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# Women Architects in the Transition: Comparative Analysis of 'Palomeras' Dwellings, Madrid (Spain)

**Angel Cordero Ampuero**

Departamento de Composición Arquitectónica, Universidad Politécnica de Madrid, 28040 Madrid, Spain; angel.cordero@upm.es

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**Abstract:** This study examines the contribution of women architects to Palomeras operation projects in the context of the Spanish transition and the Madrid housing emergency in the late 1970s and early 1980s. Works were selected according to their professional impacts; 11 projects were analyzed by redrawing and studying the main types of dwelling. The current reading interpretation—according to a gender perspective—focuses on reproduction of tasks in main spaces at home: in-depth testing of the scope of kitchen surface and glazing ratios, as well as direct lighting, views and minimum distance of housekeeping paths. Furthermore, the comparative and qualitative analysis was based on meaningful data, which yield subtle but expressive results about the consequences of gender-inclusive architect teams. Thus, it is possible to approach and discuss the role played by some women architects of the Madrid School after second-wave feminism, in a key time for gender change in architectural practice in Spain.

**Keywords:** architecture; architectural analysis; gender studies; urban planning; architectural design; housing; domestic space; kitchen design

## 1. Introduction

### 1.1. Palomeras Neighborhood

By the end of the 1970s, Spain was immersed in a complex political shift towards democracy. The first milestones of that evolution took place before the death of the dictator Francisco Franco in 1975 (Tamames 1988), a period known as the Spanish transition (Tusell 1997). The approval of the new constitution, voted for by Spaniards on 6 December 1978, marked a crucial moment for the Transition to a political democracy system. From that moment, at least until the general election held on 28 October 1982, won by the Socialists (*Partido Socialista Obrero Español*, PSOE), the Spanish political system experienced accelerated changes that transformed the whole society.

Political changes in Madrid started as early as April 1979, when the first municipal democratic elections allowed socialists from the PSOE and communists from the PCE (*Partido Comunista de España*) rule the city in a coalition, under the Mayor of Madrid, Enrique Tierno Galván. That climate of social agitation coincided with a deep economic crisis, which started in 1973; from that substratum emerged a strong local movement, unusual in Spanish history, which in fact faded away when the first democratic decade came to an end. This struggle, identified with the "social debt" from Franco's regime (Miquel 2003), began in Madrid as a resistance to the re-housing of slums, reasonably close to the urban center, which were in danger of being "thrown out" of the city and moved to an outer metropolitan circle (Figure 1). After many confrontations, neighbors managed to meet Joaquín Garrigues Walker, Minister of Public Works and Urbanism, and finally got a "communicated order" signed by his successor Jesús Sancho Rof on 25 May 1979, under the third office of Adolfo Suárez González; it meant a compromise: a new policy of social housing. This was the starting point for the *Remodelación de Barrios* (neighborhood

remodeling) program in Madrid that affected 28 districts and close to 40,000 lodgings; it was "the biggest operation of urban outskirts housing in Europe during the 1980s" (Román 2003, p. 265).

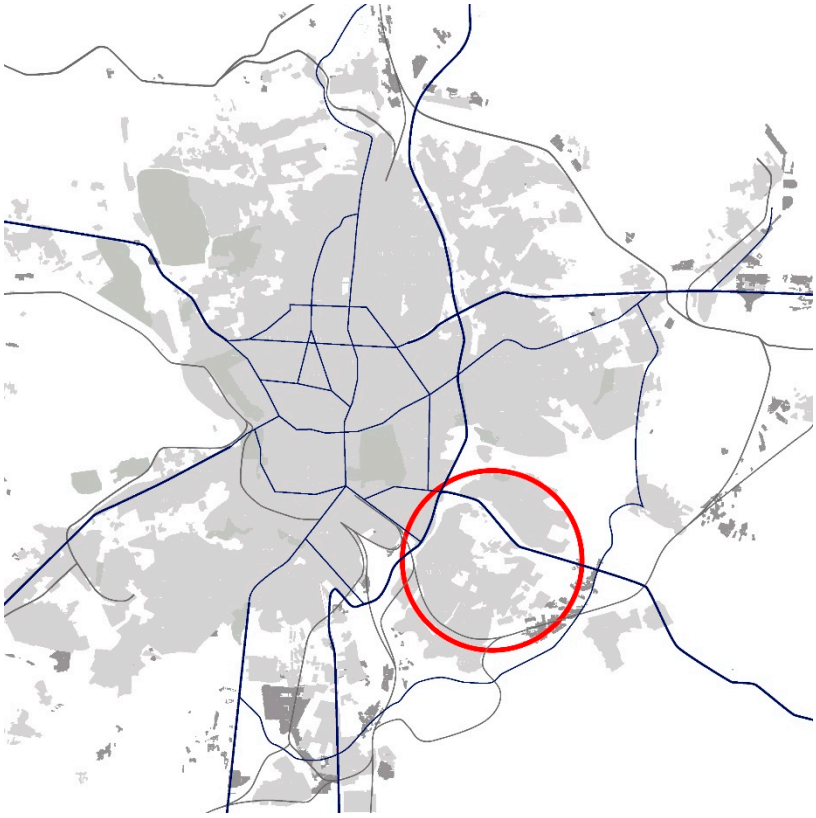

**Figure 1.** Madrid plan, 1978. Palomeras area surrounded by a red circle. Created by author.

Palomeras was the district mainly concerned in the operation, as 10,334 flats were built on 460 ha (López de Lucio 2003). Due to its size, the area was divided into three sectors: Palomeras Sureste—East of Avenida Pablo Neruda; Palomeras Norte—North of Avenida de la Albufera; Palomeras Sur—South of Avenida de la Albufera. Finally, this southern sector was segregated as Palomeras Sur and Madrid Sur, the latter developed according to the new urban planning of 1987 (Guerra de la Vega 1989). However, the three previous areas had to maintain a sort of planning which was considered obsolete at the time, with open blocks and high density. Neighbors' associations were in favor of the solution, but technical opinions showed against it (Peribáñez Ayala 2003). Under these circumstances, the professionals centered themselves on architectonic and constructive qualities as the target for the rescue of the urban landscape (Capitel 1983).

This type of urbanism began just at the end of the Civil War when Technical Office of *Junta de Reconstrucción de Madrid* (Reconstruction Council) started to work. Headed by Pedro Bidagor, this office was responsible for the design of *Plan General de Ordenación Urbana de Madrid* (Madrid Master Plan), completed in 1941 and finally validated as Act in 1946: a plan designed to constraint the urban expansion inside a green belt, crowned by satellite settlements. Thus, Palomeras nucleus was planned for 50,000 inhabitants (Sambricio 1999, p. 192) through a *Plan Parcial* (local master plan), a development way of planning imported from Italian 1942 Law. Despite of the dates and its ideological determinants, Bidagor Plan influenced the growth of Madrid for years: it ruled until 1964, when was adopted the *Plan General de Ordenación del Área Metropolitana de Madrid* (General Metropolitan Area Zoning Plan). Then, the new plan was overtaken by private capital land speculation, in collusion with municipal government. Thus, Palomeras started the *Remodelación de Barrios* with an urban regulation designed for a population density of 500 per Ha, characterized by "the proliferation of five-bays and light-wells blocks, solid high arrangements, with clearly abusive density" (Terán 1999, p. 254).

Meanwhile, *Instituto Nacional de Vivienda* (National Agency of Housing, INV) started working in 1939 on social housing regulations. From then until 1957, INV endeavored the unsuccessful task of promoting houses; then, from the establishment of the Ministry of Housing and, moreover, after 1959 Stabilization Plan and its macroeconomic changes, INV evolved into a verifier agency for private initiatives, as required under Decree 2114/1968 Regulations Implementing the Social Housing laws of 1963 and 1964. In November 1976, a year after Franco's death, a new Social Housing Act was approved; by then, just before decentralization of Spanish Kingdom, INV could still promote, under exceptional circumstances, but was mainly devoted to grant "the status of social housing to projects which met the objective requirements" (Ministerio de la Vivienda 1976, p. 25773). Subsequent development of this law, 17 May 1977 was adopted the new Design Rules for Social Housing, in force at Palomeras remodeling time.

Summarizing, technical rules, planning regulations, the issue of management and the public pressure hardly allowed some subtle changes in housing designs for Palomeras, every one of them composed in common linear blocks or residential towers (Martínez Santamaría 2003).

### *1.2. Spanish Women Architects*

Throughout the 20th century, and especially during Franco's Regime, women encountered serious obstacles to studying architecture, and it was only by the end of the 1970s that their numbers increased in a significant way in the three Spanish universities of Madrid, Barcelona and Seville (Agudo and Sánchez de Madariaga 2011). It means that only a few women were able to act as architects in offices located in Madrid in the days when the big operation of remodeling of districts led to the building of 10,000 apartments in Palomeras. We are referring to professionals selected, in those days, from the upper classes, occasionally daughters or wives of architects who, in any case, had climbed a critical step in gender demands. What can we say of women belonging to those thousands of families who finally got a suitable flat in Palomeras after suffering difficulties for years in slums almost without any basic services? Without going into too much detail, we must consider that, by 1981, nuclear families with a male head of family accounted for two-thirds of the population, and that half of them comprised four or more members (de Miguel 1992). If we consider, on the other hand, the activity in productive works, it is evident that the reproductive work was handled in those days by the female population, even if they were engaged in paid activities too.

Given such negative circumstances, this paper raises quite an easy question: From a gender perspective, are we able to recognize the contribution of women architects integrated into the teams that worked on those projects? In the information that will be analyzed, belonging to 11 housing projects, a woman architect led only one team, Carmen Bravo Durá. In the other seven teams, only two women are mentioned: Carmen Herrero Izquierdo, in the team directed by Javier Frechilla and José Manuel López-Peláez, in charge of two projects; and Juana María López y López-Prisuelos, together with José Joaquín Elizaga Asensi and Juan Luis Sánchez Sola. In short, there was a total of three women and 33 male architects, making the female proportion a little over 9%. Was it therefore possible for them to contribute significantly?

This paper does not aim to discuss the housekeeping management (Hayden 1982) in projects closely tied to the strict rules of social housing in 1976. In that operation of dwelling emergency (Paredes Grosso 1983) it was not possible to introduce alternative spaces, public or private, for reproductive works; there was no place even for experiment in the design of kitchens (Bravo 2011), necessary for the preparation of food or the washing of clothes, beyond important details of their configuration and their relation to the rest of the domestic spaces. Nevertheless, the female architects that worked in the projects for Palomeras belonged to second-wave feminism, fully conscious of recent achievements that neither their mothers nor their grandmothers could have ever imagined (Friedman 1998, p. 215), which is why their contribution to the design of housing could be decisive in the face of strictly masculine points of view.

## 2. Methods Criteria

Due to the extension of the "Remodelación de Barrios" program, we have decided to choose the projects published in Number 242 of the review, *Arquitectura*, a monographic issue published in 1983 devoted to Palomeras and prepared by the organ of expression of the *Colegio de Arquitectos of Madrid* (Figure 2). With this criterion in mind we paid special attention to the architectural quality of the projects as it was accepted in the professional and academic environment. On the other hand, these projects created 8609 flats, which was 83% of the total Palomeras operation. We must note that the rest of significant projects selected by Ramón Guerra de la Vega in his guide for 1989 were conceived and built by the end of the decade, when a new urban central area was being planned for the "Madrid Sur" neighborhood.


**Figure 2.** Palomeras plan with original sectors; Location of housing projects studied. Created by author.

Regarding the type of apartments studied, we decided to choose a model for each group. Although with this decision one loses the architectural interest for singular architectural problems, like corners or adaptations to the urban plan, we could focus on the domestic design of each proposal. On the other hand, although the projects frequently develop several blocks, even with more than one housing typology, there appears clearly in all of them the identification of the main model, from which emerges special solutions. Based on the document already published, we have decided to re-draw the outline plans of the elected flat to the same scale, with the same graphic criteria, isolated from the rest of the edification to proceed to the analysis within homogeneous conditions.

According to 1977 social housing rules, designs were strictly regulated on the family size, number and type of rooms. As three-bedrooms typology has been studied, this leads to a five or six people family: five people for a main bedroom, one double bedroom plus one single bedroom, for a minimum house plan of 66 $m^2$; or six people for a main bedroom plus two double bedrooms, for a minimum plan of 76 $m^2$ (Ministerio de la Vivienda 1977, p. 13306). Both of these houses could have a kitchen of 8 $m^2$, with a ratio between kitchen and living-room of at least 40% for six people. Regulations at the time was clear about its ideal family, with a "worker-father and housekeeper-mother" (Carreiro Otero and González 2019, p. 204); sometimes clearly, as talking of "family head" (Ministerio de la Vivienda 1968), sometimes subtly, as naming "matrimonial bedroom" or quantifying a "family program" up to eight

people or more, with two-people specifications just for exceptional circumstances. In 1977 rules still required to display a hand-washing ceramic sink, even space and technical facilities for a washing machine had to be considered.

Regard to natural lighting, the design had to provide a minimum glazed surface for 8% of the kitchen plan; with a standard 1 m height window, this means around 80 cm width, 0.1 $m/m^2$ ratio between glazed walls and floor space of the kitchen. Summarizing, the rules itself constrained a gender segregated house, where women carried the load of reproductive work in reduced and uncomfortable spaces.

According to contemporary debates (Muxí Martínez 2018), we proceeded to identify the reproductive tasks within the domestic space: the best identified, production of aliments and clothes washing. Because the cleaning of family space, including the order, was undertaken in all the rooms where "it is necessary to clean, cook, order, wash, iron and care" (Sánchez de Madariaga 2004, p. 15), we left out their identification with architectural elements, beyond the generic wellbeing of the people who developed the work in the own residence—exposure to the sun, ventilation, general orientation or views. The same is applied to the care of persons, being parents or descendants, as looking after them applies to the whole flat, although some of the rooms, like bathrooms, concentrate the harder functions. Departing from these functions of feeding and washing, we have selected criteria for an analysis, both objective and comparative, suitable for a typological selection: kitchen surfaces and dimensions (Sánchez de Madariaga 2004, p. 85), washing rooms—if any—and drying places "to address the need for hanging up the washing" (Pernas et al. 2007); their relation to the sitting room and the main bedroom; glazed walls of these spaces, direct external views, balconies, internal courtyards or drying lines; minimal distance between the entrance door and the fridge—or any furniture for storage, if known, from the kitchen range to the dining table; and, finally, the minimal distance from the washing machine to the clothes line. Thus, the study takes account of some modernity criteria, defining the gender perspective kitchen design principles:

> Set the kitchen next to the house entrance, close to the dining-room, visually related to the living-room, reduce the distance attending the main door or downloading the daily shopping, as well as caring for children while working.
>
> Carreiro Otero and González (2019, p. 186)

Even though these criteria looks rather minor from nowadays perspective, at the time could be underlined as first evidences of a more sensitive architecture, for a Spanish social context that began, slightly, to take off its real feminist revolution.

## 3. Results

According to the order of their publication in Number 242 of *Arquitectura*, the projects are listed below, quoted whenever it has been possible according to the criteria of the Guide "Arquitectura de Madrid" (COAM 2014):

1. VSM (*Viviendas Sociales de Madrid*) housing in Palomeras Sureste, UD 3 mega-block (Estanislao Pérez Pita y Jerónimo Junquera García del Diestro): los Andaluces St. 16–34, 7–17 with San Claudio, with Rafael Alberti; 1979–81 (Project), 1980–82 (Building).

It is a group of lineal blocks, defined by the façade play between pure lineal typology and its hybridization with the tower. There are very few differences, however, between the plans, apart from the difference between three bedrooms—towers—and two or four—lineal. Kitchens and drying places—the latter appear only in the tower typology as balconies in one of the bedrooms—are located at the far end of the plan, opposite the sitting room/dining room.

For three-bedroom "tower typology" apartments, the kitchen accounts for 10.89% of the total surface. This means, for the working area, 55.05% of the living-room floor, natural lighting and an indirect view to the outside, through the dormitory terrace (while living room enjoys direct exterior

views). The kitchen window achieves a ratio between glazed façade and floor space of 0.23 m/m$^2$, above the study average (Figure 3).


**Figure 3.** VSM (Viviendas Sociales de Madrid) housing in Palomeras Sureste, UD 3 mega-block. Three-bedroom "tower typology" apartment. Plan redrawn and photo by author.

2. S5 and S7 mega-blocks in Palomeras Sureste (José Luis Romany Aranda, Carlos Ferrán Alfaro y Fernando Navazo Rivero): los Extremeños St. with Gerardo Diego, with Luis Buñuel, with Pablo Neruda, with Rafael Alberti, with Riojanos; 1979–81 (P), 1980–83 (B).

They are a series of blocks in "L" grouped two to two, forming a group of half blocks in "C" which, in two cases, face each other, thus forming semi-opened blocks. In the plan, the association of two flats results in a corner, internal and external, although the outcome is a variation (with one bedroom more or less) of the intermediate type of a three-bedroom apartment. Kitchens are composed in an "L" shape, opened towards the balcony (which would serve as a drying place) of the sitting room.

For three-bedroom apartments, the kitchen accounts for 7.91% of the total surface, well below the common average. This means, for the working area, 37.76% of the living-room floor, with natural but oblique lighting and narrow oblique views to the outside (while living room enjoys direct exterior views). The kitchen window achieves a ratio between glazed walls and floor space of 0.11 m/m$^2$, far below the study average (Figure 4).


**Figure 4.** S5 and S7 mega-blocks in Palomeras Sureste. Three-bedroom apartment. Plan redrawn and photo by author.

3. IVIMA (*Instituto de la Vivienda de Madrid*) residential building in Palomeras Sureste, UV 1 block (Manuel de las Casas Gómez, Ignacio de las Casas Gómez y Jaime Lorenzo Saiz-Calleja): los Andaluces St. 1–5 with Antonio Mairena, with Luis Marín, with Miguel Hernández, with Pablo Neruda; 1979 (P), 1980–83 (B).

A lineal block of double bay forms the arrangement, with a central axis available for communication cores and lighted inner courtyards. The apartments with two or four bedrooms are variations (more or less elongated) of the usual three-bedroom flat, in an "L" shape, where the longer axis follows the succession of bedrooms and the transversal leads to the kitchen and the living room. That is why kitchens must slip off the living room, in order to get light from the neighboring sitting-room balcony, except in four-bedroom flats, where the kitchen shares the terrace/drying balcony with the main bedroom.

For three-bedroom apartments, the kitchen accounts for 12.84% of the total surface. This means, for the working area, 57.51% of the living-room floor, with oblique natural lighting through the neighboring terrace and almost no view to the outside (while living room enjoys direct exterior views). Nevertheless, the kitchen window achieves a ratio between glazed walls and floor space of 0.27 m/m$^2$, well above the study average (Figure 5).

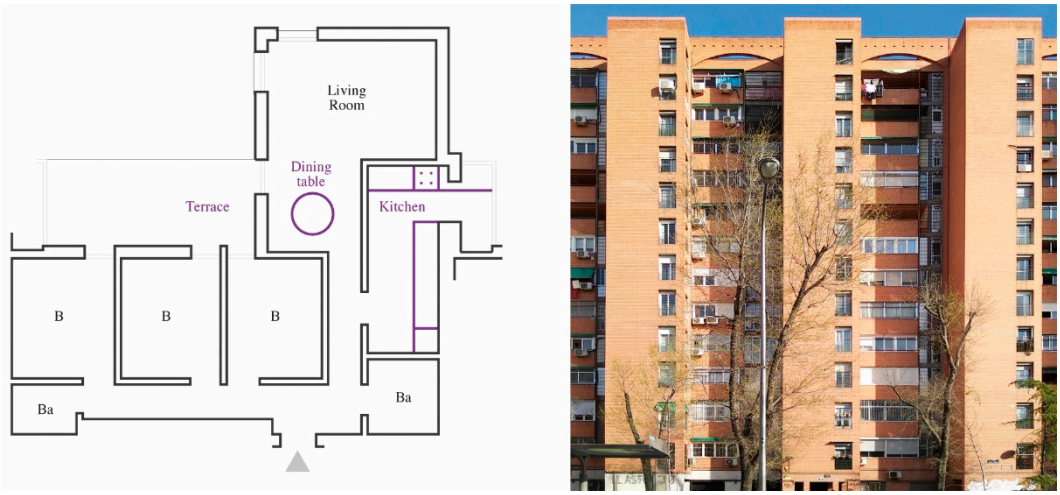


**Figure 5.** IVIMA residential building in Palomeras Sureste, UV 1 Block. Three-bedroom apartment. Plan redrawn and photo by author.

4. Houses along Palomeras Park, UD 2 mega-block (Juan Montes Mieza, Pablo Carvajal Urquijo, Mario Muelas Jiménez y Fernando Prats Palazuelo): Rafael Alberti Av. 1–7 with Rafael Hernández Hijicos, with San Claudio; 1979 (P), 1980–82 (B).

This arrangement was considered an iconic image of the new quarter, with its facades bending on concentric shapes of 90°, closing the corner of the A-3 and M-40 highways. Each block is built on a "C" shape so that the alignment of the central blocks predominates over the two external streets. On the contrary, towards the inner street the opposite blocks suggest a semi-opened quarter, with front yards between emphatic towers. The apartments, the most common example being the three-bedroom type, in tower suffer light variations in the lineal zone, where the kitchen faces the sitting room despite being located on the perpendicular axis. In both cases the lineal disposition of the kitchen ends in a drying balcony.

For three-bedroom apartments, the kitchen accounts 12.40% of the total surface. This means, for the working area, 58.87% of the living room floor, with natural lighting and exterior views through the balcony for drying clothes; these outside views could be similar to the living room ones, depending on the orientation. The kitchen window achieves a ratio between glazed walls and floor space of 0.15 m/m$^2$, similar to the study average (Figure 6).

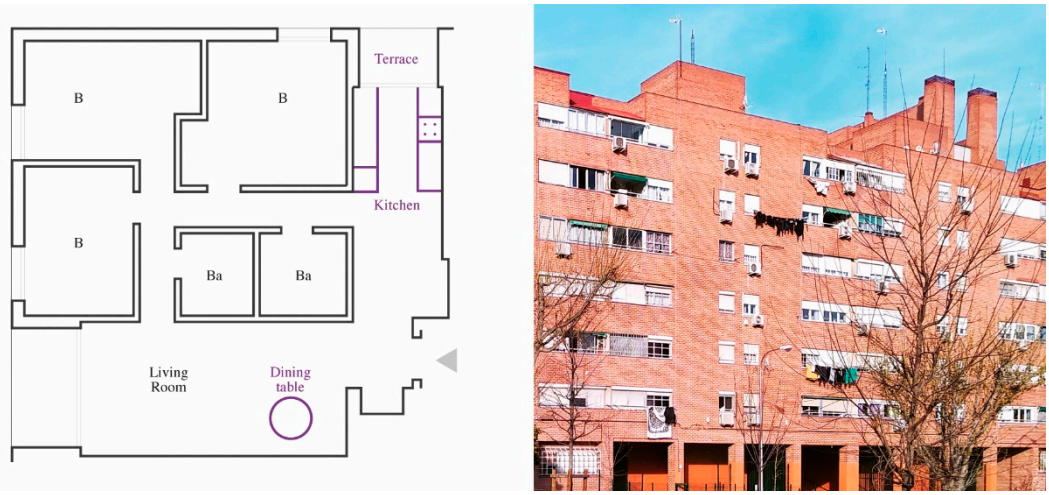


**Figure 6.** Houses along Palomeras Park, UD 2 mega-block. Three-bedroom apartment. Plan redrawn and photo by author.

5. Social housing in Palomeras Sureste (Javier Frechilla Camoiras, José Manuel López-Peláez Morales, Eduardo Sánchez López, María del Carmen Herrero Izquierdo y Emilio Rodríguez González): Coín St. 1–5 with Luis Buñuel, with Rafael Alberti; 1981 (P), 1982–87 (B).

It is a double-bay lineal block, with inner yards and central communication cores. The three-bedroom apartment type, which is the most common, develops in a two-band scheme: outward bedrooms and inside bathrooms and storage, the latter close to the entrance facing the kitchen. By the end of the line, close to the kitchen, is located the living room, opening onto a balcony that is also used as a drying space.

For three-bedroom apartments, the kitchen accounts for 10.68% of the total surface. This means, for the working area, 56.98% of the living room floor, with both natural lighting and direct exterior views, the same of the living room ones. The kitchen window achieves a ratio between glazed walls and floor space of 0.25 m/m$^2$, somewhat above the study average (Figure 7).

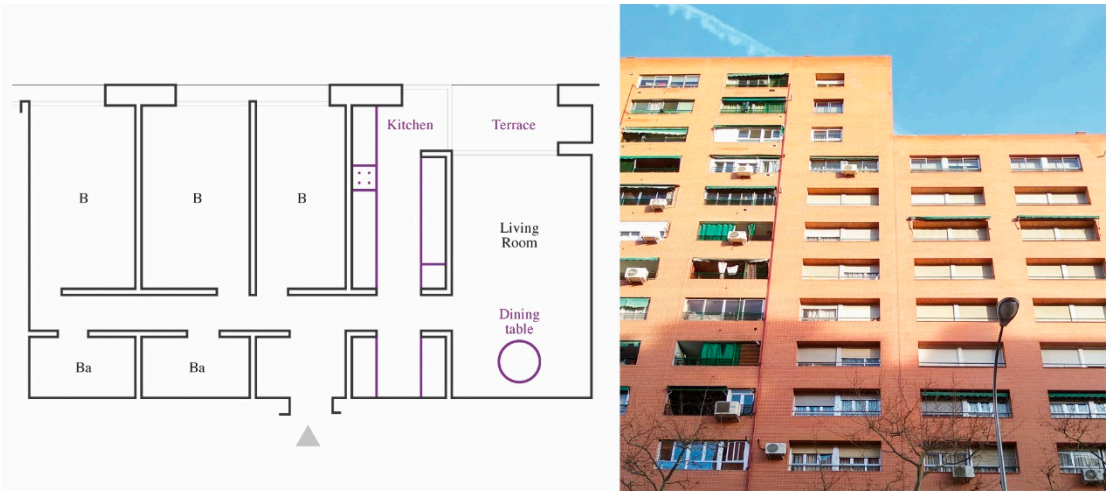


**Figure 7.** Social housing in Palomeras Sureste. Three bedrooms apartment. Plan redrawn and photo by author.

6. VICOMSA (*Viviendas Sociales de Madrid, S.A.*) residential blocks in Palomeras Sureste, UD 5 mega-block (Carmen Bravo Durá, Jaime Martínez Ramos, José Luis de Miguel Rodríguez y Juan Antonio González Cárceles): Angelillo St. 1–3, 9–17 with los Asturianos, with Fuengirola, with

Fuente de Piedra, with Leoneses, with Miguel Hernández, with Santa Cruz de Retamar, with Torremolinos; 1979 (P), 1981–83 (B).

This cluster is developed in 11 blocks, formed by the succession of two, three or four towers, separated on the ground floor and linked to the rest by a narrow bay of double drying balconies and a central inner yard. The kitchen, as often happens in tower typologies, is disposed along a transversal axis to the living room, being both articulated by the entrance and opening onto the drying balcony at the opposite side.

For three-bedroom apartments, the kitchen accounts for 13.62% of the total surface. This means, for the working area, 65.28% of the living-room floor, with both natural lighting and direct exterior views through the balcony (both to streets and inner gardens, on which is focused the living room). The kitchen window achieves a ratio between glazed walls and floor space of 0.34 m/m$^2$, clearly above the study average (Figure 8).


**Figure 8.** VICOMSA residential blocks in Palomeras Sureste, UD 5 mega-block. Three-bedroom apartment. Plan redrawn and photo by author.

7. Houses along Palomeras Park, UD 8 mega-block (Juan Montes Mieza, Pablo Carvajal Urquijo y Mario Muelas Jiménez): Benjamín Palencia St. 28, 29, 30, 34–78, 41–47 with El Bosco, with Humanes, with Malgrat de Mar, with Pablo Neruda; 1981 (P), 1982–85 (B).

We face an urban arrangement joined by two series of lineal blocks of medium height, disposed transversal to longitudinal ways, plus two towers in the center of the composition, which are crisscrossed. The three-bedroom apartment type in the blocks is designed in a cross-ventilation plan, practically square, with the bedrooms being placed in one of the facades. From the entrance, on the opposite band, the sitting room follows the kitchen, opening onto the terrace and drying balcony, respectively.

For three-bedroom apartments, the kitchen accounts for 13.04% of the total surface. This means, for the working area, 62.67% of the living-room floor, with direct natural lighting but an oblique view through the next long terrace, while living room enjoys direct views to the that terrace, opening up to the central courtyard. The kitchen window achieves a ratio between glazed walls and floor space of 0.11 m/m$^2$, below the study average (Figure 9).

8. IVIMA (*Instituto de la Vivienda de Madrid*) housing complex in Palomeras North, UV 10 mega-block (Ignacio de las Casas Gómez, Manuel de las Casas Gómez y Jaime Lorenzo Saiz-Calleja): Albufera Av. with Benjamín Palencia, with Carlos Solé, with José Paulete, with Pío Felipe; 1982 (P), 1982–87 (B).

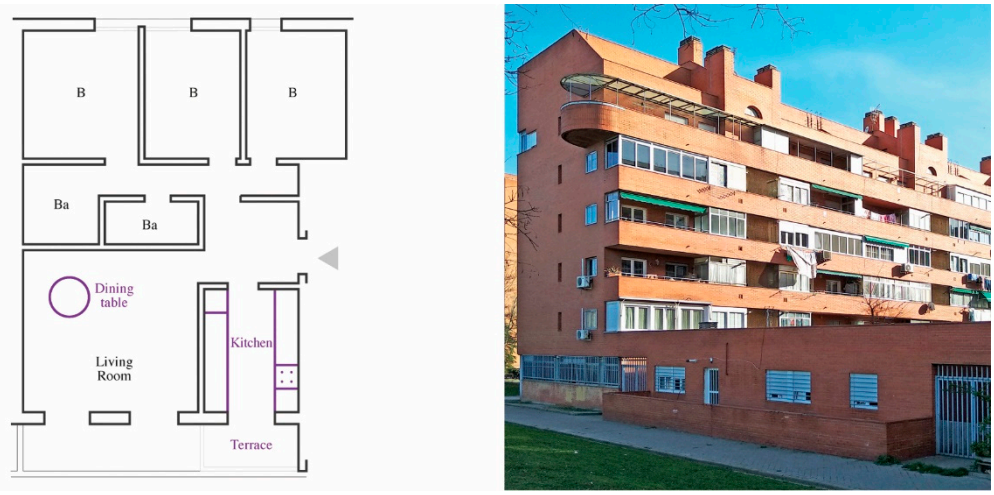


**Figure 9.** Houses along Palomeras Park, UD 8 mega-block. Three-bedroom apartment. Plan redrawn and photo by author.

The ensemble is disposed as a double row of tower blocks, following the curve that looks from Tío Pío hill towards the slopes of Vallecas, inside of which a pedestrian path with trees is supposed. The flats are practically homogeneous, except on the ground floor and in the penthouse, with the sitting room in an "L" shape, as is common in tower typology. Despite a dining kitchen being proposed (de las Casas 1983), the surfaces are small, and the conventional living-dining room is maintained according to social housing VPO (*Vivienda de Protección Oficial*) norms. On the other hand, the bow-window ending for the kitchen is articulated with a small washing-drying place opening onto the rounded inner yard.

For three-bedroom apartments, the kitchen accounts for 13.30% of the total surface. This means, for the working area, 60.24% of the living-room floor, with both direct natural lighting and direct exterior views through the bow window; however, while these views are focused to the spaces between blocks, living room views enjoys wider views, either to inner gardens or to the parks and streets. Apart from the balcony for drying clothes, the kitchen ending achieves a ratio between glazed walls and floor space of 0.16 m/m$^2$, closely similar to the study average (Figure 10).


**Figure 10.** IVIMA housing complex in Palomeras North, UV 10 mega-block. Three-bedroom apartment. Plan redrawn and photo by author.

9. Palomeras residential blocks (Alfonso Navarro Guzmán y Marcelo Franco Bedoya): Pablo Neruda Av. with Extremeños, with Campo de la Paloma, with Palomeras, with Lago Calafate, with Leoneses; 1982 (P).

The arrangement has four buildings of closed blocks, plus two semi-closed, which are disposed following the street alignments. The apartment model is practically identical for all the blocks and special solutions. It has three bedrooms located opposite to the entrance hall; in a transversal disposition, after the entrance, are located the living room and the kitchen, which opens in the inner façade onto the drying balcony.

For these three-bedroom apartments, the kitchen accounts 11.09% of the total surface. This means, for the working area, 50.80% of the living-room floor, with both natural lighting and direct views to the inner courtyard (while living room enjoys exterior views). The kitchen window achieves a ratio between glazed walls and floor space of 0.08 m/m$^2$, far below the study average (Figure 11).

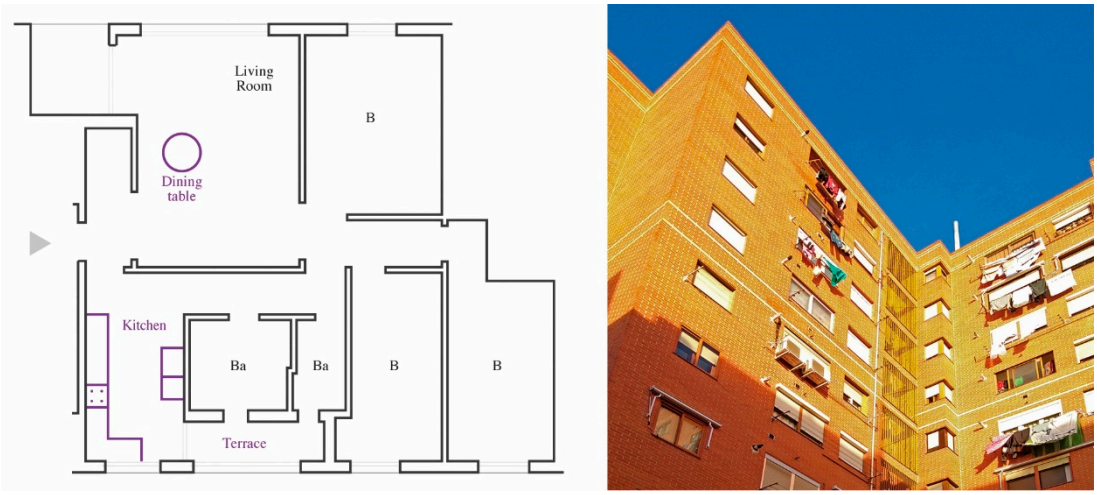


**Figure 11.** Palomeras residential blocks. Three-bedroom apartment. Plan redrawn and photo by author.

10. Palomeras housing (José Joaquín Elízaga Asensi, Juan Luis Sánchez Solá y Juana María López López-Prisuelos): Benjamín Palencia St. 12–16 with Calella, with José García Granda, with José Paulete; 1982 (P), 1982–88 (B).

It is an arrangement of towers in a square plan, 90°-staggered pattern—in a checkerboard composition—in two groups of five and two groups of three blocks. Flats with two, three or four bedrooms show little variation: against the common articulation in the "L"-shaped kitchen-living room, in these towers both are concentrated in one of the facades, whereas the bedrooms look out to the orthogonal. The elongated kitchen allows for a small dining place at its external end.

For three-bedroom apartments, the kitchen accounts for 12.99% of the total surface. This means, for the working area, 61.46% of the living-room floor, with both natural lighting and direct exterior views, the same of the living room ones. The kitchen window achieves a ratio between glazed walls and floor space of 0.10 m/m$^2$, below the study average (Figure 12).

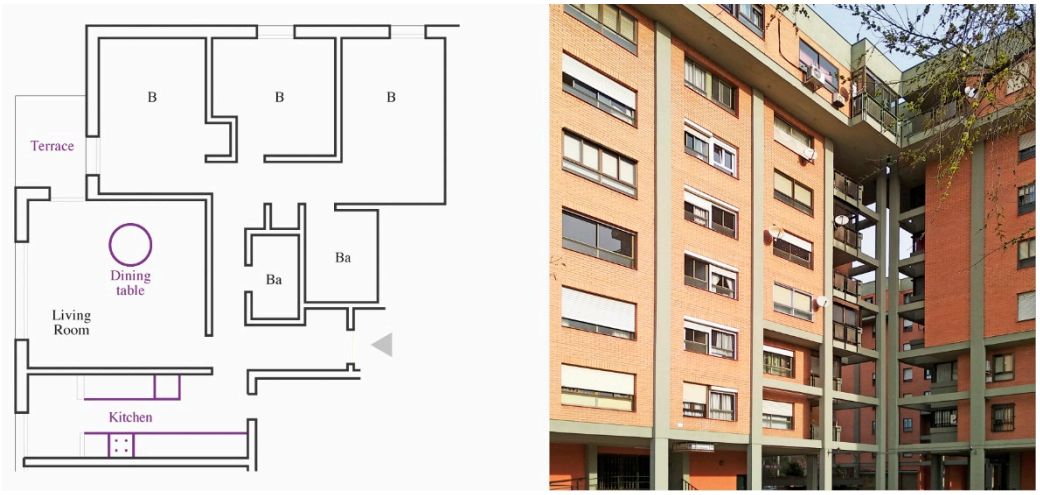


**Figure 12.** Palomeras housing. Three-bedroom apartment. Plan redrawn and photo by author.

11. Palomeras housing, UV 9 Plot (Eduardo Sánchez López, Javier Frechilla Camoiras, José Manuel López-Peláez Morales, Manuel Paredes Grosso, María del Carmen Herrero Izquierdo y Emilio Rodríguez González): las Marismas St. 1–55; 1982 (P), 1984–87 (B).

The arrangement, despite its heterogeneous plan, is composed as an urban continuous: two semi-opened sections, two lineal blocks and one more block in a rotated "L" shape which is used to form a small square. The use of a single type of apartment allows for three bedrooms with a lineal development, disposed in a double corridor at both sides of the central axis for courtyards and communication cores. The limited height of the edification (ground floor plus four) allows the creation of these courtyards with light and ventilation, both drying balconies and bathrooms. Kitchens, lighted through these drying areas, are located close to the entrance hall, opposite to the living room.

For four-bedroom apartments, the kitchen accounts for 10.98% of the total surface. This means, for the working area, 42.18% of the living room floor, with no view and oblique natural lighting through the balcony for drying clothes and the interior courtyard (while living room enjoys direct exterior views). The kitchen window achieves a ratio between glazed walls and floor space of 0.08 m/m$^2$, far below the study average (Figure 13).


**Figure 13.** Palomeras housing, UV 9 Plot. Three-bedroom apartment. Plan redrawn and photo by author.

When comparing the figures, we found the following results (Table 1), where projects designed by gender-inclusive teams are marked in purple, and figures above the average appear in bold type.

**Table 1.** Kitchen surface and glazed walls ratios, including averages.

| Project | Kitchen/Total Ratio | Kitchen/Living Room Ratio | Kitchen Glazed Walls/Floor Ratio ($m/m^2$) |
|---|---|---|---|
| 1 | 1089% | 55.05% | **0.23** |
| 2 | 7.91 | 37.76% | 0.11 |
| 3 | **12.84%** | **57.51%** | **0.27** |
| 4 | **12.40%** | **58.87%** | 0.15 |
| 5 | 10.68% | **56.98%** | **0.25** |
| 6 | **13.62%** | **65.28%** | **0.34** |
| 7 | **13.04%** | **62.67%** | 0.11 |
| 8 | **13.30%** | **60.24%** | 0.16 |
| 9 | 11.09% | 50.80% | 0.08 |
| 10 | **12.99%** | **61.46%** | 0.10 |
| 11 | 10.89% | 42.18% | 0.08 |
| Averages | 11.79% | 55.35% | 0.17 |
| Non-inclusive teams average | 11.64% | 54.70% | 0.16 |
| Inclusive-teams average | **12.05%** | **56.47%** | **0.19** |

Purple data fields represent gender-inclusive teams. In bold type, figures above average.

For all the apartment types, a dimensional comparative analysis established three domestic paths: from home entrance to fridge, main home grocery container, specifically placed in housing designs; from stove to dining table, supply chain for family feeding; from the washing machine to the clothes line, whether it is a specific balcony, inner courtyard or exterior terrace (Figure 14).

Quantitative assessment of both kitchen ratios and path dimensions (Table 2) provides no clear difference between non-inclusive and gender-inclusive architect teams. However, inclusive-team ratios always show better averages, up to 10% less of the distance covered by people in charge of reproduction tasks.

**Table 2.** Main reproduction task paths. Distance in meters.

| Project | Entrance–Fridge | Stove–Dining Table | Washing Machine–Clothesline |
|---|---|---|---|
| 1 | 9.4 | 15.2 | 4.2 |
| 2 | 9.8 | 12.1 | 8.1 |
| 3 | 6.7 | **7.9** | 12.2 |
| 4 | **5.2** | 10.1 | **1.5** |
| 5 | **5.6** | **7.9** | **2.4** |
| 6 | **5.0** | 10.1 | **1.2** |
| 7 | **2.9** | **8.8** | **2.9** |
| 8 | **4.4** | **9.0** | **0.6** |
| 9 | **4.0** | **6.6** | **1.8** |
| 10 | 6.1 | **9.3** | 10.4 |
| 11 | **3.6** | **6.8** | **1.2** |
| Averages | 5.7 | 9.4 | 4.2 |
| Non-inclusive team ratios | 6.06 | 9.96 | 4.46 |
| Inclusive-team ratios | **5.08** | **8.53** | **3.81** |

Purple data fields represent gender-inclusive teams. In bold type, (better) figures below average.


**Figure 14.** Apartment types: main reproduction task paths. Gender-inclusive teams numbered on purple circles (sub-figures are related to the numbered list of projects). Created by author.

Further comparisons can lead to more qualitative analysis, especially if kitchens have natural direct lighting or if the working space has exterior views (Table 3). In the latter case, figures clearly show a broader concern about the isolation condition related to domestic reproductive tasks. This therefore represents a contribution made by women professionals through their gender perspective approach to architectural design.

**Table 3.** Kitchen lighting and views.

| Project | Kitchen: Natural Direct Lighting | Kitchen: Exterior Direct Views |
|---|---|---|
| 1 | × | |
| 2 | | |
| 3 | | |
| 4 | × | |
| 5 | × | × |
| 6 | × | × |
| 7 | × | |
| 8 | × | × |
| 9 | × | × |
| 10 | × | × |
| 11 | | |
| Non-inclusive team ratios | 71.43% | 28.57% |
| Inclusive-team ratios | **75.00%** | **75.00%** |

Purple data fields represent gender-inclusive teams. Bold type represents higher ratios.

## 4. Discussion

Data serve to illustrate the complex reality where, from a gender perspective, the contributions of women architects from Madrid during the Transition are not of paramount importance; however, they certainly reveal subtle things that could be expected during such a period of transformation. In this sense, it is convenient to consider two important factors for a better understanding of the figures:

- Gender perspective does not belong exclusively to women: some non-inclusive teams—formed exclusively by men architects—showed a significant sensitivity towards domestic spaces for reproductive tasks. On the other hand, this contribution was very important for their professional success and resulted in the critical fortune of teams like the one led by Manuel de las Casas.
- On the opposite side, being a woman architect does not necessarily mean that there is an automatic approximation to a balanced gender perspective, partly due to the "syndrome of queen bee" (Gutiérrez Mozo 2011) and partly for a sociological reasons, obvious during the period analyzed, when access to the architect profession implied belonging to the wealthy bourgeoisie, where women could stay out of reproductive tasks.

Moreover, we must point out that this is only a detailed analysis of a special operation of housing in a limited period. Thus, the sample cannot be taken as a generalization of all Spanish women architects during the period of the Transition, not even for those who came from Madrid.

Finally, when reflecting upon architecture, one cannot forget the complexity of the practice. In housing design, many design decisions give priority to, for example, gender aspects, mean neglecting another, such as lighting, spaciousness or noise control. In other areas of architecture, the project may become economically unsustainable, so that social benefits could be lost.

This paper intended, nevertheless, to open a door to investigate and discuss the role played by female architects of the Madrid School after second-wave feminism, providing a key to understanding many of the successes and some of the shortcomings that have survived until the present day.

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