
Public space as a structural element of urban planning: The Satellite Settlement of Caño Roto, Madrid, 1957-1963

EURAU'12

ABSTRACT. During the fifties a set of projects called "Pobladors Dirigidos" (Satellite Settlements) were made in Spain, which are suburbs built on the outskirts of Madrid. It meant a significant advance in terms of planning and nowadays those projects are the most interesting examples in terms of Spanish urbanism because of the incorporation of the public space as a central aspect of the project, something that had not been done before in Spain.

Between all the Satellite Settlements, Caño Roto is where public space has a greater importance because its authors organized the whole system of housing, equipments and public spaces in which each part has been designed in relation to others and all of them respond to the aim of creating a neighborhood that make to its inhabitants a more pleasant life.

KEYWORDS. Caño-Roto, Public-space, Satellite-Settlement, Urban-morphology, Planning-strategies, New towns

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1. Introduction

The existing mechanisms for land development and management are based on economic profit and speculation. The disappearance of trading in the streets is contributing to the progressive marginalization of collective functions of the city that are incompatible with those processes. "New urbanism", which serves only financial interests, is one of the greatest problems of our time.

This situation causes a real threat to our cities and the stability of civic values, as it favors only the interests of a few against general interest. Starting with this, our research pretends to find alternative strategies to those that are imposed by the current housing market, to provide answers to current urban growths. We believe in the need of studying existing examples that have helped to advance in the construction of the "polis", understood as public management, throughout history.

We have prepared this article for this reason, whose is a part of the doctoral thesis "The Satellite Settlement of Caño Roto: Dialectic between typology and urban morphology", which is currently being developed at the Polytechnic University of Madrid.

This work takes as its study object a model of exemplary neighborhood, the said Satellite Settlement of Caño Roto, which was designed by architects Antonio Vázquez de Castro (1929) and José Luis Íñiguez de Onzoño (1927). Once analyzed, the second thesis purpose is to find strategies that may be applicable to the city of our time.

2. Context

To make a brief contextualization of the project, we should note Caño Roto is part of "Satellite Settlements" procedures, which were made in the fifties in Madrid, to solve the housing problem of immigrants who came to the capital from rural areas. These kind of neighborhoods were promoted by the Franco administration to provide a home to immigrants, that were arriving to Madrid, which population grew from 1,096,000 in 1940 to 2,177,000 in 1960 (COHN, 1992. 95-100). Satellite Settlements were made during the last idealistic time of the Dictatorship, which linked the Regime(1) with a more social side. Soon after, the dictator Franco made a government reform and delivered the country's government to technocrats linked to the religious order of Opus Dei.

Therefore, and paradoxically, the construction of the first set of Satellite Settlements coincided with the change in state economic policy. So, they were built at a time of transition between "postwar autarky" and "developmentalism", which started in the sixties. This is the reason why the Satellite Settlement architecture has connections to both periods.

Due to the transitional use of the architecture of the Satellite Settlements, its typological solutions are heirs of some solutions of the earlier times. However, the Satellite Settlements mean a significant advance in terms of planning, because of its incorporation of the urban morphology as a principal variable of the project, something that had not been done before in Spain.

Even if we analyze these procedures together we can say that it had –and still have– a lot of interest, it's clear that there are significant differences in terms of urban quality of each one. Between all the Satellite Settlements, which are the last and most brilliant examples of Spanish social housing, Caño Roto is the paradigmatic model because it's the only one that was able to reach the perfect

balance between urban morphology and building typology. There is no doubt that Caño Roto is the better example of social housing in Madrid not only because it clearly exceeds all its predecessors but because it's really hard to find a subsequent urban project which is able to reach its quality (FULLAONDO, 1969. 34).

3. Main body of research

Caño Roto and others Satellite Settlements respond to the Anglo-Saxon model of "mixed development", which is a combination of single-family housing clusters and collective housing buildings, although each settlement had typological differences over others. Initially, the residential program planned for Caño Roto was made a total of 1302 houses(2), of which 772 were located in tall buildings, blocks of four or six floors and towers of six floors, and 530 were single courtyard family houses. Furthermore, the whole neighborhood had endowments and equipments to provide basic services to its residents.

Given the complexity of the program, as we can see in Fig. 1, the architects designed a wide range of housing types to provide future users with a housing model which was able to adapt to economic situation and living needs of families. This large number of typologies made possible architects to improve the urban morphology of the settlement in order to improve the quality of the neighborhood too.



Fig. 1

Architects raised tall buildings in the periphery of the settlement, which are always near to roads and parking areas. This way, they structured those spaces, which would otherwise had become blurred and too exposed, and avoided that the high-rise buildings removed the light to the single family houses. Also, the single family housing clusters were organized inside the village, away from the most exposed areas, configurating indoor-quiet places where life could be closer to rural environments. The towers, which due to their thinness are less bulky than blocks, are located in the southeast edge of the neighborhood to create a permeable boundary with the existing buildings.

We can say that the different housing types of Caño Roto are structured consciously to get an urban environment that offers nice living conditions to all its inhabitants.

However, while this project has a strong interest in typologies, its greatest contribution, locating it above any other project of its time, is the coherence of its urban morphology, which represents a significant advance over other suburban developments that were built in Spain and Europe, during the fifties(3).

This is mainly due to the importance that public space has in the project, which is the structural element of it.

The project value is not only the care and precision of the interiors of homes or the studied urban order of buildings, but the coherence of its urban structure and relationships between buildings and empty spaces. Relationships between objects and voids are which determine the objective quality of the work(4).

In Caño Roto, public space solves the articulation of each building that compose it and, in turn, these determine the use and urban quality of these public places. Both complement each other.

Stressing the integral nature of the project, we should note that the geometric characteristics, and dimensions of all open spaces in the neighborhood are also related to buildings that comprise them. This way, largest blocks are always in large open spaces to facilitate its lighting and ventilation and avoid overlaps of view and sunlight between them. By contrast, the access roads to the houses have a narrow width.

All these operations allow to establish different degrees of privacy in public space without using physical barriers such as fences or gates. Therefore, the urban structure of Caño Roto is the result of the incorporation of all the variables that are involved in its configuration. We cannot understand the urban fabric of the settlement as the simple addition of each of its parts but as an integrated and integral overlap of them all.

The Satellite Settlement of Caño Roto is not only a residential neighborhood; it is a full fragment of the city. So, although housing is very important, it is only a part of the buildings that make up the neighborhood. The urban fabric of Caño Roto is also made up by endowments, industries, stores and other buildings intended for tertiary use. All these parts play an essential role within the complex since they are its public program. They also ensure the functioning of urban neighborhood as a civic space and not only as a residential suburb.

Initially, the settlement should have had a large number of endowments that included a civic center, a cinema, a parish center, a market, a primary school, medical center, three kindergartens, a post office and a police station. But, finally, only the market, the church, the police station and a great school, which collected the entire school program planned for the neighborhood, were built. As Fig. 2 shows, within the urban structure of the neighborhood, the endowments are

located in the central area of the plot to make them more accessible to all residents.

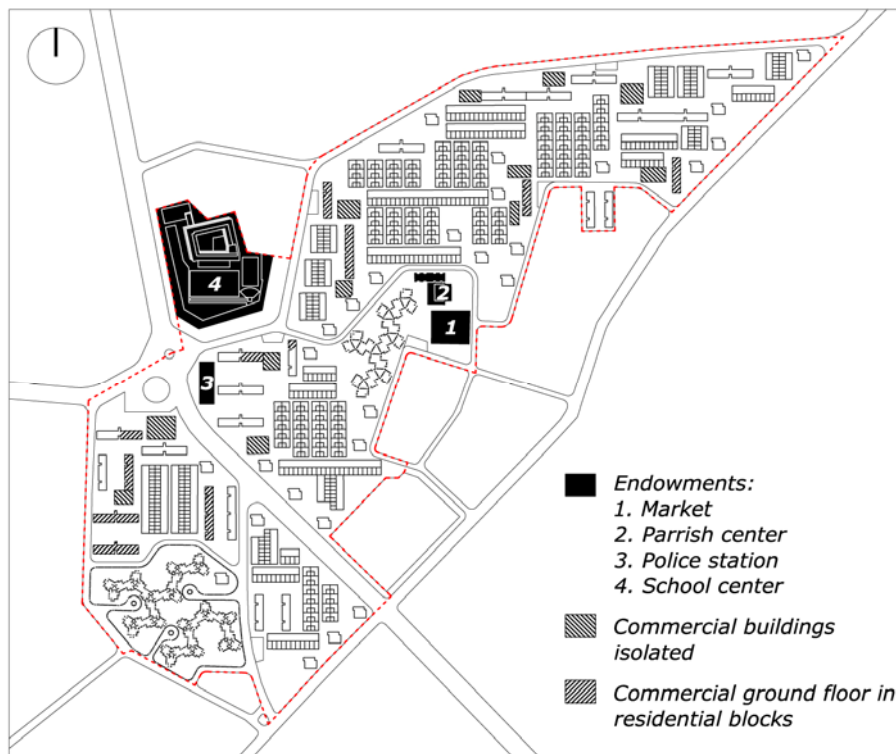


Fig. 2

In addition to endowments, the settlement had also an extensive area devoted to the tertiary sector, which was divided between the ground floors of some of the residential blocks (see again Fig. 2) and twelve low-rise buildings that are distributed throughout the complex. Despite the apparent arbitrariness of the arrangement of these elements, we can see that its organization answers the attempt of creating shopping areas which are built by combination of commercial ground floor and exempt buildings.

These shopping areas are almost always linked to motorized traffic streets that run through the neighborhood and, more specifically, most of them are located in areas near the northeast edge of the plot, giving the highest concentration of trade in the vicinity in the roundabout located at the western edge of plot(5). This organization favors both the inhabitants, because of the proximity of trade promotes shopping, and the traders, who proximity guarantees their survival.

As we said before, in Caño Roto there is not a single building and not a single element that works independently. All of them, regardless of its function, are part of a unitary whole, in which a change in any its parts produces a change in the set.

The latter is one of the major differences between Caño Roto, and the vast majority of urban projects made over the year 1950, compared to present urban

developments, in which the modification of any part does not produce significant changes in the set because of their urban structure and their buildings operate as autonomous entities. They are not interrelated.

Therefore, the great lesson we can get from this project is how architects have designed their urban morphology; which is not determined by a previous plan but by the location of the buildings and the relationships established between them. This produces a big variety of areas for public use with different morphological characteristics which define the condition and use of these areas. There are living areas, which serve as meeting places and relations between the neighboring. There are streets that connect different parts of the neighborhood and with the surrounding urban fabric. There are also pathways used only for access to houses. The latter have a much smaller width than the other streets in order to restrict its use almost exclusively to residents of the housing clusters they serve (see Fig. 3).



Fig. 3

Caño Roto does not have big squares and avenues that would establish hierarchies within its urban fabric, except the empty set in the center of the plot that was reserved for the construction of housing blocks later; the public space of Caño Roto is labyrinthine, not addressed, in which the location of buildings prevents distant views. This makes the overview possibility of the whole impossible. In the Fig. 4, which shows empty spaces of settlement shaded in black, we can see that it spreads like an oil slick that will articulate spaces which invite to linger and chat, read or simply listen to the song birds. Thus the pedestrian areas of the neighborhood are a succession of streets that lead to squares and squares that, in turn, lead to streets, creating a multiplicity of tours within the complex.

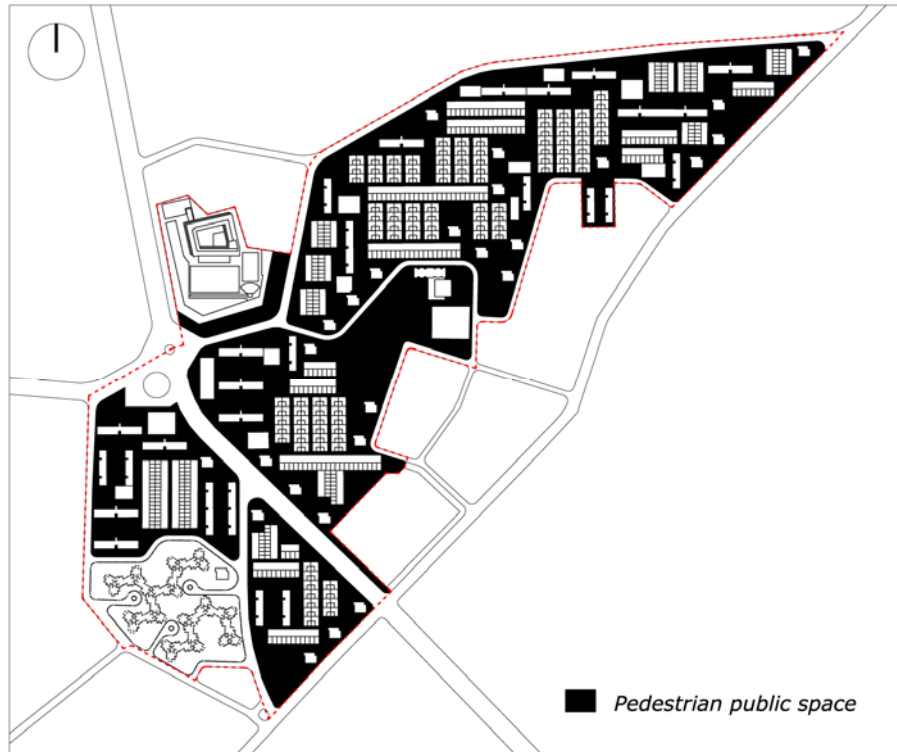


Fig. 4

This way of organizing urban space is very far from both the planning of the Central European countries in the thirties as the urban developments which were doing in Europe and Spain at that time. However, the urbanism of Caño Roto suggest a way of understanding the city linked to Mediterranean tradition and, more specifically, to Islamic tradition. One of the clearest links between Islamic tradition and this settlement is the unitary character of its urban morphology, answering both to the circumstances of the physical environment, climate and landscape, as a social needs of the community⁶. All design decisions of the architects answer to the aim of creating a real neighborhood, which is understood not only as a group of houses but as a community⁽⁶⁾. In Caño Roto everything is projected from the collective aspect. So, the great interest of the proposal lies in the link between private and public, operating as two inseparable entities that cannot be conceived independently.

In addition to that, architects reinforced the importance of public space in the project through two basic operations: firstly, by placing parking areas on the periphery of the settlement blocks, preventing the movement of vehicles inside, and secondly, by placing numerous vegetation areas throughout the set. So, the pedestrian movement is encouraged since access to housing is always done walking. This way, residents understand the walkways as their own spaces and vegetation also improves the habitability of the outdoors spaces, encouraging their use and enjoyment.

Also, the design of green areas is thought for the neighbors, which are who take care of its preservation since the proximity between gardens and houses, making inhabitants to understand these spaces as a part of their home. Thus, everyone feels responsible for these external sites and care for and maintain it as if would be owned because they are also part of their living space(7). All these issues make Caño Roto an essentially human neighborhood, where neighbors can be at ease both inside and outside their homes.

The importance attached to public pedestrian spaces is largely due to the layout of streets of motorized traffic. In Fig. 5, we can see that Caño Roto has six streets where cars can circulate: three perimeter roads that run through the outline of the plot and another three roads that cross the plot transversely. This road network, which metaphorically could assimilate with tributaries that flow into one main road, establishes five big areas (blocks) where cars cannot enter. Each of them is equipped with parking areas outdoors, where parking number varies depending on the size of the block in which they are located. These parking areas have a preferred use for the residents but their access is not restricted. The location of these parking points responds to the condition that the distance between any building in the neighborhood and the nearest parking not exceeding two minutes (see again Fig. 5). So, the layout of roads and parking optimizes both the car circulation surface as walking time from parking to dwellings.

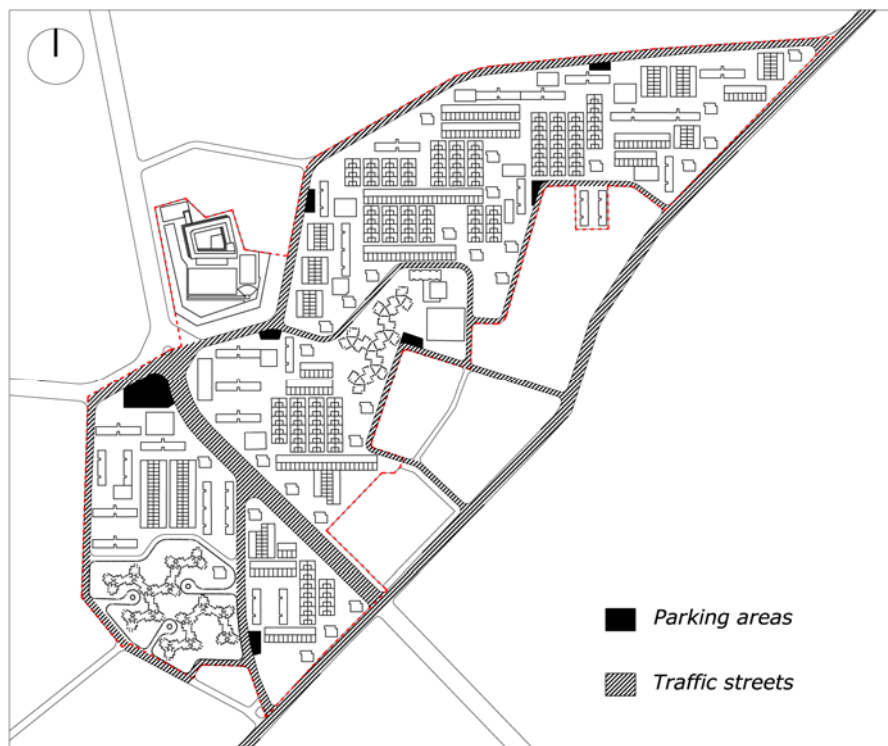


Fig. 5

4. Conclusions

At last, after having analyzed the main elements that make up the public space of the Settlement of Caño Roto Satellite, we can say that the urban quality of the project lies in the importance given to pedestrians. The pedestrian scale is the fundamental principle for the design of the urban morphology. Therefore, architects organized an integral system of housing, equipments, streets and squares in which each party has been designed in relation to others, and all of them respond the overall goal of creating a neighborhood that make to its inhabitants a more pleasant everyday life.

Authors made a careful study about the organization of all areas, both public as private, where life would develop since they firmly believed that changing the environment in which human activities take place, could be –and can be– changed by the social situation(8).

Compared to existing urban developments, the design of Caño Roto should serve as an example that urban planning can and must be used to build a better city: less individualistic and less segregated. The functional planning cannot simply establish administrative boundaries that separate private from public, but it must contribute to encourage and intensify civic life. Nowadays, Caño Roto is even a great lesson of architecture.

One lesson which new generations of architects can learn and we must keep learning to find answers to the confusion of urban planning today.

NOTES

(1) “Falangistas” were the more social side of the Franco regime. Although its ideology was clearly fascist, they declared themselves anti-communist and also anti-capitalist. So, they promoted some initiatives from populist and nationalist, which in some cases favored to popular classes.

(2) Although there were planned initially to build 1606 homes, due to the huge demand for housing later were built 304 units more.

(3) «En este momento, los arquitectos españoles estaban convencidos de que el problema fundamental de las nuevas agrupaciones residenciales era la orientación. A consecuencia de esta idea, los nuevos desarrollos urbanos que se van a realizar en el país en la década de los cincuenta –especialmente los denominados “sociales”– se van a diseñar casi con la única regla de lograr unas condiciones óptimas de soleamiento y ventilación en las viviendas» (FLORES, 1964. 35-38).

(4) «Cualquier trabajo de crítica que olvide o haga abstracción de las relaciones internas a la Obra que formalizan a su vez, las relaciones entre lo íntimo, lo privado y lo público, entre edificio medio y lugar, o entre necesidad, historia y libertad... no puede ser considerada como una completa obra de crítica» (MIRANDA, 1999. 82).

(5) Only the three commercial buildings which are located on the north side of the plot are far from shopping areas.

(6) The urban organization of Islamic society is the materialization of social relations, which are public, and family relationships, which are private. Islamic society requires both the seclusion of domestic life as participation in economic and religious life of the community. Because of this, the Islamic city is articulated through a hierarchical system of spaces, in which we can distinguish public, semi-public and private spaces. This hierarchy is established according to the degree of

accessibility and closing of each space. Islamic settlements are not organized randomly manner but respond to a coherent order that lies behind to sequence of those privacy degrees.

(7) Caño Roto is probably one of the few remaining urban areas in Spain where residents still consider public space by as their own.

(8) Antonio Vazquez continuously repeated that «from policy, and architecture is a political activity, you can change society»

LEGENDS

(Fig.1) The Satellite Settlement of Caño Roto, aerial view, 1964.

(Fig. 2) Satellite Settlement of Caño Roto, general plan. Commercial equipments and endowments.

(Fig. 3) Satellite Settlement of Caño Roto. From left to right: square, main street and side street.

(Fig. 4) Satellite Settlement of Caño Roto, general plan. Pedestrian public space.

(Fig. 5) Satellite Settlement of Caño Roto, general plan. Traffic streets and parking areas.

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BIOGRAPHY

José Manuel Calvo del Olmo is an architect, graduated in the School of Architecture of Polytechnic University of Madrid (UPM). He has a Master's degree in Advanced Architectural Projects (Polytechnic University of Madrid) and at present is doing a PhD at the same university. His doctoral thesis is entitled "The Satellite Settlement of Caño Roto: Dialectic between typology and urban morphology".

Currently, he is an Assistant Lecturer in the School of Architecture of Architectural Projects at the Polytechnic University of Madrid and he also has been Tutor in the Master "Housing" of Roma Tre University (Rome), in 2010, and Lecturer both in Master in Advanced Architectural Projects (Polytechnic University of Madrid), in 2011, as in Master in Advanced Architecture, Landscape, Urban Planning and Design (Polytechnic University of Valencia) in 2012. In addition, he has been

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As professional architect, he has worked with renowned architects in Spain as Mr. Luis Martínez Santa-María and Ms. Carmen Espejel Alonso. Also, for a little over a year he started working on his own with the architects Guillermo Gosálbo Guenot and José López Parra. At this time, they have won the first prize in the International Competition EUROPAN 11-Getaria.