

DOI: <https://doi.org/10.38027/iccaua2023en0279>

## Cooperative co-housing to promote healthy and accompanied ageing in place (Co-aging). Case studies of architectural viability in obsolete neighborhoods in Malaga

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### Abstract

Spain is facing a progressive aging of its population and the inversion of its population pyramid, also inverting the income/expense balance of the Estate, and reducing its agency to control the housing market by construction. Our transdisciplinary project proposes cooperative co-housing ways of living inside the existing housing stock of obsolete and aged neighbourhoods in Málaga (south Spain). Re-densifying by sharing the use of obsolete too-big family houses, while renting the others, will provide a solution to the problems of both unwanted loneliness, active and financially independent aging, while increasing and re-activating the housing rental stock. By combining the results of focal meetings realized with inhabitants of the case study neighbourhoods, and the analysis of the specific housing units via several teaching projects at different pre- and post-graduate levels and authors' design studies, we will test the architectural viability of our project by providing specific on-site solutions to the study cases.

**Keywords:** Architectural Design; Rental Stock; Co-living; Healthy aging; Obsolete neighbourhoods.

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### 1. Introduction

The progressive aging of the population is a social problem that requires the search for alternatives, among others, due to the desire of these people to grow old in their environment and community that allow them to relieve the forced loneliness of the elderly. On the other hand, we have an urban problem of obsolescence of social housing slums (Rosa-Jiménez, 2015), which in Spain began to be built in the 40s and 50s and which persist today. The Co-Aging research project (Rosa-Jiménez, 2020) <sup>1</sup> aims to address the regeneration of social housing neighbourhoods and active aging in the place of the elderly, as part of a joint equation. To this end, it explores the possibility of developing a viable neighbourhood cooperative of seniors for active aging in place (Wiesel, 2012) to reduce forced loneliness and increase the supply of long-term rental housing (Rosa-Jiménez, 2020; Amen, 2021; Aziz Amen, 2022; Amen et al., 2023; Amen & Nia, 2020; Rosa-Jiménez & Nebot, 2019 ).

This paper describes possible potential transformations of the housing stock for the implementation of this proposal in a specific context of social housing, for its adaptation to a neighbourhood cooperative for the elderly that allows active aging in their own neighbourhood. For this purpose, the Bailén-Miraflores District located in Malaga is chosen because of the building conditions and its inhabitants, since we find many elderly people in a situation of loneliness.

### 2. Methodology

To explore the possibility of transforming some residential units into cooperative housing for the elderly we use an experimental process based on different activities and combine the results obtained:

1. Focal meetings realized with inhabitants of the case study neighborhoods.
2. The analysis of the specific housing units via several teaching projects at different pre- and post-graduate levels.
3. Authors' design studies.
4. Test the architectural viability of the project by providing specific on-site solutions to the study cases.

### 3. Typological analysis of oldest buildings

If we analyse the building age of the area, he can find 6 types of buildings integrated in the urban fabric that could serve for our purpose (figure 1). Once we select the, we study the possibilities for the transformation. Among the oldest buildings, we analyze then the different residential developments.

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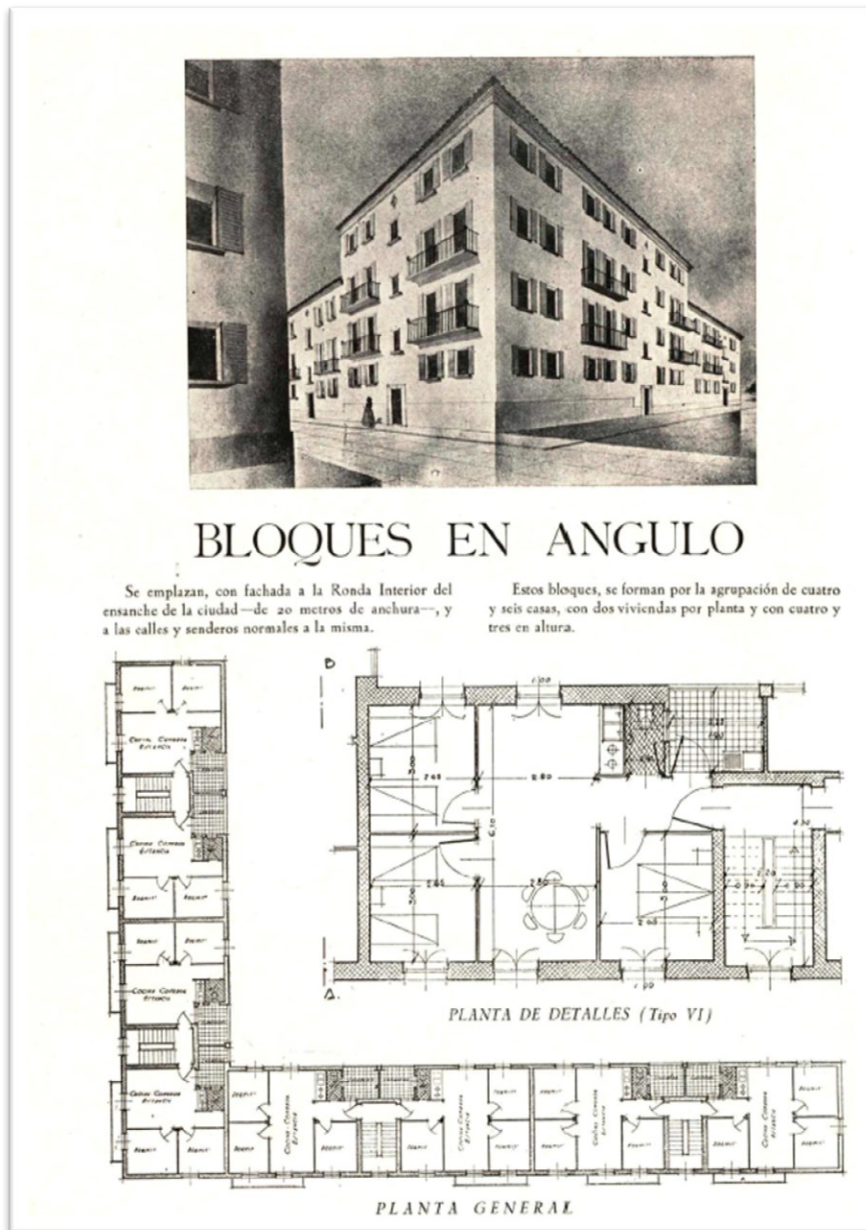
<sup>1</sup> Neighborhood cooperatives of elderly for active aging in place. Implications for improving forced loneliness in large cities (co-aging)<sup>1</sup> Research project directed by Carlos Rosa Jiménez, with a research team from the University of Malaga and the University of Seville. Funded by the Junta de Andalucía (PAIDI).



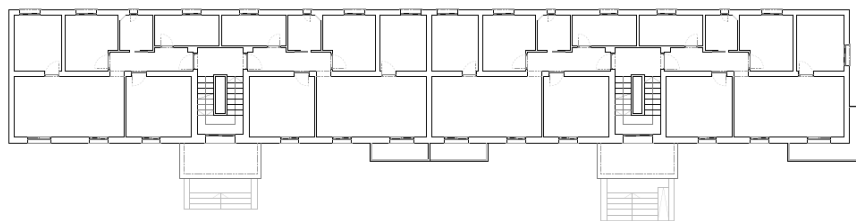
**Figure 1.** Age of buildings (Developed by the Authors with QGIS and data from Cadastre).

In this urban fabric there are two interventions from the 40s-50s that belong to an autarchic period of the Spanish dictatorship. These public housing developments, built with very precarious qualities, are conceived as linear blocks that surround groups of single-family homes with a very small size. Although they are designed with flexibility, are so small that it would be difficult to transform them into co-aging homes as they would require the union of several real states, thus making the process of effective management and implementation of the proposed model difficult. We can find a later example (from the 50s) made to house the families of military personnel. These buildings have been developed with higher quality standards, both in the interior layouts, and in the dimensions of the bathrooms. They could also be used for the development of the project, but they are built with load-bearing walls, which makes their transformation difficult by increasing the final cost of the work.

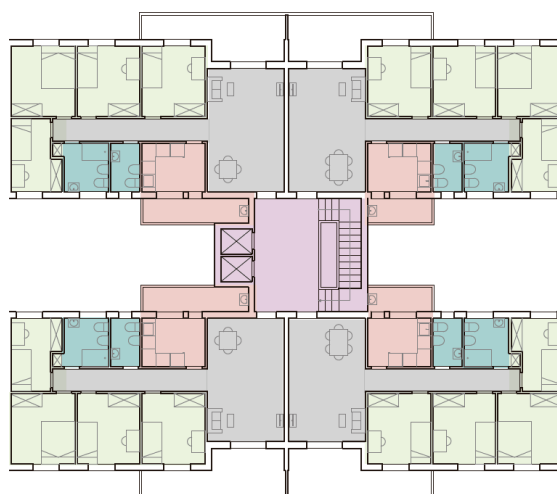
We then analyze privately promoted homes, and therefore highly affected by real estate speculation, which was also supported by the dictatorship of the time. Some of them (figure 4), are developed from a linear block typology, with a bay and a half (the first bay towards the façade and the second facing inwards) constitutes a fairly rational and flexible way of presenting the collective housing that could serve for the development of the proposed model of co-aging. The problem is that this type of building, which would normally be 4 to 5 stories high, has been built with parameters of maximum speculation, reaching 11 or 12 stories height. This causes the patios, especially the lower ones, to be very dark, drastically reducing their habitability.



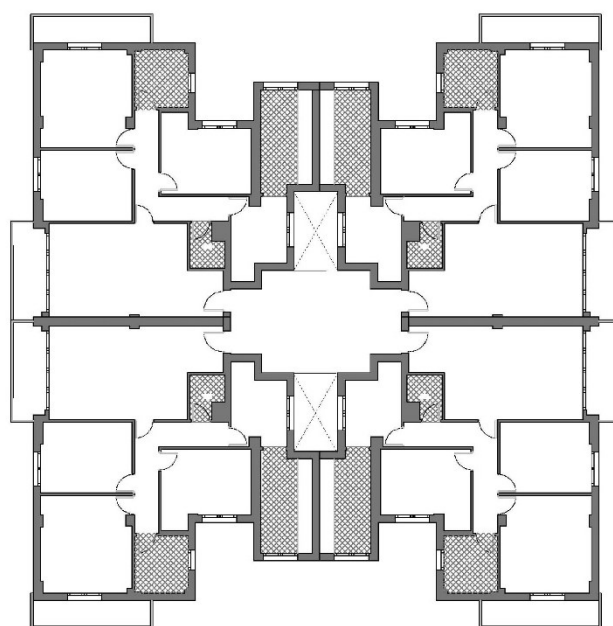
**Figure 2.** “Angled block”. Source: Viviendas protegidas. Una obra de la falange. (1941)



**Figure 3.** Blocks made to host families of military personnel. Source: Viviendas protegidas. Una obra de la falange. (1941)



**Figure 4.** Block y H shape. Developed by Raúl Pave, Holtei Soldea, María Galván Florido, Arshak Hovhannisyan, Javier Fernández Campos



**Figure 5.** H shape block 2

We can find also H-shaped blocks, with 4 flats for each floor (figure 5), that are organized around a central core. In this case with small patios. They are large enough, although they have a somewhat tortuous distribution. In any case, it could be the object of viable transformation.

In the figure 6 we can see other type of building has been formed through the juxtaposition of a series of H-shaped housing blocks, losing its meaning and beginning to become typological aberrations. The patios, for example, are so small for the height of the building that it makes it difficult to live in.

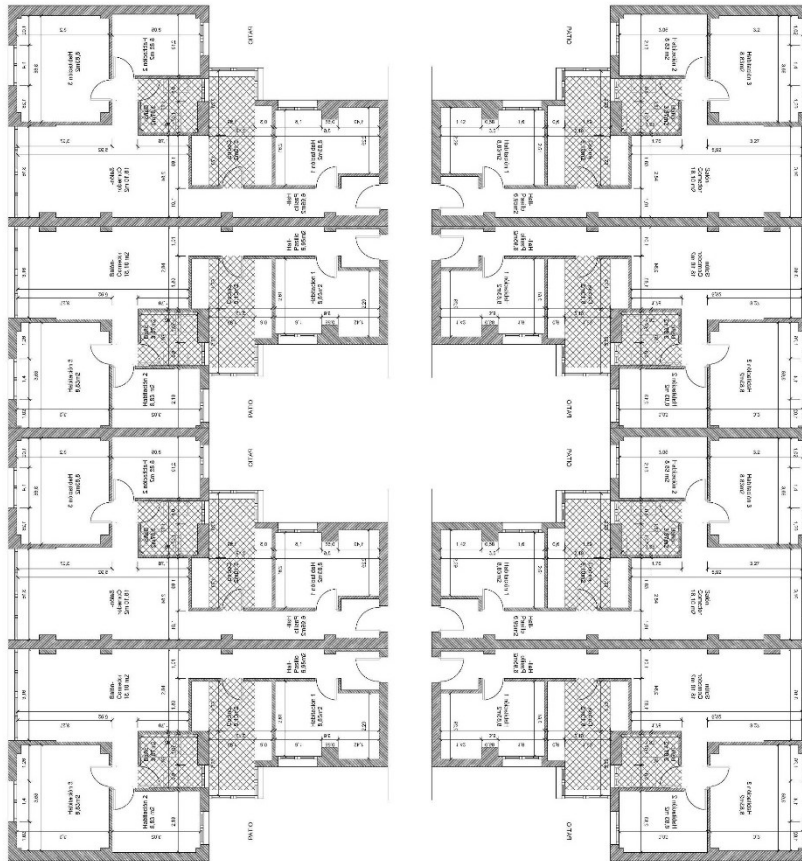


Figure 6. H block-chain.

From the 80s and 90s, residential buildings appear with a more refined typology, somewhat more generous in the space available for each family and with an internal organization that facilitates the achievement of the project objectives (figure 7).

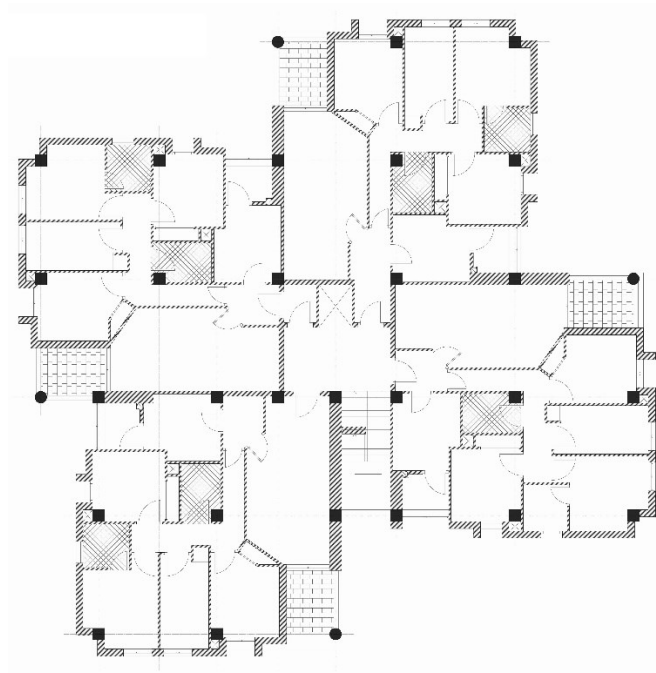
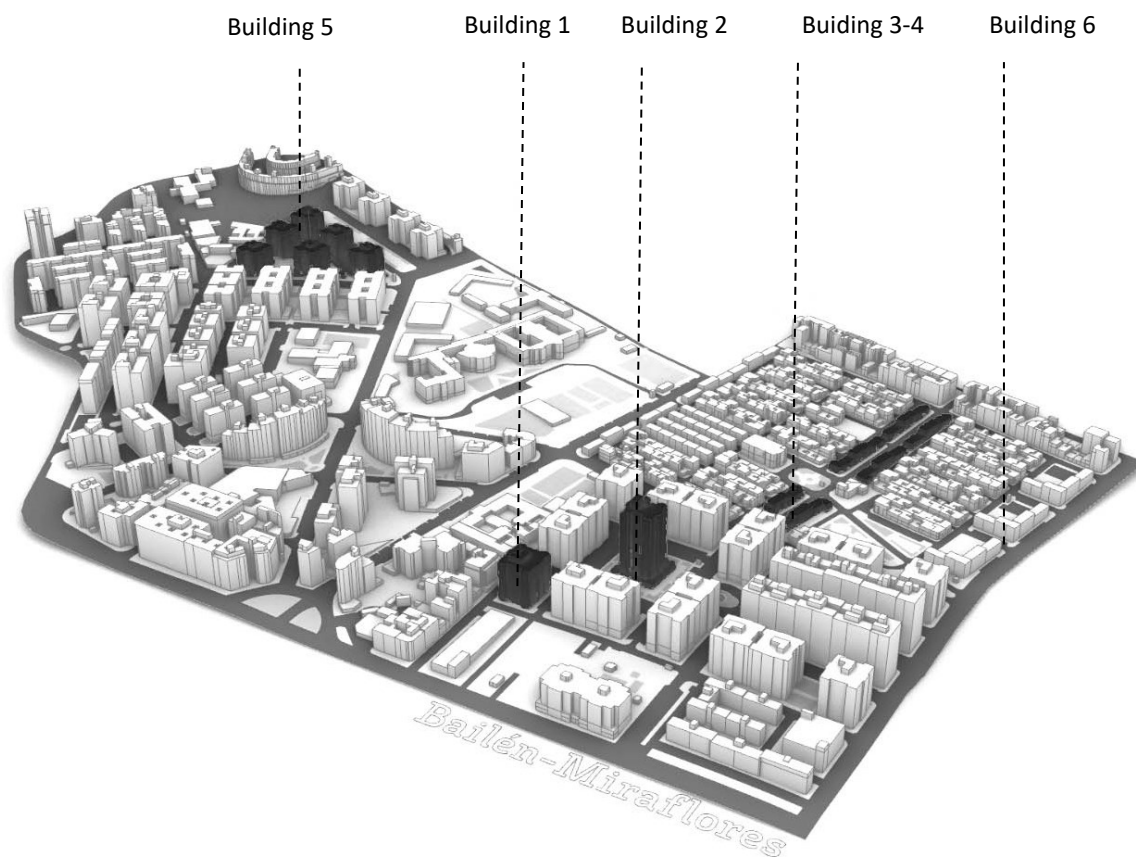


Figure 7. Building nº 5 (Developed by the Authors)



**Figure 8.** Volumetric perspective of the study area and the chosen buildings Bailén-Miraflores neighborhood, Malaga. (Developed by the Authors).

### 3. Strategies for the implementation of the Co-Aging Model

The concept of neighbourhood cooperative can be applied in different ways depending on the characteristics of the neighbourhood in which it is inserted, as well as the desires, needs and possibilities of the elderly (Beisi, 1995). Taking this into account and assuming that one of the major difficulties in this model is the management of coexistence, we consider a series of housing possibilities that can be carried out (Altés, 2011) (Morales, Alonso, Moreno, 2012). In this sense, the domestic space available for people's intimacy, as well as the space to be shared, is different in each alternative presented. To put this into practice, it would be convenient to carry out an analysis of the existing spatial possibilities in the neighbourhood to decide which of them, and their possible variants, can be validated by the elderly people involved in the neighbourhood cooperative.

*"...coexistence is perceived more as a conflict than as a value. They also consider that at a certain age, and with the accentuated character of the people and their habits, coexistence would become very difficult. The need expressed at this time is for independence and freedom."*

The proposals described are based on the testimonies gathered from field work carried out with the elderly population in the cities of Seville (Cerro del Aguila neighbourhood) and Malaga (Bailen-Miraflores district). This would have to be applied to each specific reality taking into account the adaptability of the available spaces.

We will now describe some strategies on how the housing model of the *Coaging* project can be conceived in Malaga city, depending on the urban fabric and the housing typology in the neighbourhood.

#### **STRATEGY A**

##### **Yard concept**

This model could be developed if we have a typology in the neighborhood that allows us to have enough privacy for each elderly person to have an apartment around a common courtyard. The difficulty of this model is to find the right typology for it.

*"It would be nice to have the yard model, which is something community-based but falls short of being an institution as a residence, and it's community housing for seniors. It's something more centralized. With small apartments and that would work well, with people of similar profile." (Program "Siempre acompañados." Malaga).*

#### **STRATEGY B**

##### **Neighborhood Cooperative Residence on ground floors.**

The concept of Neighborhood cooperative residence on ground floors, conceived that Empty ground floors in the neighborhood are enabled to be part of a dispersed cooperative for the elderly, in locations where they are close to each other. The common spaces and services could also be located on the ground floors of residential buildings, and public space could be considered as a meeting place.

*"... believe that there should be a nursing home in their neighborhood so that people who have no other alternative for care do not have to leave their environment."*

*"... the need to establish a nursing home in the neighborhood so that neighbors do not have to leave their environment and their usual social relations."*

*"The recurring idea is not to lose their space of intimacy, not to have to live all day under the same roof with other people, but to have shared spaces and neighborhood recreation areas. In this sense, many people say they are willing to sell their property to go to such a place in their own neighborhood."*

#### **STRATEGY C**

##### **Cooperative apartments in existing empty housing throughout the neighborhood.**

Housing in the neighbourhood are adapted to have apartments with comforts and services needed by the elderly people (toilet, bedroom and office).

If the dwelling is larger than this apartment-residence, the remaining space can be rented to young people who want to co-care for the elderly or for caregivers. In any case, there may be a collective care and monitoring service for the various apartments scattered throughout the neighbourhood.

*"In order to consider any cohabitation formula, the model would have an indispensable minimum: its own space with bedroom and bathroom, TV and, if possible, also a small office for greater independence. However, in all groups the tendency is to imagine a set of small apartments with common areas and recreational spaces."*

*"The recurring idea is not to lose their space of intimacy, not to have to live all day under the same roof with other people, but to have shared spaces and neighbourhood recreation areas. In this sense, many people say they are willing to sell their property to go to such a place in their own neighbourhood."*

#### **STRATEGY D:**

##### **1. Cooperative apartments in empty housing throughout a block.**

In a building, housing could be adapted to have single apartments with the comforts and services that the elderly need (toilet, bedroom and office).

##### **2. Cooperative apartments in dispersed housing per floor.**

Houses in the same floor are adapted to have apartments equipped with the comforts and services that the elderly need.

**STRATEGY E:**

Model of the *CoAging* project but in 'cooperative apartments' mode. In case of having sufficiently large dwellings, apartments with their own privacy would be enabled, since it is considered essential that each apartment has at least one bathroom and enough privacy to have its own space. The shared space is the common areas of this dwelling, if any. Perhaps a space could be explicitly enabled in the civic centre to promote certain community activities when the neighbourhood or district has several homes with cooperative apartments.

*"People need to preserve their privacy and one bedroom is not enough space."*

*"It is not possible to have large common areas if you want a bathroom in each bedroom."*

*"It is difficult to leave the usual dwelling and also feeling as one's own that of another partner".*

**1. Cooperative apartments in existing adapted housing.**

In large houses, apartments are adapted to have their own privacy. It is considered essential that each apartment has at least one bathroom and enough privacy to have its own space.

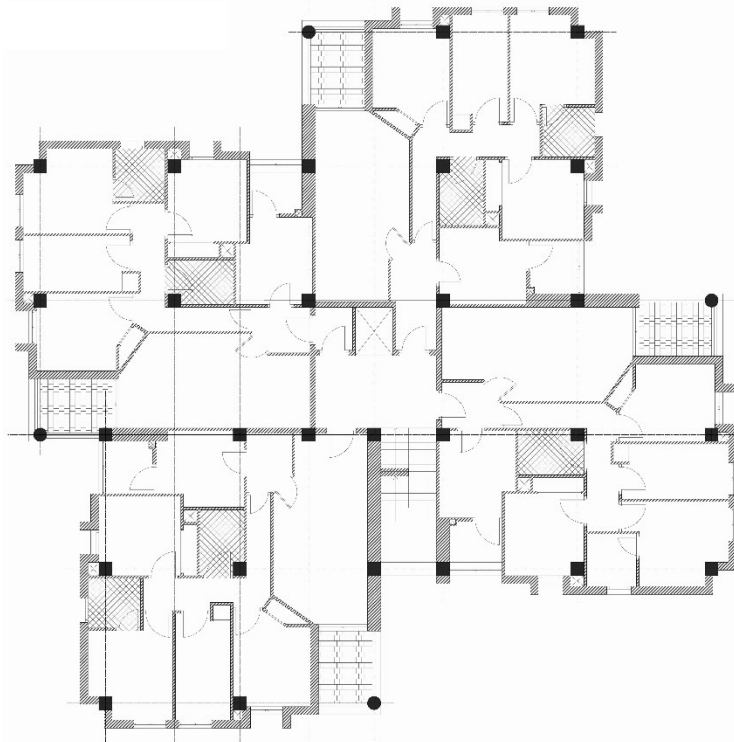
**2. Cooperative rooms in existing housing.**

Housing is small and only has shared bathrooms and shared common spaces.

**4. Proposed transformation for co-aging in the first chosen building**

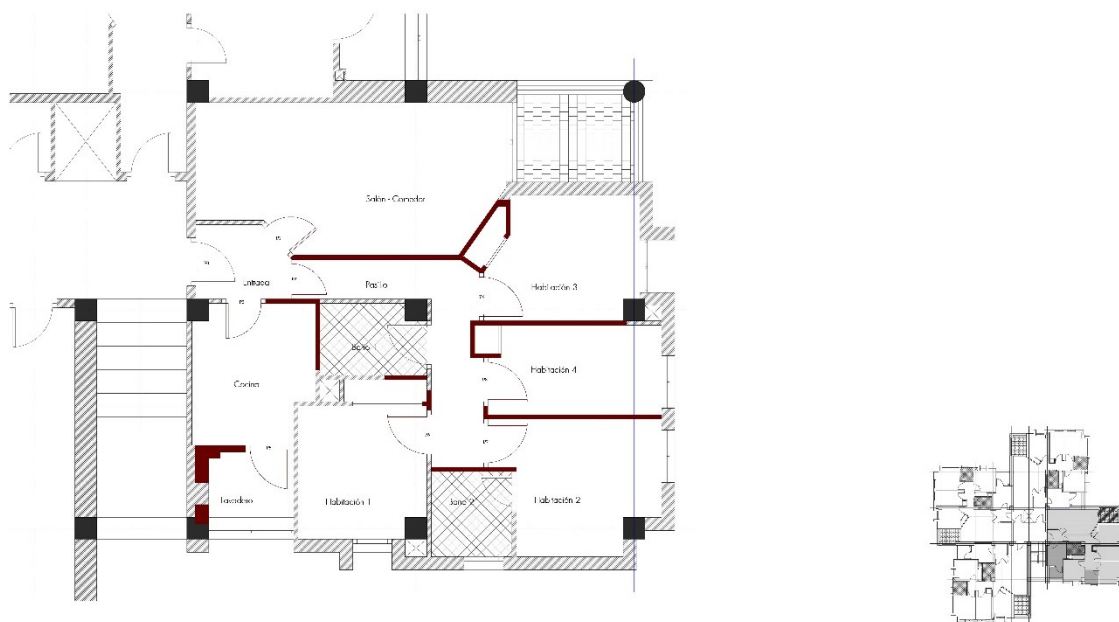
The building that we call here nº5 is located between Brújula street, José Iturbi street and Maestro Pablo Luna street, in Malaga. This type of multi-family housing is repeated, forming an urbanization of 10 housing blocks with a total of 7 stories high plus commercial premises and annex spaces located on the ground floor that are 1 or 2 stories high. Its orientation changes depending on the location of its access to the vertical communications core.

The internal organization of each tower responds to a configuration around a central nucleus where the elevator and the stairs are located. Each floor contains 4 flats, all the same, with two 5-meter bays and a small terrace of 5.34 m<sup>2</sup>. The total dimension is 26.86 m in both directions. Each flat has 4 bedrooms —three of them with approximately 10 m<sup>2</sup> and one of reduced dimensions, with 8.3 m<sup>2</sup>—, kitchen of 8.55 m<sup>2</sup>, a laundry room of 3.37 m<sup>2</sup>, two bathrooms and a living room with 22,50 m<sup>2</sup>. The area dedicated to the entrance and the distributor amounts to 11.47 m<sup>2</sup>.



**Figure 9.** Building 5. Floor plan (current state)





**Figure 10.** Model 1 (Host-flat or Guest-flat). Demolitions plan.

One of the main objectives of the proposal is the reduction of demolition waste and the control of the economic cost of this work. Figure 10 shows a diagram of the elements proposed for demolition. As can be seen, an effort is made to preserve the location of the wetlands and the first section of the corridor is eliminated. Subsequently, the disassembled doors, which normally tend to become construction waste, are used to make new sliding doors. This system increases the flexibility of the home, since it allows different relationships to be established between the kitchen and the living room, which can be modified according to the customs and preferences of the elderly. One of these doors continues to serve as access to the kitchen if they need the independence of this room and odour control.

The furniture constitutes another of the elements that must be modified to be adapted to the elderly, some of whom may have reduced mobility. This task of retrofitting the home can be addressed in a synchronized manner with the measures to improve the thermal insulation of the envelope of each home on the inside. This strategy is important, since the increases in the cost of energy in Spain, with large fluctuations throughout the year, can affect certain elderly people with low pensions.

Figure 11 shows the floor plan of the renovated house, here called the “host-flat” or “guest-flat”. This apartment must allow its owner to stay in it while receiving two elderly people who leave their apartments for rent. One of the main requirements obtained from the interviews and meetings with the social agents and people from the neighbourhood is that each room has its own bathroom and enough space for a certain independence, for when they prefer not to socialize. In this way, it is guaranteed that the relationship between the elderly is always voluntary.

The organization of the home by reducing circulation spaces (from 11.49 m<sup>2</sup> to 3.90 m<sup>2</sup>) and the modification of the alignment of some interior partitions allows the effective useful surface area of each living space to be increased (see graph 1). The elimination of the smallest bedroom allows the incorporation of the third bathroom while increasing the surface area available for the remaining bedrooms, as well as their storage capacity for clothes and other auxiliary items.

1<sup>st</sup> floor plan: "Guest flat"

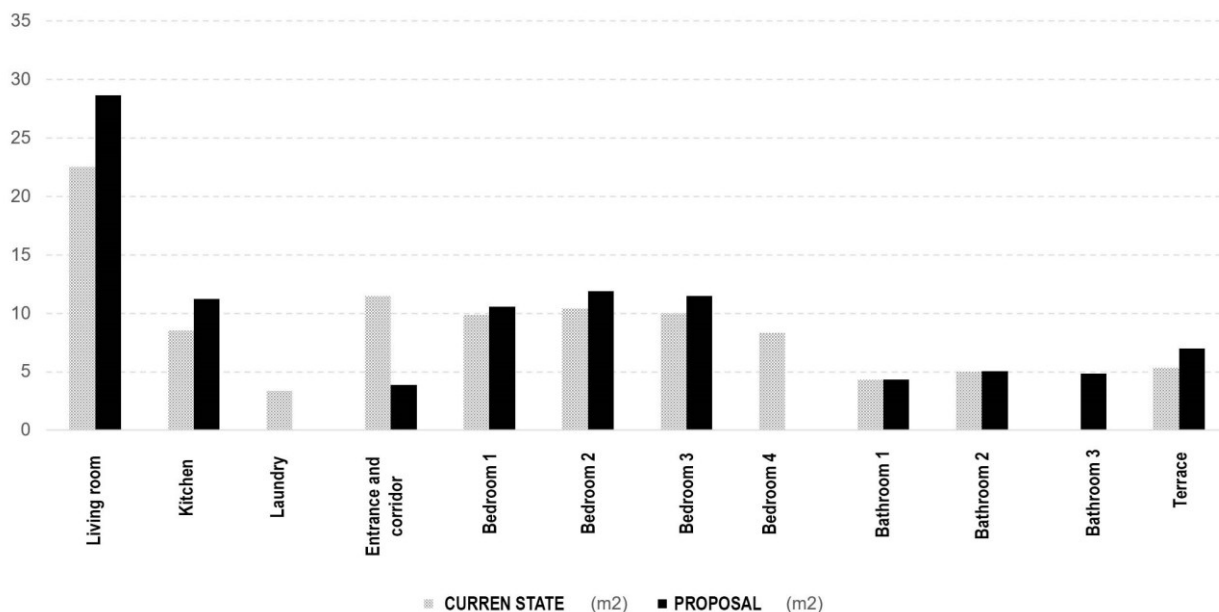
Model 1: Elderly people living together (1 owner + 2 guests)



Figure 11. Model 1 (Host flat or Guest-flat). Proposal for the transformation of the house for co-aging.

A second housing option is proposed for the case of the location of two elderly people who need a caregiver. This configuration can also be used within a social intervention plan when it comes to apartments that have been vacated by one of the elderly people —transferred to the guest apartment— and are offered to accommodate two people alone with a high degree of dependency. Here are included some of the tactics used in the guest apartment, such as the reuse of doors left over from the demolition to create mobile partitions, in this case also between the kitchen and the living room (figure 12, left down).

The third model corresponds to another of the flats left by one of the elderly people transferred to the guest flat and is oriented to rent, preferably for young people. This proposal has a special program, since it incorporates two bedrooms with 2 bathrooms, a living-dining room, and a wide and flexible space of 14.74 m<sup>2</sup>, which can act as a third bedroom or serve as multifunctional spaces (Figure 12, left upper side).



**Graph 1.** Model 1 (Piso-huésped). Area of each space before and after the intervention.

In the event that the three elderly people reside on the same floor of the building, there are several possible options or combinations, among which we describe the opposite ones:

- 1- Reform the 3 floors as it appears in the guest floor. This transformation is very efficient if you want to rent the other two floors, but you do not want to establish relationships between the different neighbours.
- 2- Renovate the flats according to the 3 models described: guest flat, elderly people flat with caretaker and rented flat with common multifunctional space.

The first option would increase the economic income of the co-living cooperative, but the coexistence would be limited to the space of a house. The second option would obtain less economic income for the cooperative but would allow the creation of shared spaces that foster intergenerational relationships. This last option can be seen in figure 12, where the possibility can be seen —with prior authorization from the Community of Owners— of making openings to establish links between neighbours, such as the connection between the kitchen of model 2 with the terrace of model 3 or the connection between the common space of stairs and elevators and the multifunctional room of model 3.



Figure 12. Scheme of possible co-housing: transformation of 3 flats on the same floor, with shared spaces.

## 5. Conclusions

The possibility of transforming certain homes located in the Bailén-Miraflores neighborhood of Malaga for the establishment of cooperatives for the elderly seems to find a better place in buildings designed during the 80s and 90s of the last century. It is possible to consider certain buildings from the 1940s and 1950s, but it requires a greater investment in the transformation, sometimes due to its spatial configuration, its small size or sometimes its load-bearing wall structure. This is a real challenge for the *Coaging* project. On the other hand, it is possible to find buildings in the area that could be used for the implementation of the project, always with the help of the municipality of Malaga, but it is necessary to carry out detailed studies of those cases in which the type of housing does not respond to an excessive densification process. This is especially clear when we study the residential developments of the 1960s and 1970s.

The proposals for the transformation of the houses to allow an elderly person to receive two elderly people in their apartment require a design capable of attending to the surveys and meetings carried out with the residents of the studied neighbourhood. One of the most important conclusions is the need to consider the independence of the bedrooms, equipped with the necessary elements to ensure a certain autonomy, such as their own bathroom and enough space for furniture and adapted elements.

The proposal presented also allows for a more flexible and much more efficient spatial organization regarding the use of available space.

The economic income that the rental of the two free apartments can bring to the cooperative is an incentive for the development of other types of transformation projects, including the possibility of having multifunctional spaces capable of being shared by different apartments. The fight against unwanted loneliness finds in these proposals a real answer to the problems of urban complexes with aged, inefficient buildings and elderly inhabitants.

## Acknowledgements

This work belongs to the Research project called "Neighborhood cooperatives of elderly for active aging in place. Implications for improving forced loneliness in large cities (co-aging)" directed by Carlos Rosa Jiménez, with a research team from the University of Malaga and the University of Seville. Funded by the Junta de Andalucía (PAIDI).

### Conflict of Interests

The authors declare no conflict of interest.

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