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Representations of Spatial Transformations: Industrial Agriculture and Informal Settlements in Mercedes, Uruguay

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Keywords
Industrial Agriculture, Informal Settlements, Social-spatial Fragmentation, Spatial Transformation, Urbanism, Uruguay

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Silvina Lopez Barrera, Iowa State University, USA

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Introduction

Traditionally, rural areas of the Departamento ¹ of Soriano in western Uruguay depended on agriculture. Today, these areas are facing changes related to rural-urban migration and the development of industrial agriculture. Globalization, agricultural industrialization, rural migration, social and spatial fragmentation, economic growth, and local and national policy have contributed to this transformation. This study is an attempt to explain the processes of transformation as they are spatially manifested. It explores how changes created by industrial agriculture and the distribution of wealth in the capital of Soriano, Mercedes, is transforming the local social space.

In recent years, global agricultural networks have expanded their operations to include remote areas in the developing world, such as Soriano, Uruguay. Being more specialized technologically than traditional agricultural practices (ARU 2009),² global agricultural companies and corporations induce a process of transformation that has, in the last two decades, changed Soriano’s rural and urban landscape and reshaped the profile of local communities. In Soriano, as well as in the rest of western Uruguay, agriculture historically

¹ Departamento is an administrative-political subdivision of the country. Uruguay has nineteen Departamentos, and each has its own capital city. The governments of the Departamentos are called Intendencias Municipales. The Intendencias Municipales are in charge of the rural and urban areas within the Departamentos, and the headquarters of the Intendencias are located in the capitals of the Departamentos.

² Asociación Rural del Uruguay (ARU) stands for Rural Association of Uruguay.
influenced the infrastructure of towns and their surrounding areas. Today, these areas are subjected to new governmental policies and projects, which attempt to accommodate the operations of international companies interested in moving their headquarters to countries like Uruguay.

The landscape of Mercedes has been affected by land use changes of its agro-ecosystems and uneven economic growth within the city impacting the spatial gap between the privileged and unprivileged. Some of the results of these changes are the location of silo facilities and informal settlements along the urban fringe of Mercedes, causing the deterioration of existing transportation infrastructure and the built environment.

Informal settlements have expanded during the last two decades in Mercedes, as a result of socio-economic and spatial segregation. According to the Census of the National Institute of Statistics (INE), from 1996 to 2004, twenty-six percent of the rural population of Soriano moved to urban areas. Around fifty percent of the rural labor force lives in urban areas in small towns and cities, including Mercedes and Dolores, among others. The formation of the first informal settlements in Mercedes in the 1980s was a consequence of rural migration brought about by the financial crisis, among other critical factors. The first squatters migrated into the city from rural areas seeking job opportunities. Those who could not find work or became unemployed could not afford places to live in the city and ultimately many ended up occupying public land, such as banks of the Daca Stream, which flood annually.

Mercedes, Soriano

Uruguay is subdivided into nineteen administrative-political regions called Departamentos—one is Soriano. In 1857, Mercedes became the capital of the Departamento of Soriano. As one of the main destinations of international industrial agriculture companies seeking headquarters in Uruguay, Mercedes benefits from being directly connected to farmland and transportation infrastructure connecting to the port of Nueva Palmira (see Figure 1).

Figure 1: Uruguay and Soriano Maps. Drawn by the Author based on Satellite Image

3 Instituto Nacional de Estadística (INE) stands for National Institute of Statistics.
4 The Daca Stream is in the west area of Mercedes and flows into the Negro River.
Located along the Negro River, the city of Mercedes, originally called “Capilla Nueva de las Mercedes,” was founded in 1788 by a priest named Manuel Antonio de Castro y Careaga. The city’s foundational map was based on the “Law of Indies,” which established the hierarchical spatial relationship center-periphery through the grid. The Law of Indies Plan located the church and the institutional buildings around a central plaza (Lejeune and Centre international pour la ville l’architecture et le paysage. 2005, 18–29). The orthogonal base grid of the Law of the Indies Plan is the base foundational map of Mercedes today. The orthogonal grid was rapidly expanded from the central plaza and the cathedral.

The city of Mercedes is comprised mainly of four different geographical areas and different socioeconomic statuses can be observed in each. These areas include the center, the rambla or riverside boulevard, traditional neighborhoods, and the periphery (see Figure 2). The center is the historical area and is used in a variety of ways, including residential units, commercial buildings, and governmental and financial institutions. The residents in the center are comprised predominantly of a middle socioeconomic class. The rambla is the neighborhood located along the Negro River, and the activities in this area are basically residential and recreational involving the river. People from the highest economic class of the city occupy the rambla. The traditional neighborhoods form the urban fabric of Mercedes and are inhabited by the working class. Corporations and facilities related to industrial agriculture activities are located in the peripheries of the city next to the informal settlements (see Figure 2).

Figure 2: Neighborhoods of Mercedes. Map Drawn by the Author

Theoretical Framework: Abstract Space

The way space is organized embodies a relationship of power between those who are advantaged and those who are disadvantaged. This relationship defines social structure and organization. In the words of Lefebvre, “The space of a (social) order is hidden in the order of
space” (Lefebvre 1991, 289). Space is understood not just as a built environment, but also as a force of production and an object of consumption. Consequently, the space produced as an instrument of thinking and action is also a consequence of control, domination, and power.

The capitalist society has produced abstract space which includes “the world of the commodities,” its logic, and its worldwide strategies (Lefebvre 1991, 53). Although abstract space seeks to achieve homogeneity through the simplification of social reality to a determined plan or idea, it is complex and polymorphic. Lefebvre describes abstract space’s constitutive dualities as the result of being produced as geometric space and productive (Lefebvre 1991, 287–288).

The neoliberalist approach to economic and social policies is a global phenomenon in the capitalist society. A significant problem of abstract space under the neoliberal approach is, while the state produces legislation and policies benefiting corporations like agri-business, it withdraws from welfare supply, leaving segments of the population exposed to impoverishment (Harvey 2005, 70–80).

In the globalization process, societies become integrated by networks that blur the boundaries of the autonomous state (Castells The rise of the network society 2000). The global economy networks are based on information, financial transactions, markets, and production sites. To become a part of the global economic networks, the regions must add value through the input of human resources or raw materials, among other ways (Castells Toward a sociology of the network society 2000, 693–699). For example, Mercedes is part of the global network because it provides raw materials to the global markets. The global markets and the global economy produce abstract space at different scales—local, regional, and global—as well as in different forms, including housing, land, and transportation, among others. The abstraction of space implies the destruction of complex reality with the purpose of imposing a spatial order. Nature and social reality become abstracted by a homogenous gaze that ignores parts and details (Lefebvre 1991, 286). In this sense, a commodity represents an abstraction of the activity of production and the human need; its market value is prioritized. Commodities embody the networks of exchange and the world market.

The reflections of Lefebvre in 1970 about politics of space suggest a method to approach the spatial problems. The spatial approach must be based on a “dialectical method” that explores spatial contradictions in society, the contradictions of physical manifestation, and the use of space (Lefebvre, Brenner, and Elden 2009, 167–182). Abstract space embodies elements of Lefebvre’s “perceived-conceived-lived” triad, which consists of spatial practices and representations of space in its constitutive dichotomy. Thus, abstract space implies a hierarchical arrangement of elements and places by integrating and excluding them (Lefebvre 1991, 287–289). The foundational plan of Mercedes, based on the colonial grid, represented abstract space; it imposes a relationship of power between the central plaza with the cathedral and the remainder of the city, reinforcing the duality center-periphery.

Space is a social product and the social construction of space implies a process over time. The form of social space assembles everything produced through cooperation or conflict between nature and society (Lefebvre 1991, 101). Social space is the intersection of spatial practice, the representation of space, and representational space, where all exist together. Spatial practices are the production and reproduction of the relationship between society and/or the individual and space. Spatial practice is an everyday practice and embodies the physical manifestation of space; through spatial practice, society produces and appropriates
space (Lefebvre 1991, 38). Representations of space imply the abstraction of space through maps, plans, and policies, among other ways. These representations of space enforce a type of order (Lefebvre 1991, 38).

Capitalism and the state have produced abstract space that is fragmented and disarticulated from society and its needs (Lefebvre 1991). As illustrated later, space in Mercedes is shaped by the industrial agriculture operations and practices, and by the different plans driven by different levels of state government, both national and local. In the 1980s and 1990s, the Uruguayan economy was driven by neoliberal economic practices. Although concern for social equity brought the government in 2005 to attempt to solve issues regarding the distribution of wealth through economic practices and social justice policies, such as the social emergency plans and income tax reforms, these polices have not counteracted the effects of neoliberal practices in the spatial transformations. Neoliberal economic practices, as well as state and municipal plans, have influenced the spatial segregation in Mercedes.

The social justice approach and claims of the right to the city provide counter-points to neoliberal economic practices. The spatial approach to social justice is constructed by society as a whole; it implies the spatial redistribution of resources and ensures access to urban infrastructure for the entire society (Harvey 1973, 14–15). In addition, the right to the city is the right to transform urban processes through collective action:

The right to the city is far more than the individual liberty to access urban resources: it is the right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the process of urbanization (Harvey 2008, 23).

The informal settlements of Mercedes represent the claims to this right, which include access to housing and public infrastructure, among others.

This paper provides an insight on the social construction of abstract space in Mercedes, which implies the social relations of production, the representations of space, and spatial practices and their physical manifestations. This study analyzes, through elements of Lefebvre’s triad (1991), spatial transformation and challenges Mercedes faces related to the development of industrial agriculture and the growth of informal settlements. Finally, it explores the way maps, policy, and plans have transformed the physical manifestation of space and the use of space by the inhabitants of Mercedes between 1980 and 2010.

**Methods and Procedures**

This research focuses on the spatial transformation of Mercedes produced by economic practices and informal urbanism. This phenomenon is analyzed through the concepts of the representation of space and the spatial practice of Lefebvre’s spatial triad (1991). This study is based on secondary data obtained from the Agricultural Census, Population Census, online press and websites, maps, policies, and other sources. The discourse includes field notes from informal conversations about plans and policies with staff of the local government (Intendencia Municipal de Soriano (IMS)), and the Ministry of Transportation (Ministerio de Transporte y Obras Públicas (MTOP)).
The representation of space is analyzed through data gathered from historical and contemporary maps, satellite images from Google Earth, the current strategic plan of Mercedes, and past and current policies related to land use and development.

Spatial practice refers to the physical manifestation of space. A society’s spatial practices determine that society’s space. Spatial practice produces and appropriates the space. Thus, in a capitalist society, spatial practices are materialized through routes and networks that connect places for work, living, and leisure (Lefebvre 1991, 38). This paper analyzes spatial practices through data gathered from the 2002 Agricultural Census, the Population Census from 1996 and 2004, and the Relocation and Regularization Program of informal settlements in Mercedes. Additionally, local and national media, online-newspapers, websites of the agriculture industries located in Mercedes and Soriano, and several bibliographic resources were analyzed.

Finally, the findings of this research are shown through maps on satellite images that illustrate the social construction of space and spatial practices. Additionally, the maps attempt to decipher what Lefebvre calls society’s “secret” space under capitalist practices (Lefebvre 1991, 38).

This research had limitations, due to the location of the city studied, and the lack of primary resources and precedent research about the informal settlements’ population. Other limitations were the lack of academic studies related to agricultural transformations in this region, particularly the lack of studies, maps, and demographic data related to both rural and urban growth.

Social Space in Mercedes: Abstract Space and Spatial Practices

A Historical Perspective of the Production of the Space: Internal Market (Local) vs. External Market (Global)

The production of space in rural areas of the departamento of Soriano and in cities like Mercedes is the result of two different agriculture production systems that respond to different markets—the exportation market and the intern consumption market. The industrial agriculture system, based on agro-industrial complexes, local businesses, and international corporations, among others, is basically oriented to the exportation market. In contrast, small scale agriculture is oriented to the internal market (Piñeiro 2003). In Latin America, agricultural practices have been developed at different speeds:

Today there is agriculture in two speeds: agriculture with the strong use of chemists and mechanics, and biotechnology related with agribusinesses, whose agents are agricultural entrepreneurs, and the main destination for this agriculture production is exportation. The agriculture of peasants and family farmers with lower technological development oriented to the domestic market, which is less dynamic… (Piñeiro 2003, 28). Translated by author.

In the past, the Mercado Central of Mercedes, or central market, was supplied with fruits and vegetables from rural huertos\(^5\) areas and chacras\(^6\) located around the town. This local

\(^5\) Huertos are vegetable gardens.
\(^6\) Chacras are small farms.
food system shifted to a centralized regional food system, based on intermediate retailers, who transport produce to the central market in Montevideo, Uruguay. Produce is then distributed from Montevideo to the rest of the country. Both the local and the centralized regional systems supply the internal demand of the country.

The Mercado Central in Mercedes was built in the 1950s to provide the town with fresh and affordable food. During the 1970s and 1980s this local food system suffered a significant decline. In 1981, there were around eighty horticulture farms with an average size of nineteen acres in Mercedes (Piñeiro 1981). In 2008, the Mercado Central was re-inaugurated, but currently, only ten horticulture farms supply the market (Mercedes recovered its Central Market 2008).

The distribution patterns of the old local food system were based on the area of small chacras around Mercedes. The farmers transported the produce themselves without any intermediaries to the Mercado Central through rural and secondary roads (see Figure 3). \(^7\)

![Figure 3: Historical Chacras and Central Market. Map Drawn by the Author based on Satellite Image](image)

The industrial agriculture system is based on the international market. Soriano and Uruguay have experienced the expansion of monoculture farming, based on the production of soybeans, since late 1990s (see appendix). Monoculture farming is associated with the presence of multinational corporations in this country. In 2008, seventy-three percent of the soybean exports from the port of Nueva Palmira were under the control of four multinational companies, including Cargill (Crop Uruguay S.A.), Louis Dreyfus Commodities, Garmet S.A., and Archer Daniels Midland Company (Barraca Erro) (Oyhantcabal and Narbondo 2008, 169

\(^7\) Figure 3 shows a type of central distribution to the Mercado Central in the inner city.
Uruguay mostly exports the raw materials of grain and imports processed materials, such as wheat and oil; it also imports fertilizers, seeds, and agro-pests. Thus, there is an increasing dependence on multinational companies in both the input and output of agriculture production.

The industrial agriculture system distribution patterns rely on primary roads, ports, and storage facilities (see Figures 4 and 5). In Mercedes, silo facilities, used for drying, processing, and storing grains, are located along the transportation network consisting of Route No. 2, Route No. 14, Route No. 21, and an abandoned railway. The distance from the farmland to the grain facility is usually less than seventy kilometers. In Soriano, grain is transported by trucks from the storage facilities in rural areas to the port of Nueva Palmira, from which it is exported on ships to countries around the world. Hence, Route No. 21 connecting Mercedes, Dolores, and Nueva Palmira is the principal agricultural transportation route. This explains during the last five years the government has focused its transportation infrastructure investment on Route No. 21. However, government investments have not been able to accommodate the increasing truck traffic caused by the rapid growth of the agricultural industry. Today, the primary and secondary rural roads in Soriano are largely deteriorated because of the amount of truck traffic and the lack of maintenance (see Figure 6).

![Figure 4: Industrial Agriculture Distribution System. Map Drawn by the Author based on Satellite Image](image-url)
The ‘Growth’ of Mercedes (Economic and Spatial Expansion of the Agro-industry, and the Expansion of the Informal Settlements)

As a result of rural migration, economic crises, unemployment issues, and other problems, in the early 1980s the outskirt of Mercedes became appropriated by squatters and rapidly this space was transformed into informal settlements. These informal settlements grew rapidly from 1982 to 2008.\(^8\) They shaped new and existing neighborhoods along the periphery of Mercedes (see Figures 7 and 8). The precariousness of the quality of life experienced by these inhabitants of informal settlements have implied they had little access to urban infrastructure, such as water supply, electricity, sewage, and transportation. Additionally, these inhabitants have had to face issues regarding poor access to education and health services. Unsafe building structures and the use of inappropriate construction materials make these informal settlements places where human life is constantly in danger.

\(^8\) 2008 was the date of the latest survey completed by Mercedes municipal government.
Socio-spatial segregation and urban poverty are associated with a poor quality of life, limited access to education, and violence, among other critical issues. The growth of informal settlements and extreme socio-economic differences among residents imply social exclusion through the use of this urban space. On the other hand, local and national economies have grown. At the local and spatial level, this is reflected in the renewal of the city center, which features new businesses and shops. Since the late 1990s, Mercedes has been the destination of several international companies, which have installed high-tech silo facilities on the outskirts of the city (see Table 1, Figures 7 and 8). In 2000, sixty-two percent of national soybean production took place in Soriano (DIEA 2000). In 2009, agro-industrial production for the entire country was 3.841 million dollars (DIEA Uruguay rural en cifras 2010), which constitutes around sixty percent of the total exports of the industry.

The municipality and the national government state their concern about the challenges of Mercedes being the location of agro-industries, as well as social inequality:

The Department of Soriano is facing challenges related to the production, the emergent agro-industries, and the socio-economic inequalities of its population. Facing those challenges means highlighting the complements with the territorial neighbors, having close links with the departments of the region, and defining strategies at national and regional levels with neighbor countries. (IMS and MVOTMA-DINOT 2007, 11)\(^9\) translated by author.

Thus, the challenge of Mercedes is to encompass the economic growth of the agro-industries and the distribution of wealth to face up to the social, economic, and spatial inequality among the most vulnerable sectors of its population.

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\(^9\) Ministerio de Vivienda Ordenamiento Territorial y Medio Ambiente (MVOTMA) stands for Ministry of Housing, Planning and Environment.
Table 1: Historical Evolution of Informal Settlements and Agro-industries. (Elaborated by Author, based on Data from IMS Survey and Agro-business Websites.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Informal settlements</th>
<th>Agro-industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947</td>
<td></td>
<td>Barraca Erro</td>
</tr>
<tr>
<td>1950</td>
<td></td>
<td>Calmer</td>
</tr>
<tr>
<td>1980</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>Ap Sa. 100 families 430p</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>Ap Sa. 155 families 665p</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td>Agro apoyo (ex Arinsa)</td>
</tr>
<tr>
<td>1995</td>
<td>Ap Sa. 265 families 1140p</td>
<td>Alpino</td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td>Agroterra S.A, Silopin S.A</td>
</tr>
<tr>
<td>2000</td>
<td>Ap Sa. families 1343p</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>Louis Dreyfus Commodities</td>
</tr>
<tr>
<td>2002</td>
<td>AFE</td>
<td></td>
</tr>
</tbody>
</table>
AFE 133 families 299p | ADM associates BE, Garmet Cargill associates  
Crop Uy |
AFE 597p | Alpino, Cargill, and Nidera new plant approved     |
Figure 7: Evolution of Informal Settlements and the Growth of Silo Facilities in Mercedes. (Maps by the Author, based on Data from IMS, INE, Satellite Image, and Agro-business Websites.)
In 2010 there were two major informal settlements in Mercedes, the Aparicio Saravia and the Tunel, also called AFE\textsuperscript{10} because of its proximity to the railroad (see Figure 8). The Aparicio Saravia started in 1982 in the west area of Mercedes along the Daca Stream and the Aparicio Saravia Road. This land was the property of the Intendencia Municipal de Soriano (see Figure 9).

\textsuperscript{10} Administracion de Ferrocarriles del Estado (AFE) stands for National Railroad Administration.
of new generations raised there, in addition to new settlers who migrated from impoverished urban families from the low-income neighborhoods of Cerro and Artigas.  

The other important informal settlement is the Tunel or AFE. Located along the railroad, this informal settlement started in April of 2002 (see Figure 10). Settlers, who vacated their previous residences, were the main origin of the Tunel. According to the 2008 IMS Survey, these settlers declared their main interest in the Tunel was the possibility they would become eligible for social subsidized housing. This informal settlement then grew rapidly as a housing solution for the impoverished and low-income population.

Figure 10: Tunel, AFE Informal Settlement. (Map Drawn by the Author.)

Most of the population in these informal settlements are either unemployed or employed temporarily. Around thirty-five percent of the population have unstable jobs called changas. Changas are precarious jobs with high worker turnover, usually jobs ranging from construction and rural employment to maids and trash collectors. In 2008, only four percent of the population of these informal settlements declared rural employment as their main source of income (IMS 2008).

Issues related to land availability and rent have contributed to the origin and growth of the informal settlements. Housing rent prices are expensive for the low-income population and there is a lack of land for building affordable housing.

There have been two frustrated attempts to regularize the informal settlements—one in 1999 and another in 2004. Currently, the local government, in coordination with the national government, is implementing a program for the re-localization and regularization of these informal settlements (IMS and MVOTMA 2009).

In 2010, 263 families were relocated into new social housing. The relocation plan provides a better quality of housing, but reinforces the spatial fragmentation between the squatters and the remainder of the population. The new social housing is located along the periphery

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11 Field notes from informal chats with staff of the local government of Soriano (IMS).
12 Field notes from informal chats with staff of the local government of Soriano (IMS).
of the city, influencing their access to the urban infrastructure (see Figure 11). These families represent around sixty-five percent of the population included in the plan. The plan includes 1,758 people surveyed by the Intendencia in 2004, 2005, and 2008 (263 families abandoned the informal settlements in 500 days of the relocation plan 2010). However, not all the informal settlements’ population was surveyed by the Intendencia and entered into the plan. According to the 2004 Population Census, at the time of the survey there were 2,815 people living in the informal settlements, but only 1,758 were surveyed by the Intendencia, meaning 1,057 people were not entered into the re-localization and regularization program.

Figure 11: Relocation Plan, Informal Settlements, and the Silo Facilities in Mercedes in 2010. (Map by the Author based on Data from IMS, INE, Satellite Image and Agro-business Websites.)

The opportunity to achieve social justice and spatial equity resides within the informal settlements. For example, squatter communities have been empowered with the purpose of gaining legal rights over the land they inhabit, as well as access to affordable housing and urban infrastructure. In addition, since 2005 the national government has made great efforts to integrate the informal settlement population into the whole society. Some examples of this are the Plan de Emergencia and Rutas de Salida,\(^\text{13}\) which provided job opportunities to people living in poverty. Despite the efforts at local and national levels, the social-spatial gap between informal and formal city have not been reduced and, in cases like Mercedes Relocation Plan, the spatial fragmentation has been accentuated.

\(^{13}\) Social plans achieved by the National Government. Plan de Emergencia was the emergency plan that provided economic subsidies to people living in poverty conditions. Rutas de Salidas was the plan that followed the Plan de Emergencia; it provided job opportunities to people who were part of the previous plan by the association of NGOs with public administration jobs.
Discussion and Conclusions

This section is a dialectical interpretation of the spatial transformation in Mercedes. It explores the way representations of space (maps, policies, and plans) impact the spatial practices composed by the flow of people and goods, and how they relate to each other (Lefebvre 1991).

As described by Castells (Toward a sociology of the network society 2000, 693–699), regions need to add value through the contribution of human resources, natural resources, and/or raw materials to become part of the global economic network. The foreign investments law promoted the insertion of Uruguay in the global economy. Historically, Uruguay oriented its agricultural production to the export markets.

The industrial agricultural system oriented to the exportation market produced a built environment that relies on transportation infrastructure. In this system, highways, primary roads, and secondary roads play the principal role by connecting the productive areas (farmland) with the storage facilities (next to urban areas) and to the ports for exports. In addition, public investments in roadway infrastructure improvements and maintenance are an attempt to mitigate the infrastructure decline. At the same time, these investments became an attraction for setting new industries connected to roadway infrastructure in good conditions.

The ambiguity of producing goods for the internal and external markets, and the physical result of an economic system that concentrates wealth demonstrate despite the economic growth, the quality of the urban spaces for part of the population along the periphery of Mercedes has declined. Thus, these urban changes have materialized through the socio-spatial segregation of citizens, who are advantaged regarding space and services, and those who are disadvantaged. It is the local citizens’ rights to reshape and transform the urbanization process, and the responsibility of development to ensure local social and spatial equity, and access to urban infrastructure and services, as well as affordable housing (Harvey 2008, 23–40). Informal settlements are an expression and manifestation of this right.

The Mercedes Plan, and the regularization and relocation program attempt to alleviate the growth of the Aparicio Saravia and Tunel-AFE settlements (see Figures 8 and 11). The growth of informal settlements is a complex problem; the settlements reflect the lack of urban planning and a lack of affordable land and housing, among other issues. Although the regularization and relocation plans create new neighborhoods for social housing, relocating and regularizing the informal settlements will not prevent the formation of future settlements, nor will it ensure the quality of life of the squatters will improve. Thus, the regularization and relocation program is an attempt to solve the physical consequence of the problem, but not the causes of the informal settlement.

To produce space with social and spatial equity, planning strategies and policies should deal with the redistribution of infrastructure investments and ensure rights to the entire population of the city, especially the most spatially disadvantaged and vulnerable sectors of society. Thus, legislation plans, policies, and public participation are essential to reinforce these rights, and for recognizing and regulating informal livelihood strategies and the private sector in rural and urban areas.
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________. 2010. Rural Uruguay rural in numbers. MGAP.


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### Soy-bean Production in Uruguay

<table>
<thead>
<tr>
<th></th>
<th>Exportations</th>
<th>Exportations Tons</th>
<th>Farmed Land Hectare</th>
<th>Farmed Land Acre</th>
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<td>$169,000</td>
<td>608</td>
<td>7,560</td>
<td>18,681</td>
</tr>
<tr>
<td>2001</td>
<td>$1,592,000</td>
<td>10,848</td>
<td>12,000</td>
<td>29,653</td>
</tr>
<tr>
<td>2002</td>
<td>$10,055,000</td>
<td>61,636</td>
<td>28,948</td>
<td>71,532</td>
</tr>
<tr>
<td>2003</td>
<td>$36,357,000</td>
<td>179,465</td>
<td>78,940</td>
<td>195,065</td>
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<td>2004</td>
<td>$82,620,000</td>
<td>229,350</td>
<td>247,096</td>
<td>610,588</td>
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<tr>
<td>2005</td>
<td>$100,678,000</td>
<td>477,401</td>
<td>277,961</td>
<td>686,857</td>
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<tr>
<td>2006</td>
<td>$138,167,000</td>
<td>631,595</td>
<td>309,100</td>
<td>763,803</td>
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<tr>
<td>2007</td>
<td>$209,326,000</td>
<td>773,142</td>
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<td>905,728</td>
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<tr>
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<tr>
<td>2009</td>
<td></td>
<td>577,800</td>
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<td>1,427,775</td>
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<tr>
<td>2010*</td>
<td></td>
<td>847,700</td>
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<td>2,094,712</td>
</tr>
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</table>

*sowing intention
Source: data obtained from DIEA.

### Average Income (Without Housing Value)

<table>
<thead>
<tr>
<th></th>
<th>Average Household Income</th>
<th>Number of people per household</th>
<th>Income per capita (pesos)</th>
<th>Income per capita (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper limit of the 20% poorest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rural areas</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2006</td>
<td>5,404</td>
<td>2.9</td>
<td>$ 1,863</td>
<td>$ 93</td>
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<tr>
<td>2008</td>
<td>7,153</td>
<td>2.9</td>
<td>$ 2,467</td>
<td>$ 123</td>
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<td>Medium</td>
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<td></td>
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<tr>
<td>2006</td>
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<td>2.9</td>
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<td>$ 67</td>
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<tr>
<td>2008</td>
<td>13,132</td>
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<td>$ 4,528</td>
<td>$ 226</td>
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<td>Lower limit of the 20% richest</td>
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<tr>
<td>2006</td>
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<td>2.9</td>
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<td>urban areas</td>
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<td></td>
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<tr>
<td>Upper limit of the 20% poorest</td>
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</tr>
<tr>
<td>2006</td>
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<td>$ 1,924</td>
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<tr>
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<tr>
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<tr>
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<td>$ 3,604</td>
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<td>3</td>
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<tr>
<td>Lower limit of the 20% richest</td>
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</tr>
<tr>
<td>2006</td>
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<td>3</td>
<td>$ 6,555</td>
<td>$ 328</td>
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<tr>
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<td>26,036</td>
<td>3</td>
<td>$ 8,679</td>
<td>$ 434</td>
</tr>
</tbody>
</table>

Note: the dollar value was calculated based on an average of 20 pesos
Source: data obtained from INE
About the Author

_Silvina Lopez Barrera_

Silvina Lopez Barrera is lecturer of architecture at Iowa State University where she teaches design studios. She holds a Master of Architecture degree from Iowa State University and an architecture professional degree from University of the Republic Uruguay. Silvina’s current academic interests include a multidisciplinary approach to space, informal urbanism, sustainable alternatives for rural and urban communities, food systems, and trans-nationalism, particularly in finding linkages between Latin America and the Midwest. She is a member of Iowa Women in Architecture and an associate member of the American Institute of Architects.