



Article

Peri-Urban Dynamics in Murcia Region (SE Spain): The Successful Case of the Altorreal Complex

Rubén Giménez García ¹, Ramón García Marín ¹, José María Serrano Martínez ¹ and Manuel Pulido Fernández ²,*

- Department of Geography, Faculty of Letters, University of Murcia, 30001 Murcia, Spain; ruben.gimenez@um.es (R.G.G.); ramongm@um.es (R.G.M.); jmserran@um.es (J.M.S.M.)
- University Institute of Research in Sustainable Territorial Development, Faculty of Philosophy and Letters, University of Extremadura, 10071 Cáceres, Spain
- * Correspondence: mapulidof@unex.es; Tel.: +34-684-080-710

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Abstract: The spatial pattern of the urban development recently experienced by large urban areas is significantly changing the traditional city model based on its compactness. It is generating new forms of urban organization that imply morphological, territorial, social, and functional changes. We analyzed the spatial impact generated by the construction of the Altorreal resort in the Murcia region and its effects on the local population (e.g. number of inhabitants). The results obtained highlight the importance of this resort in terms of space and population compared with other neighborhoods of the city.

Keywords: metropolitan area; urbanization; golf; interurban network

1. Introduction

The creation of metropolitan areas as a consequence of urban development over the last few decades is one of the main characteristics of current cities. Nonetheless, this expansion of peri-urban areas has not always been balanced and efficient, particularly in those countries in which their economies have grown very quickly. Two tendencies can now be observed in both global and national scales, where people tend to be concentrated in a reduced number of cities.

The global population has reached a total of more than 7 billion people, of which more than 50% are now living in cities. This suggests an increase of 25% of people living in cities in comparison with those who lived in urban areas in 1960. So, a global rural exodus has taken place in the 20th century. This increase in the number of urban people has caused social conflicts in many cities. This has provoked changes in some local people's preferences. Many have preferred moving to peri-urban areas, avoiding the typical crowded downtown areas, and generating a spatial expansion of surrounding neighborhoods.

From a theoretical point of view, this urban sprawl can show a high diversity of forms induced by different urban processes, such as suburbanization [1], metropolization [2], regionalization [3], rururbanization [4], and peri-urbanization [5]. The literature on these processes has been increasing in parallel to the socioeconomic value and complexity of urban agglomerations in most developed countries. In this context, one of the most representative examples corresponds to the expansion of the house stock and to the generation of cities with low population densities [6], i.e., the traditional model based on a compact city is progressively changing into other typologies of more scattered cities, in which people are concentrated in peri-urban areas [7].

Another important aspect is the changing relationship between cities and their hinterlands from the central city model by Von Thünen [8] and the hierarchical system by Christaller [9], up to the current monocentric or polycentric metropolitan regions [3] giving place to two urban processes, such as

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metropolization and regionalization [2]. This regionalized urban model commonly attributed to Central Europe has started to be observed in the tourist-dominated regions of Southern Europe (e.g., Balearic Islands, Murcia, etc.) as a consequence of the urban sprawl.

Nazarnia et al. [10], for instance, compared the urban sprawl in three important cities from North America and Europe, namely Montreal, Quebec City (in Canada), and Zurich (Switzerland) since 1951 and they estimated an increase of 26-, 9-, and 3-fold, respectively. Restrictive land planning legislation and a good system of public transportation can be useful in the reduction of this urban phenomenon that is provoking environmental problems, such as the reduction of the number of birds due to interference in their natural migration routes [11].

This spatial dispersion means the occupation of spaces traditionally considered transitional between the city and the countryside, in which agricultural and urban activities competed to be the dominant land use in the same space [12]. Motorization development based on privately-owned cars, the decentralization of many economic activities, and the attraction exerted by real estate developers due to the affordable price of rustic land have facilitated this urban sprawl in peri-urban areas [13].

Nowadays, the concepts of city and border are fuzzy and current metropolitan areas have become an urban space without borders [14]. This is causing confusion and inaccuracies to determine the physical and social borders between urban and rural spaces [15]. The inherent technical and economic transformations linked to this process are leading to a full physical and functional integration of the territory, including urban lifestyles. Consequently, the social differences between urban and rural citizens are less and less prominent [16]. Furthermore, these changes to a city with increasingly fuzzy borders are remarkable by the neoliberal approach as a win-win process both for inhabitants of the former rural and for those of the traditional urban areas [17].

New patterns of urban organization contrasted with traditional ones occur through the existing road network. This provokes the creation of new landscapes, morphologies, and building typologies [18]. The origin of this urban sprawl began in American cities after World War II, although following the model of the first suburbs created during the Industrial Revolution [18]. This American urban sprawl process has been adopted by many European cities, thus generating a new list of concepts and definitions adapted regionally.

The current use of the concept *metropolitan area* [19] has been quite useful in order to understand the urban dynamics of Spanish cities after the period of economic growth based on a singular building boom process. The current urban areas composed of several municipalities have had the most significant change in terms of the growth in the number of inhabitants and added value. In addition, many services have been installed in these new cities, in the former transitional areas between the city and the countryside [20]. A metropolitan region must therefore fulfill important functions, such as cosmopolitanity (power in a regional/national context) and guaranteeing the integration in networks of its different neighborhoods (connectivity) [19].

Muñiz et al. [21] consider urban sprawl to be a model of expansion characterized by at least the increasing weight of the peri-urban areas with respect to the city center, a decrease in population density, and a higher consumption of land. As a consequence, urban space is increasingly fragmented causing isolated towns within the city. These kinds of urbanization processes have been analyzed in depth from space using remote sensing data [22,23]. Taubenböck et al. [23], for instance, remark on the importance of measuring parameters such as dimension, pattern, and form in spatiotemporal analysis of urban sprawl. In the case of Murcia (SE Spain), it can be observed that there are significant differences in building typologies apart from the increase in urban land surface. Isolated houses with orchards (rural inheritance) are surrounded by several resorts, typical of Mediterranean coastal areas where tourism is the main economic activity [24].

Font [25] defines these residential groupings (resort-like) as an urban space of low population density formed by single family homes integrated in an urban complex with access by road, green areas, and leisure and sports facilities. These resorts can be directly managed by the municipality where they are located or by private owners of the autonomous complex [26]. The households built

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in these residential areas were first planned to cover the significant offer of tourism in the form of a secondary residence. Currently, they are usually used as a main residence [27].

So, the main goal of this study was analyzing the evolution of the urban model generated in the Altorreal resort, as an example of this urban sprawl in the Murcia region. We have also aimed to find out how the existence of some sports facilities, such as a golf course, is influencing this specific example before and after the commonly-known brick rush period (1998–2007) [28].

Our line of research, however, aims to go beyond a simple description of a case study. The Altorreal resort could be an excellent example of what is now happening in the urban agglomerations near the Mediterranean Sea [29–32]. The elitist resort model, i.e., including a golf course, initially thought for tourists, is being assimilated by local people who seek a greater social distinction [33]. Altorreal is, in fact, particularly interesting for two reasons. On the one hand, its quick success reached in terms of urban and demographic expansion. On the other hand, it is located in the center of the region of Murcia, 40 km away from the coast, although relatively near the capital city. So, a research question still remains uncertain: Is Altorreal an isolated success case? Or, on the contrary, is it following a Mediterranean trend of urban sprawl based on elitist tourism resorts, which are ultimately converted into residential resorts in high demand by local people?

2. Materials and Methods

Over the last few decades, cities have experienced significant changes in their spatial and demographic patterns on different scales. The information analyzed here was obtained from official statistics and cartographic sources, such as the Spanish Institute of Statistics (INE), the Regional Center of Statistics of Murcia (CREM), the Electronic Office of Cadastre (SEC), and the Spanish Royal Federation of Golf (RFEG). The information provided by these sources was matched and correlated in order to be able to characterize these changes. We used MO Excel and Access 2013 as well as free GIS programs (QGIS and GVSIG). The evolution of the urban fabric was analyzed using aerial imagery provided by the Spanish Plan of Aerial Orthophotography (PNOA), the Murcian Institute for Agricultural Research and Development and Food (IMIDA), and the Spanish Geographical Institute (IGN).

We have analyzed demographic indicators (number of inhabitants) comparing values of the Altorreal resort with other resorts nearby, the city center (Molina de Segura), and the whole municipality of Murcia City. In addition, we have quantified the land surface occupied by these resorts and how the morphology of the building (urban structure) has been progressively changing as well as causing changes in other demographic indicators, such as population density (expressed in people per km²). This whole process shows the dynamics of peri-urban areas in these Spanish cities that grew considerably over the last few years.

Study Area

The region of Murcia is one of the 17 Spanish Autonomous Regions, which is located in the southeast of the Iberian Peninsula with a size of 11,313 km². Its southern border has a coastal length of 275 km along the Mediterranean Sea.

Its administrative capital is Murcia City, forming a metropolitan area where the highest economic and social regional dynamism is mainly concentrated. This urban area is composed of 10 municipalities scattered over 1225 km² in size, which is known as the urban agglomeration of Murcia [34].

Murcia City is the largest municipality (880 km² in size) representing 75% of the total surface of urban agglomeration and has more than 438,000 inhabitants. Molina de Segura, with a land surface of 170 km², is the second municipality in terms of size and number of inhabitants with almost 70,000 people. The rest of the municipalities (10% of total surface) are Santomera, Torres de Cotillas, Alguazas, Archena, Alcantarilla, Beniel, Lorquí, and Ceutí (Figure 1).

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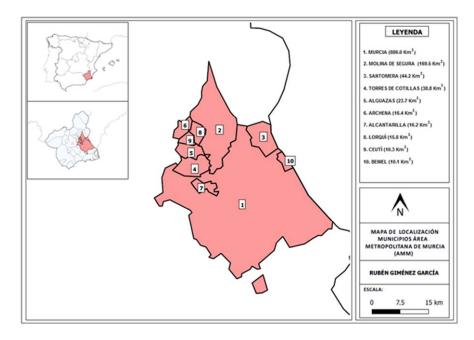


Figure 1. Location map of the Metropolitan Area of Murcia (MAM).

The study focused on the municipality of Molina de Segura, which is the most important out of the six municipalities that form the central node of urban agglomeration. Molina de Segura has experienced a significant urbanization process over the last few decades. It has entailed the building of almost 20 residential complexes occupying the peri-urban area (Figure 2). Of all of them, Altorreal is considered the most successful and dynamic. This resort has achieved an interrelationship between golf facilities, green areas, and real estate developer business since 1990. The construction of the Altorreal complex (golf course surrounded by residential blocks) was planned in 1977, provided with financial support in 1984, and finally built in 1997 [35].

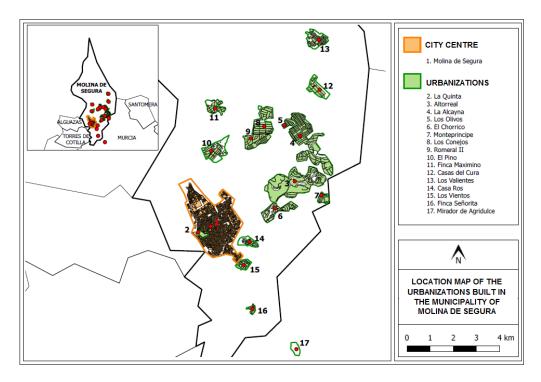


Figure 2. Location map of the urbanizations built in the municipality of Molina de Segura.

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3. Demographic Evolution

The Spanish building boom in the period between 1998 and 2007 was significantly remarkable in the (littoral and prelittoral) coastal areas of the Mediterranean Sea, as well as around the regional and provincial capitals and metropolis [36,37]. The Murcia region has been one of these coastal regions where the effect of the building boom has been more visible. Within this region, Molina de Segura is an excellent example of these dynamics. The success of this municipality has been due to its proximity to Murcia City, a good road network that links the capital with the coast, and by the low price of terrain at the beginning of the urbanization process [38]. Table 1 shows the evolution of the number of inhabitants in the different resorts, the city center, and the whole municipality of Molina de Segura.

Urbanization	2000	2005	2010	2016
El Chorrico	128	353	491	572
Montepríncipe	0	87	264	341
Altorreal	988	2759	5777	7864
La Alcayna	1201	2572	3951	4266
Los Conejos	412	655	850	920
Los Olivos	0	85	362	420
El Romeral II	22	143	165	203
El Pino	71	64	77	115
La Quinta	0	0	107	729
Finca Maximino	8	62	112	149
Mirador de Agridulce	0	0	537	1110
Los Vientos	394	431	403	416
Casa Ros	36	74	135	133
Casas del Cura	8	38	87	103
Finca Señorita	9	16	16	35
Los Valientes	203	349	433	488
City Center Molina de Segura	36,115 44,389	41,644 54,673	46,135 65,815	45,649 69,614

Table 1. Demographic evolution (2000–2016) of urbanizations of Molina de Segura (No. of people).

The increase in the number of inhabitants in the city center (almost 20,000 more people) and its nearest complexes has been constant in the last 15 years. Nonetheless, the increase in the surrounding residential urbanizations has been higher than in the city center, where 65.5% of the total population lives. Altorreal, in particular, grew 7 times more than the city center and the whole municipality. This fact is due to the preference of dwellers to live far away from urban overcrowding, although having the services offered by the metropolis relatively close [39].

The downtown of Molina de Segura has lost about 15% of its total population in the last 15 years. Former dwellers from this part of the metropolis have preferred moving to this surrounding residential area, motivated by living in more quiet places, although keeping an acceptable quality of life in terms of services offered (e.g., accessibility) [40]. Table 2 shows the values expressed in percentage comparing only the urbanizations. 44% of dwellers in the surrounding areas live in Altorreal, specifically in those urbanizations built in the 20th century.

Table 2. Percentage of dwellers in the urbanizations with respect to the total in surrounding areas.

Urbanization	2000	2005	2010	2016
El Chorrico	3.68	4.59	3.57	3.20
Montepríncipe	0.00	1.13	1.92	1.91
Altorreal	28.39	35.89	41.96	44.02
La Alcayna	34.51	33.45	28.70	23.88
Los Conejos	11.84	8.52	6.17	5.15
Los Olivos	0.00	1.11	2.63	2.35

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Tab	e 2	Cont

Urbanization	2000	2005	2010	2016
El Romeral II	0.63	1.86	1.20	1.14
El Pino	2.04	0.83	0.56	0.64
La Quinta	0.00	0.00	0.78	4.08
Finca Maximino	0.23	0.81	0.81	0.83
Mirador de Agridulce	0.00	0.00	3.90	6.21
Los Vientos	11.32	5.61	2.93	2.33
Casa Ros	1.03	0.96	0.98	0.74
Casas del Cura	0.23	0.49	0.63	0.58
Finca Señorita	0.26	0.21	0.12	0.20
Los Valientes	5.83	4.54	3.15	2.73

Table 3 shows the population density of Altorreal according to the surface built in each period. It has increased from 1059.56 people $\rm km^{-2}$ in 2000 up to 4791.83 people $\rm km^{-2}$ in 2016, 7 times higher than in Murcia City (515 people $\rm km^{-2}$). It contrasts with the dominant opinion of the residents who say that they have moved to Altorreal looking for a lower population density. In addition, it contradicts the definition of urban sprawl, which assumes these peri-urban areas are of low population density.

Table 3. Evolution of the population density of Altorreal urbanization.

Year	Built Surface (km²)	Built Surface (ha)	People km ⁻²	People ha ⁻¹
2000	0.93	93.25	1059.56	10.60
2005	1.26	126.18	2186.58	21.87
2010	1.63	163.12	3541.60	35.42
2016	1.64	164.11	4791.83	47.92

4. Planning Activities

The urbanization process of Altorreal has been quick and intense, mainly concentrated in the period of the Spanish building boom, since between 1956 and 1981 there was little building activity (Figure 3).

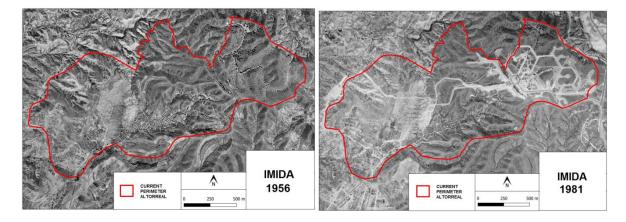


Figure 3. The first constructions in the Altorreal urbanization.

In 1956, the current settlement of Altorreal was unaltered. The task of urbanization began in 1981: shrub clearing, land moving, and road network design. In 1990, only 6.8 ha were already built (Figure 4). It was to be the base of the Altorreal Golf Resort, which was completed in 1998, including a golf course with 18 holes, with a surface built of 78 ha (46% of total complex). In Figure 5, we can observe the first residential blocks as well as the construction of sports facilities, such as the golf course, which were a good way to attract residents to the area.

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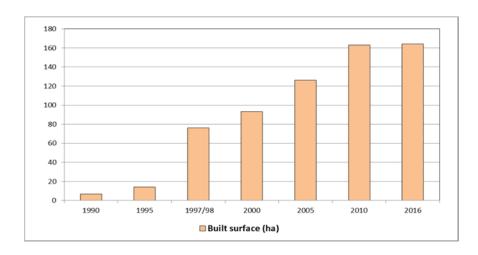


Figure 4. Evolution of the land surface built in Altorreal since 1990.

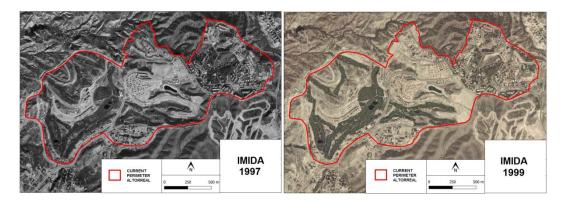


Figure 5. The starting point of the Altorreal Golf Resort.

In the new millennium, the urban fabric of the Altorreal resort kept increasing. In 2000, 93 ha were already built (56.8% of total resort), and 125 ha were surpassed in 2005 (Figure 6).

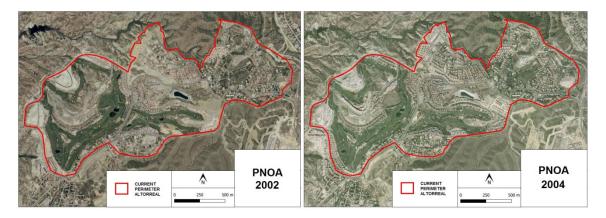


Figure 6. Evolution of the urban fabric in Altorreal at the beginning of the 21st century.

Between 2005 and 2010, the remaining blocks of the resort were built. This last urban project (163 ha) was key to the success of the complex (Figure 7). In the period from 2010 to 2016, practically nothing (0.61% of total) was built. It was a consequence of the real estate bubble bursting [41]. It has had serious consequences on the national economy due to the role played by the secondary sector [42].

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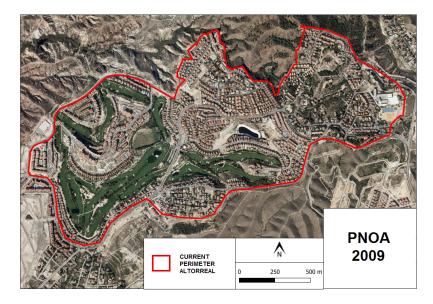


Figure 7. View of the Altorreal resort in 2009 at the end of the building process.

Figure 8 shows the evolution of the building phases in the Altorreal resort according to the projects completed at each period. The starting point was the building of 6.7 ha in 1990. Another 7 ha were finished in 1995. Between 1995 and 1998, the period of highest activity took place: 62.2 ha, including 47.1 for the golf course and green areas. The good economic situation in Spain at the beginning of the 21st century helped to increase building activity: 32.9 ha (2000–2005) and 36.9 ha (2005–2010). In the last six years, less than 1 ha has been built due to the economic recession Murcia and Spain have been facing. Nowadays, the Altorreal resort has a perimeter of 221.68 ha, out of which 116.90 are occupied by residential blocks, green areas, and leisure facilities. The golf course makes up 47.17 ha. The remaining surface (47.5 ha) is still pending urbanization projects.

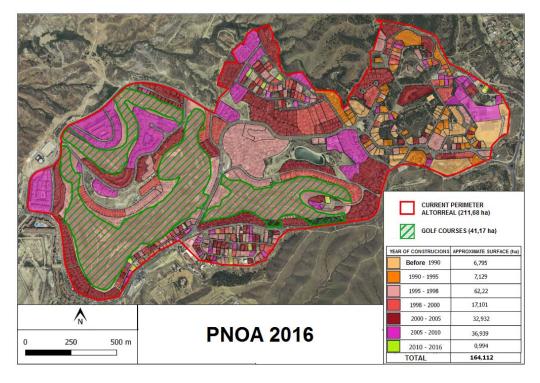


Figure 8. Evolution of the different projects of urbanization carried out in Altorreal.

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The process of urban sprawl analyzed in Altorreal, initially induced by a tourism proposal (i.e., a golf course), has already been observed in many other touristic Mediterranean areas, even in inland Majorca, the Mediterranean island that annually receives more visitors [43]. Urban sprawl has even been observed in places with a declining human population [44]. In the Spanish case, this phenomenon has seen about 500,000 ha of land transformed from agricultural land use into urban spaces between 1975 and 2008 [45].

5. Conclusions

The recent urban sprawl of many Mediterranean cities contrasts with their traditional compactness. This demographic and residential irradiation process has lead to a higher consumption of land and a reduction in population densities as well as an increase in the spatial continuum fragmentation. However, this process is not only being detected in coastal areas as a consequence of tourist activities, i.e., this urban sprawl is also starting to be significant in inland areas relatively near to main cities (e.g., Murcia).

Altorreal is a resort that was originally endowed with elitist facilities, such as a golf course and many green spaces in order to attract foreign visitors that were looking for a second residence for the summertime holidays. Nowadays, it is mostly inhabited by local people that use their houses as their main residence and work in the influencing area of Murcia City. In addition, Altorreal has experienced an increase in the number of inhabitants and land surface built much quicker than its closer neighborhoods (some of them are resorts as well).

Its urban-demographic success, even in times of economic crisis, has been induced by two peculiar reasons: (a) the availability of rustic land at low prices in the northern crown of Murcia City, and (b) the construction of shopping and leisure facilities (football stadium, shopping center, etc.) and roads/railways that have facilitated accessibility to the city downtown and the provision of extra services for its inhabitants that are complementing those already existing in the neighborhood (schools, kindergartens, supermarkets, etc.).

Therefore, we can conclude Altorreal is a good example of urban sprawl that followed the economic/spatial rationale of the majority built in the Mediterranean coastal areas. This currently makes it a node of significant demographic relevance within the urban agglomeration of Murcia City, located in the inland of the homonymous region. So, we think Altorreal should be considered an isolated residential success. However, further research is still needed in order to compare this model with other Mediterranean cities.

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