families of limited income at Inzersdorferstrasse in Vienna. Loos' approach was to develop elevated "streets" like wide public terraces on the second, fourth and sixth floors. The houses access was made by this outer space, that, moreover, it became an excellent space for leisure and recreation for the inhabitants.

"My proposal, overall, has suggested a number of terraces connected by stairs inside. These terraces could be called elevated streets. Each home has a private covered porch where you can sit and relax in the evening. Children could play on the terrace without the risk that a car or any other vehicle hit them "[1].

After this first prototype, Loos developed more projects, which were focused on giving wide terraces to urban houses. The culmination of his work was presented in 1923 at the Salon d'Automne in Paris: the Babylon Hotel, located at Nice, France. It is a ziggurat-shaped building where every room has its own terrace, as it can be seen in Fig. 1.

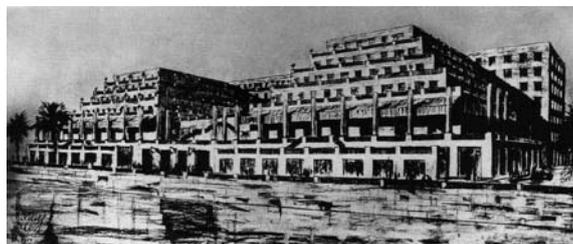
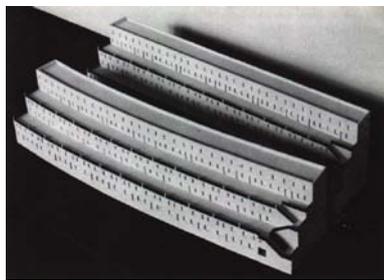


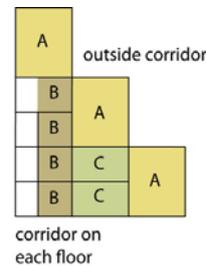
Figure 1: A. Loos, Babylon Hotel, Nice, 1923 [2]

The Babylon Hotel will not be included in our analysis because it is not a housing model. However, we will analyze two predecessor projects, also developed in 1923, that solve the staggered shape through two completely different ways. As we have mentioned above, the houses located in Vienna Inzersdorferstrasse, are inserted within a long building, in which the terraces represent an outdoor recreational space, and, at the same time, the system of access that the architect named "elevated

streets”. The apartments are situated on the streets, like townhouses. Below these houses, other more conventional houses fill the gaps created by the staggered section (see diagram attached in Fig. 2).



Scale model of the building



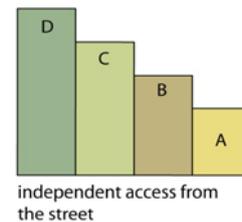
Housing typologies in section

Figures 2: A. Loos, housing in Inzersdorferstrasse, Wien, 1923 [2]

By contrast, the houses with roof gardens at the Riviera, France, are quite different. In this case the building is configured as a series of houses of different heights and with independent access from the street. As can be seen in Fig. 3, one house invades the roof of the contiguous one. We could say that this scheme does not follow the spirit of elevating the different floors something that only can happen at the level of the ground floor. From our point of view, the interest of the project is the organization of the volume: three narrow bars located like a “comb”, that is to say, as parallel structures. The open space left between the bars allows good ventilation of dwellings.



Drawing of the buildings



Housing typologies in section

Figures 3: A.Loos, 20 apartments, Nice, 1923 [2]

1.2 Taking advantage of the staggered shape. Four sections to study

Following the prototype developed by Adolf Loos, other architects have also exploited a staggered shape to provide quality in elevated houses. In this section we are going to analyze five other modern examples of staggered buildings, four of which are housing projects while the last one is a residence of students and therefore is presented as a complement.

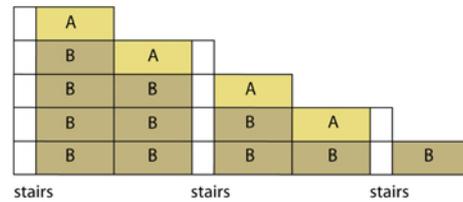
1.2.1 Innocenzo Sabbatini, ICP housing, Rome, 1926

A first case of study close to the ones projected by Loos, is the building in Lega Lombarda street in Rome designed by Innocenzo Sabbatini in 1926. In this case the Italian architect built a curious prototype of social housing, part of a series of prototypes called “alberghi suburbani”, designed to provide quality houses for the lowest socioeconomic classes. Sabbatini uses an ingenious triangular plan that encloses an interior courtyard which performs various functions. The building access is

solved out by staircases leaning out to the patio and the houses can be ventilated because they are open to it.



Picture of ICP housing



Housing typologies in section

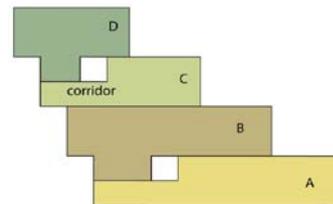
Figures 4: I. Sabbatini, ICP housing, Rome, 1926 [3, 4]

1.2.2 Le Corbusier, Lotissement de l'Oued-Ouchaia, Alger, 1933

When talking about staggered shapes it cannot be ignored the prototype developed by Le Corbusier in Algiers in 1933. This example is the first to link the staggered shape building with the need to have sea views. This building is also the starting point of a research process to take advantage of an interior corridor, a research that Le Corbusier culminated with the construction of the famous *Unités d'Habitation*. The disadvantages of the Algiers project is the difficulty to ensure a proper lighting of the rooms due to its excessive depth, as well as, the great landscape impact of a too large block length.



Picture of Lotissement



Scheme of housing typologies in section

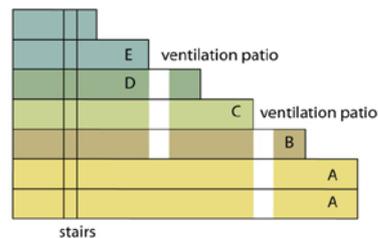
Figures 5: Le Corbusier, Lotissement de l'Oued-Ouchaia, Alger, 1933 [5]

1.2.3 A. Bonet Castellana, Terraza Palace Building, Mar de la Plata, 1957

A very similar case to that of Le Corbusier, thought as a holiday's dwellings is what the architect Bonet Castellana developed in Mar de la Plata, Argentina, in 1957. From our point of view, it is a very paradigmatic example because it magnifies the disadvantages of the prototype of the Swiss master, also incorporating the problems of the ventilation of a vast ground floor. The enormous depth of the different houses located in the lower floors forces to place some patios to facilitate ventilation and lighting of the rooms. The houses accesses are reached by three staircases.



Picture of the Terraza Palace Building

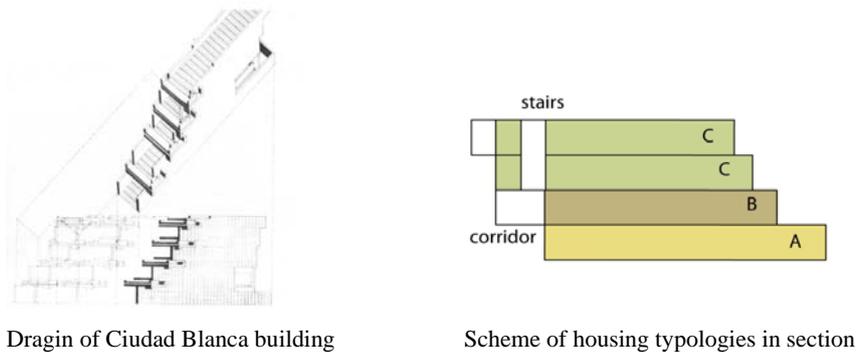


Scheme of housing typologies in section

Figures 6: A. Bonet Castellana, Terraza Palace Building, Mar de la Plata, 1957 [6]

1.2.4 F. J. Sáenz de Oíza, Ciudad Blanca, Alcúdia, 1961

Following the trail of holidays' housing placed facing the sea, it is necessary to refer to the project "Ciudad Blanca" of Francisco Javier Sáenz de Oíza in Alcúdia. Among all of the projected buildings of this city, only the staggered ones were finally built. As seen in figures 6, the ingenious prototype section provides access to all of the houses by a single corridor at the rear of the first floor and a series of spiral staircases "pricking" the upper floors. However, this example still has serious problems of lighting and ventilation resulting from a excessive depth.



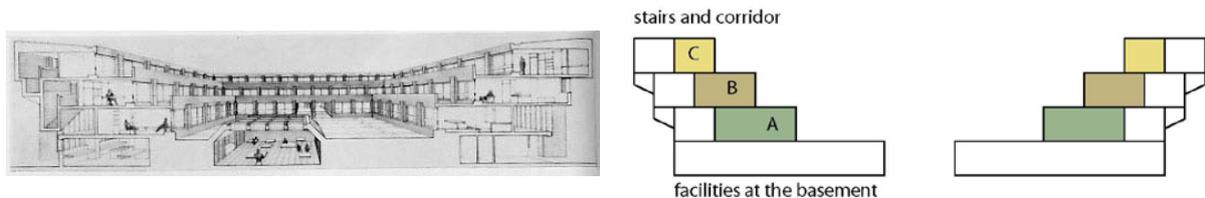
Dragin of Ciudad Blanca building

Scheme of housing typologies in section

Figures 7: F. J. Sáenz de Oíza, Ciudad Blanca, Alcúdia, 1961 [7]

1.2.5 L. Martin, Students Residence, Cambridge, 1962

As a final case of study, we can present a project that is not exactly housing, but a student residence. It draws our attention to how are the blocks arranged around a large courtyard. In this case the staggering of the building, beyond allowing a private outdoor space for each room of the residence, is used to reduce the scale of the building when contacting with the ground, configuring a more pleasant communal patio inside the complex.



Figures 8: L. Martin, Students Residence, Cambridge, 1962 [8]

2 Housing for the elderly in Sabadell

The prototype designed by us, currently under construction, includes the concerns that emerge from the study of the historical projects such the ones analyzed previously, trying to adapt the building to current needs and demands. In addition, of course, to the particular and unique adaptation when placing a building in its location (Fig. 9).



Figure 9: Placement of the building

In developing the project it has been of special significance to consider the peoples' profile that would live in the building; elders. The elderly share, often, a unique way of living, based on a particular type of schedules, habits, "hobbies" interrelationship needs, care requirements, etc. It therefore implies a unique way of experiencing the fact of living.

For example, the model that the municipal developers raised already involved certain and comprehensive way to understand and address the specificities of "living" of the elderly: an assistance building where 114 rental housing had to share a remarkable amount of common spaces, as well as an public facility on the ground floor for open to all of them but also to the rest of the neighbourhood. In addition, in the adjoining site, the City Council has projected other facilities for the elderly.

Therefore, from the beginning it was already accepted that the "limits" of the house for an elderly person does not end with its walls, but they extent to communal and diverse areas, from the corridor giving entrance to the house to a neighbouring building.

Regarding specifically the communal areas of the building, the first draft draws of the project already took into account the inclusion of indoor as well as outdoor spaces. The first are concentrated close to the communication cores and are relationship and resting areas to sit next to generous openness to the exterior life. The latter are terraces facing the sun and the views, trying to take advantage of the local weather conditions.

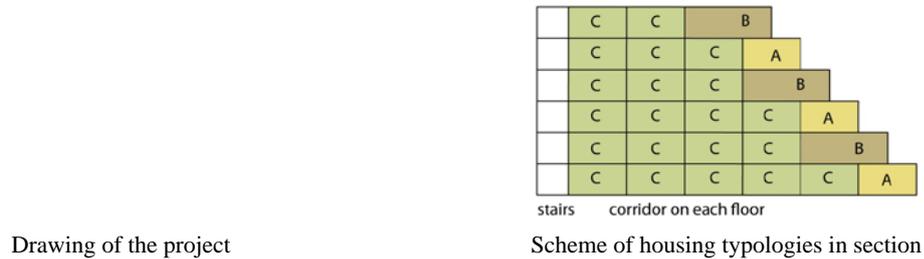
The distribution of these communal areas also determines the plant configuration in each block. Thus, the houses are lined up along either side of a corridor of increasing width at the ends of which there are always those relaxing and well lighted areas and the outdoor terraces. This also ensures a uniform and equitable distribution of the shared spaces throughout the building.

Therefore, we tried to give those areas the best architectural conditions being aware of the importance that these areas would have for the "life" of the building.

2.1 Typologies

Regarding the specific types, there are three different ones in the building. In the first, the two main parts -the bedroom and the living room- lean out of a balcony opened to the side walls of the blocks, seeking the sun and views (C in Fig. 10). The other two types sort out the south end using a "trick" to switch their highs, taking advantage of the fact that one of them has only one bedroom while the other one has two. This draws the staggered shape that characterizes the building (see Fig. 11).

The aim of the balcony of the C type mentioned is reinforced even more in the other two types, leaving behind a balcony for a private outdoor terrace. This terrace has to be understood within a series of terraces in cascade, located at the last south end of the block, seeking to give to as many houses as possible, a unique living conditions.



Figures 10: Scheme and section of elders' building, Sabadell



Figures 11: A and B types plans

2.2 The terraces

Indeed, these terraces -like outdoor living rooms- have been carefully studied, so we could highlight some of their features: the dining-rooms lean out as if they were an internal extension of the terraces.

The terraces themselves are limited by side walls and therefore protected from both the potential excess of wind and the horizontal sun, as well as from indiscreet glances from contiguous blocks. The rail enclosing the south side of the terrace that would overlook to the below neighbor is retracted in relation of the slab in order to maintain some privacy between neighbors. This also allows a part of the below terrace to have a roof, and therefore, work as a porch, what also has the benefit of protecting the interior from excessive solar radiation when necessary, specially during the summer.

In addition, the way this spaces can be appropriated, transformed and brought to life by the elderly (due to amount of time they can enjoy and their patience and passion for simple activities such as, for example, taking care of plants in a balcony), escape the hands of usually controlling hands of the architects and rules, and this has also make us believe in the merits of the proposal.

Therefore, from a typological dimension of housing, the intention has been to put into order some indoor spaces and lean them out to the terraces to take the most of both the Mediterranean weather and the added value that future inhabitants of those houses could bring.

2.3 Some technical difficulties

As a last section of the paper, we would like to talk about some technical aspects related to the solution of this staggered shape building regarding the structure and plumbing (see Fig. 12).

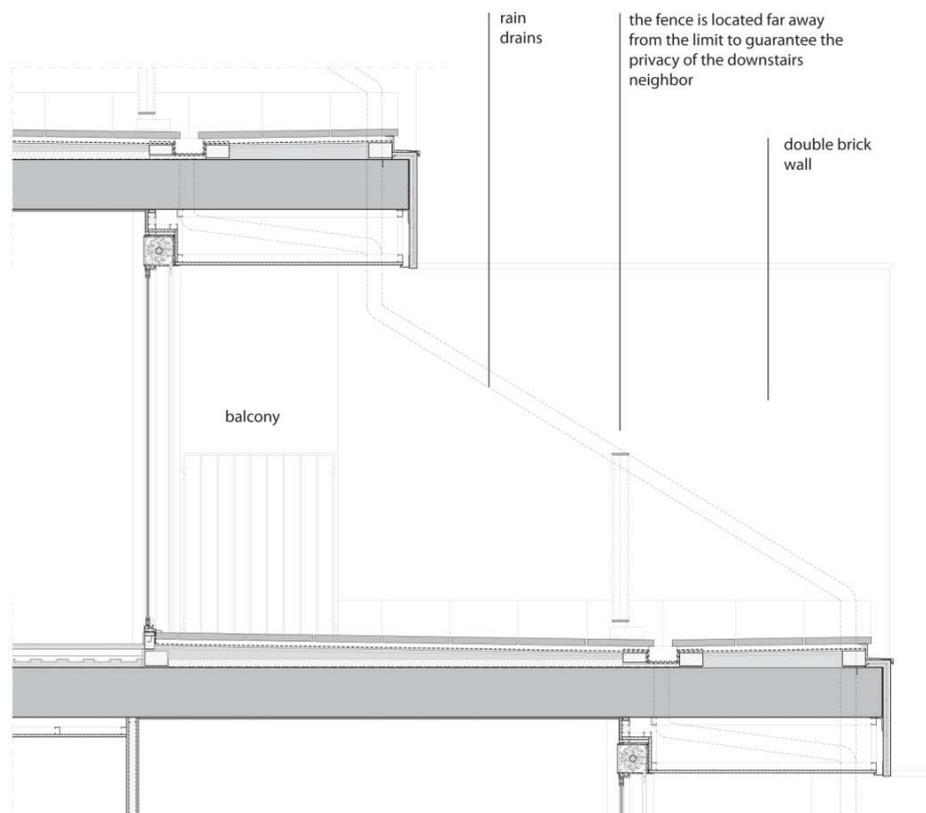


Figure 12: A terrace section

First of all, the question is how a staggered shape can be built from a structural point of view, specially taking into account that the structure is based on concrete pillars and slabs. The structure module of the building coincides with the width of the apartments. The south terraces only occupy half of that module, this is to say that in each floor the building is retracted only half of it. Then, we can find complete structural modules in the case of on-bedroom apartments on 2nd, 4th and 6th floors. In the other floors, the two-bedroom apartments need the support of metallic pillars underpinned on a flat beam embedded in the lower slab, thus enabling a clean and consistent resolution of the structure.

Finally, at the level of plumbing and ventilation systems, both for the collection of rainwater and the ventilation of bathrooms and kitchens, it is sorted out at the staggered shape by building an air space of 15 cm between the two sheets of brick and mortar that form the side walls that limit the terraces at the south side. This cavity has continuity with the chamber behind the back wall of the kitchen in the interior of the apartment.

The difficulty we have tried to solve was how to evacuate the air from kitchens and bathrooms of the apartments situated downstairs without disturb the neighbors upstairs. The cavity that we have described before permitted evacuate those fluids in diagonal, following the slope of the staggered shape. We can see it in fig. 12.

Therefore, in this sense, we rely particularly on the criteria of distribution order, or grouping of facilities or modulation which, after all, are what will allow fitting harmoniously the structure, the facilities, the construction, the distribution and so on. And this is, in a word; Architecture.

3 Conclusions

3.1

Terraces have been linked to residential vocabulary since ancient times. Houses have often needed more intense contact with the outside; hence arise the balconies, galleries, the bay-windows... These are areas that enlarge the uses of the house and extend the feeling of spaciousness.

3.2

Due to their dimension and the lack of ceiling, terraces have become a substantial complement for any apartment, like outdoors living rooms. The usefulness of this space depends on the residents' ability for their maintenance and use. Having the elderly a great amount of time to spend at home, they are grateful to have a terrace. Hence, the task of building 114 homes for the elderly in Sabadell was suitable to experiment with a staggered shape.

3.3

The staggered shape allows making the most of terraces, with large outdoor surfaces offering views to a great number of residents. However, it should be noted that some criteria is needed for the terraces to be effective (orientation, limits treatment towards a greater protection from the wind, etc.).

3.4

From the analysis of similar previous staggered building in flat terrains it can be concluded that the main building difficulties come from the distribution of apartment types, the section of the structure configuration, and the plumbing and ventilation systems (being essential that the residual air from the downstairs does not disturb the people upstairs).

3.5

We have shown that a simple way to solve the problem of plumbing and ventilation is placing the tubs on facades and within air cavities in the walls, forcing the fluids and the smoke to move diagonally by following the slope of the staggering.

3.6

It is important to stress the ephemeral condition prevalent in the analyzed housing examples. Holiday apartments, hotels, student residences and, in our case, housing for elders, take advantage of the terraces by expanding a very small indoor space. However, we claim for a more general use of this architectural resource. We believe that modern buildings have far too rigid geometries and some formal experimentation is to be retaken in order to provide greater quality houses. Then, we started the article wondering "What has been of terraces?"

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