

A Proposal to Try To Change Contemporary Monotone Urban Sceneries

Euler Sobreira Muniz¹

Abstract

This paper intends to show the changes of the Post Industrial Revolution cities, mainly the ones faced by urban spaces settled in Europe and in Brazil. These changes turned the town's urban and built spaces extremely monotones. The contemporary way of producing objects in series and the necessity of reducing costs, to answer increasing space demands - until 2050, 75% of the world population will live in cities, instigated professionals, promoters and built spaces producers, to repeat a large number of times, planned constructions and urbanized zones. Surely, the reproduction of objects can or should always increase the products quality and decrease their costs. But, it's a human natural necessity, to face new sceneries and to live in a place that has some identification with its owner. Computer's systems can help designers to produce individual projects inside a series production. After a research, a method of defining spaces was developed to create individual solutions for answering collective demands. The presentation of this method is, by the end, the main target of this paper.

Keywords: Housing, Series Production, Flexible Design.

"... today's designs will inevitably become tomorrow's problems." JOSEPH F. WONG

1. Introduction

The Industrial Revolution has changed the way of thinking and living in societies. The industry needed a lot of workers for the production and a large number of buyers for the products. This industrialization process demanded more qualified employees, a very different one found in countryside at that time. The need of human resources to be in charge of the machines, already unknown in rural zones, drove to a migratory stream that occurred from different cities and countries. Day by day, the quiet life in farms, faced by the countryside employees, changed into a new faster cadence of the industrialized cities and the citizens were, little by little, plenty involved by this new rhythm of life. Horses that can easily walk on trails and helped farmers in Nineteen Century daily life, have been substituted by motorcycles and cars which can faster long distance transport people and commodities, but usually demand more generous streets and roads. Also workers and citizens substituted their daily tools from shovel and scythe to computers and electronic devices. In Brazil, also horses that participate in daily farm work have been substituted by motorcycles, because this kind of vehicle can use the same horses' trails, help farm employees the same way as animals, represents less maintenance costs and also less risk of loss, caused by death or sickness. In the majority of the Brazilian nowadays farms, horses are only used for leisure and sports. The way of living in isolate houses, very common in countryside, changed to occupying crowded skyscrapers, settled in urban dense zones. Little by little, villages came to cities and, part of them, are nowadays megacities - a big problem for citizens and an immense dilemma for Post-Modern urban planners.

¹ Architect y Urban Planner, Professor of the Universidade de Fortaleza – Brazil. Concluding his PHD Program in Suburban Zones, Sustainability and Urban Vitality at the Escuela Técnica Superior de Arquitectura of the Universidad Politécnica de Madrid. E-mail: euler@unifor.br.

"In 2050, more than 75% of the world population will certainly live in cities. For this reason, we can't plan houses without considering the city and cities without considering the houses" (HABRAKEN, 2009).

Alvin Toffler, a journalist born in New York City, in 1929, divided the human history, in his book named *The Third Wave*, published in 1980, in three great periods: The First Wave that begun with the Agricultural Revolution and has been characterized by countryside human activities – the farmer taking the place of the hunter, the fisher or the food collector. This First Wave remained around 10,000 years. The Second Wave happened just after the Industrial Revolution and it was based, as Toffler said: "...on mass production, mass distribution, mass consumption, mass education, mass media, mass recreation, mass entertainment and weapons of mass destruction. If we combine things such as standardization, centralization, concentration and synchronization, we shall have a kind of organization we name bureaucracy." Work and property were the main targets in this period of the human history and the steam engine was the biggest man creation for the employees and commodities mass transportation, took as exclusive components of the industrial process. Also architects of that time were aligned with this theory and considered citizens just as a number – the typical man presented in the International Congress for Modern Architecture. This Second Wave lasted around 300 years.

The Third Wave begun with the Computing Revolution. This history period was not anymore based on the industrial production, but on the service sector where computers, communication, robotics and micro-processors were the most important technologies. Nowadays, information goes across the world by web cables. Electric devices, plenty used in the Second Wave period, were substituted for electronic ones. Knowledge and Information are the main targets in this period of the human history. Personal and economic negotiations are done in real time and some of them are also made by the use of the virtual space. Man is not anymore only a number, but he is considered as an individual with different shapes and concepts. Products are developed for specific people. Big corporations of the Second Wave have been substituted for small companies that work in web. There is almost no company that can be at the same time in charge of producing, sale and products' distribution. Sometimes, there are companies settled in different parts of the world, working in web, that are responsible for the whole process. Each company that compounds this group could be in charge of part of the procedure. Internationalization is also a reality in academic life. Professors and students are working in international studying or researching collaborative networks, although they are physically living and studying in different countries. They can speak more than their native languages. Frequently, life's products end earlier in Post-Modern time. Programmed innovations make the products obsolete, even before their components come out of order. Mankind flexibility is the most appropriate tool to make life more comfortable in a society full of changes. Knowledge is nowadays the greatest difference we can add to a specific product or also to ourselves.

The city should be designed by planners to be adjusted to the society's changes, or it will be adapted by itself, as an effort and a desire of its population. In Ancient times, villages and cities were a result of the buildings' construction. The streets were the free space in the middle of these buildings. Although, in a first glance, it seems not to be a planned occupation, it was really a result of a deliberate intention of the area's inhabitants. The first construction built in a zone, was done in the best place that exists in the area. The constructors or the owners should consider it a best place to built, because it was close to the existing water, or because there were many building materials in the site, or still because the zone protected users against dangerous animals or undesirable neighbors. There was really a reasonable motivation that guided constructors to select specific site in one determinate zone. The second build, generally a house, was done in the same zone in the most appropriate place for the owner or constructor, selected among the areas that still remain untouched. This place could be chosen close to the other building or far from it, depending on the specific interests of owner or constructor. Many reasons could be pointed out for this election, but it was certainly a deliberate decision, not a random result. And then forth, all constructions were done considering the best remaining place. For Mathematics, this is an optimizing process that means a kind of a planned process - a rational utilization of an empty space for the best use of the occupants. Moreover, the villages' or cities' sizes depend on the way people move from one point to other, if citizens use feet, animals or vehicles to do this kind of activity. Until now, we can face owners or constructors using this logic to create new settlements around the World.

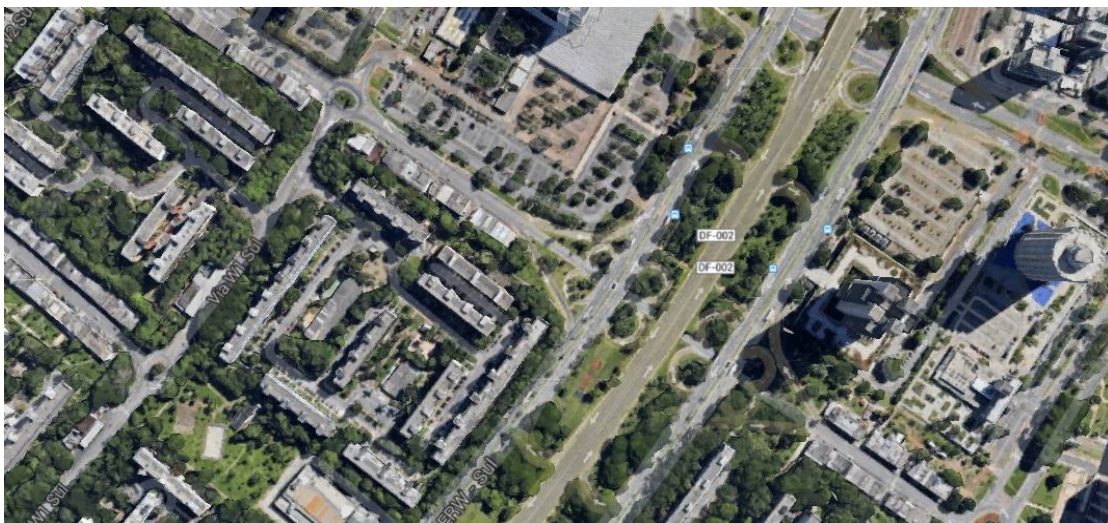
After the Industrial Revolution, cities increased their sizes and trains started to transport commodities and employees. Pollution's problems came along with the vehicles and the first green areas, in urban zones, were created in order to try to minimize the pollution terrible effects.

Green areas were also used, by urban planners, to divide the residential zones from the industrial ones – a crucial effort, done by the urban planner, to protect citizens from the contamination dangerous consequences. Before this period of the human history, only little green spots grew around the buildings. In Brazil, it was a direct influence of the French *Belle Époque*. France, at that time, was the center of cultural World. Great natural forests or dense green zones should be easily found around the cities and also in the peripheries. A large quantity of people living at the same area, begun to destroy the natural zones and substituted them for built ones. The concentration of workers and buyers in the same place increased the cities' sizes. Cars and big avenues started to be a solution, developed by planners and engineers, to increase the quality of life in these urban spaces. More vehicles imply in more pollution. More cars, in principle, demanded more streets. The urban planners had to change their working methodology. If in ancient times, constructions defined the first steps of occupying the urban land, in industrialization era, certainly streets origins all urban plans (**Picture 1**). The use of Zoning helped planners to distribute different types of constructions in different urban areas, using streets and avenues to link them. This division of the city in zones also intended to protect people against the effects of the polluted areas. This kind of constructions' distribution, considering the Zoning, increased moreover the cities' sizes. To (MUMFORD, 1982): "if capitalism intends to expand the commodities kingdom and changes each part of the city to a marketable product, it also modified the normal organization of the urban activities to arrange production in large scale, transforming cities in gloomy chimneys, which are smashing, creaking and sending smoke frenetically to the atmosphere around 12 or 14 hours per day, sometimes until 24 hours".



Spontaneous Settlement - Community of Mare, Rio de Janeiro - Brazil.

SOURCE – Google Earth.



Planned Settlement – Super Blocks, Brasilia - Brazil.

SOURCE – Google Earth.

Qualified urban planners usually begin to draw contemporary cities, defining streets and avenues. The constructions consequently occupy the boards of these routes, considering their own uses and the specific interests of each owner. Nowadays, different uses, at the same zone, help planners and users to minimize displacements. "The housing production, as taught by the Ford Model, nevertheless done by public or private constructors, considered repetition, homogeneousness, standardization, functional segregation and the large number of products as strategies to answer home necessities" (HABRAKEN, 2009).

Post Industrial Revolution territorial occupation impacting Brazilian and European urban space plans:

The main propose of this part of the paper is to present the results of house occupation of the urban territory – a study case that consider two main aspects: the first that shows the collective housing in Brazil, and the second that brings the same situation in European land. To (HABRAKEN, 2009): "the valorization of the intense relationship between house, public space, uses and mobility, built the ground where quality of life could be develop in a city." Quality of life should not be only considerate by their touchable and formal aspects, but also by the psychological, emotional and subjective sensations that interfere and guarantee the human being characteristics and differences. Buildings and cities mainly affect the spectators' vision, but the natural and constructed spaces should be recognized, in different levels, by all the human sense parts. Cities produce smell, buildings could be touched, natural spaces emit songs and the cultural landscape originate flavors. The quality of life must considerate each person as unique and prioritize social relations. The urban planners must take men's interests, necessities and relations with others, with the ground, and also with the city, as the center of their professional work.

In Brazil, the housing problem increased when the fabrics came to the urban zones and grew the necessity of employees, to command the industries' machines, and buyers to guarantee the productions' flow off. There was already housing problem in rural areas, where landlords and employees live and work almost at the same place. Owners lived in the *Casa Grande* and employees laid in the *Senzala* (**Picture 2**), as toilers at the very beginning or free workers, after Slaves' Abolishment. This same structure *Casa Grande - Senzala* came from country fields to the cities with the Industrial Revolution, because the owner of the fabric was, in the majority of time, the landlord of the farms and also industries treated products that came from the countryside. After increasing more and more the number of employees in the industries, and also after the arrival from Europe of more qualified fabrics' workers and from Japan, a new workforce to take care of the coffees' plantations, the housing solution that subsisted in the urban space or in the countryside, was not sufficient, concerning quantity and quality, to contest this new demands. Big size houses that existed in urban areas, have been changed in hives, to shelter groups of worker families. This high density, little by little, drove to endemic health problem in these new employee's homes, and the government of that time decided to force out the habitants of the hives, and they started occupying hillsides and swamps, areas that the Brazilian Building Market demonstrated no interest. In Brazil, it is only permitted to construct above the level 5 meters of the ocean line, and with a land bending less than 45%. This was the genesis of the Brazilian slums, *favelas* in Portuguese - poor temporary houses that can be destroyed, in rainy days, by mountain creeps or floods. Usually, this kind of homes was constructed in dry Seasons, because the owners frequently simple occupy the grounds where they built their homes.

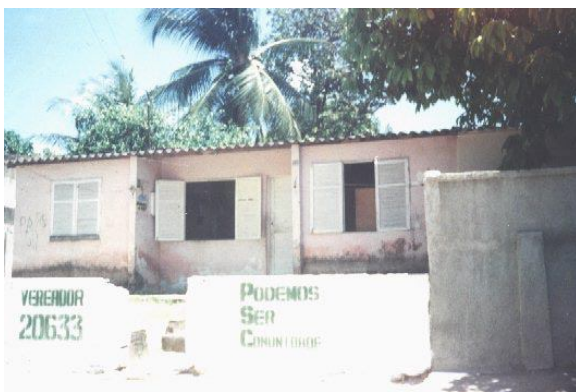


PICTURE 2 – *Senzala* - Brazil.

SOURCE – Draw of Jean Baptiste Debret.

To decrease the social impacts of the constructions in risk zones, Brazilian government created the Housing Financial System, controlled by the National Housing Bank. The main objective of this strategy was to try to guarantee homes to low salaries families. The Brazilian government lent money to the companies to construct housing estates to these poor families. The grounds were selected by the firms, generally far from downtown, because of the great offer of outsized free spaces and the low cost of these lands. The result of this kind of election: low price buildings and high social costs. Transportation was the first massive problem that emerged to this big crowds living in suburban zones. Moreover, many of these housing estates was done far from of the train stations, setting that contributed to increase citizens mobility demand, it considering that train easily move more quantity of people.

To turn easier the construction of the living units, generally companies used to clean up all the land, removing all green specimens that there grew, and they also built only two or three types of houses and generally two types of streets. Other strategy used to decrease the sale's values in Brazil was the *Mutirão*, a Portuguese name that means the use of the future owners working hand to produce their personal homes.



PICTURE 3 – Original Building and a similar changed by the owner. Fortaleza, Brazil.

SOURCE – Author's photo.

The Brazilian administration developed its proposal and nowadays less quantity of houses has been constructed in one property. As a govern policy, uninhabited urban spaces are selected, by the corporations, to receive new enterprises closer to downtown or to the existing infrastructure. Also citizens are collaborating to the change of the urban landscape, giving colors and shapes to their own properties – a new view to the monotone prior design (**Picture 3**). The series production, the same way as in Brazil, although motivated by different reasons, also created monotone spaces in Europe. The wars destroyed completely or part of the cities and territories. The necessity of settling the survivors in a short period of time drove constructors to repeat intensively the same model of house. If in Brazil the massive production largely induced constructions, in Europe it was the massive destruction that produced the same effect. Until nowadays, it can be faced in Europe and in Brazil an exhaustive repetition of the same project, as a solution for constructing spaces. Sometimes, two or more blocks have been raised with the same building solution. This can be found the same way in rich and poor zones of the cities (**Picture 4**).

To (MUMFORD, 1982): “the patterns employed to poor houses in XIX Century, were little by little absorbed by intermediate and rich constructions”. To the companies, in a research done a few years ago in Madrid, Spain, by the author of this paper, little changes done in each building to give them a personal style, increases enormously the costs of the built unities. In other hand, the building repetition produces a learning effect and, little by little, better and faster constructions can be done by the companies' workers. To the architects, in the same research, alike projects in neighbor blocks is a rational way for producing cities. To these professionals, this is the best solution to reply the demands found in contemporary cities. The owners of these buildings, still in the same Spanish research, think that only the interiors of the homes belong to them and for this reason they can change and adjust them to the owners' interests. The houses' exteriors are part of the city and must fit with the rest of the constructions. Certainly, a Building Market desirable owner perception, probably induced by the media; but perhaps not really a wide view of this situation.



SOURCE – Author's photo.

PICTURE 4 – Intensive repetition of the same house typology. Madrid, Spain.

Single housing projects done in a series production

(RAPOPORT, 1984) says in his book titled Cultural Origins of the Dutch architect Aldo van Eyck: “a building is a little city and a city is a big building”. Based in this sentence, the Methodology here suggest should be present. To develop a series produced housing estates, to reply local demands for social homes, architects and urban planners should follow the same sequence of activities regularly used in other kind of projects. The first step is to build up a Functional and Space Program. To a perfect demand matrix construction, architects must have a deep knowledge of the future building users who, in the majority of time, are different from architect's clients. The first sample is when clients and users are the same person that generally happens with one family house project. The users / clients present direct to the planners their necessities, willing and investment's desire. A second sample, more common in commercial buildings, is when the users are, in reality, clients of the architects' demanders, although clients should be also users of future constructions. The last sample is when architects work to investors; in this case users should be typified, not really identified.

There are some important data that must be collected by architects when they want to compose the Building Functional and Space Program. In the other hand, there are some different strategies, depending on the client, that should be adopted by professionals to better collect this kind of information. In order to correctly develop his Project, architects must know each spatial unit that compounds the building and which activities happen inside them, and how each spatial unit relates to the others. With all this information, architects could determine zones, flows and the way different areas are connected in his project. Other important information for planners is the quantity of each building space permanent and transitory users and how much area they need to develop their activities.

It is quite subjective the definition of permanent and transitory users and it deeply depends on the way they exploit these spaces. The importance of characterizing users is that usually permanent users need more area than transitory ones and also they demand more comfort and furniture to develop their activities.

As an example, we can analyze public restrooms. There are some of them that have employees that continuously clean the space. They are restrooms' permanent users and the other people who occasionally come to use toilets or sinks are transitory ones. The permanent user needs a chair to seat for a while and a locker to keep their tools. There are other restrooms where no employee works continuously inside. In this case they are the transitory users and the people who, in alternating way, use toilets or sinks are permanent ones. Other important step to develop the Functional and Space Program is to identify equipments and furniture each space unit needs to turn possible or to give comfort to permanent or transitory users' activities. It is advisable, in order to guide complementary projects, that architects define the correct positions of equipments and furniture. With this information engineers or other architects could better locate lights, sockets, taps and other components of building installations. By the end, it is necessary to inform, to the Functional and Space Program, special requirements of each space unit that use to be adjectives that clients confers to the spaces. These adjectives usually implicate in coverings, cold pots, furniture types, kind of doors and windows, natural lighting; finally, all inside building characteristics. Some different strategies, depending on the type of building users, can be applied by architects to collect the necessary information to the Functional and Space Program. In the first case, user and client is the same person. It is the simplest mode where architects could collect all necessities directly with the client or with other users he indicated. In the second case, users are future consumers of the architects' clients. It is a little bit complicate to obtain information in this mode. It is advisable to identify consumers of similar buildings and collect with them the necessary information, considering statistical parameters. In the last case, we are talking about clients who are investors. In this mode architects must demand statistical research with probable buyers or search this information with sellers who use to work with similar demanders.

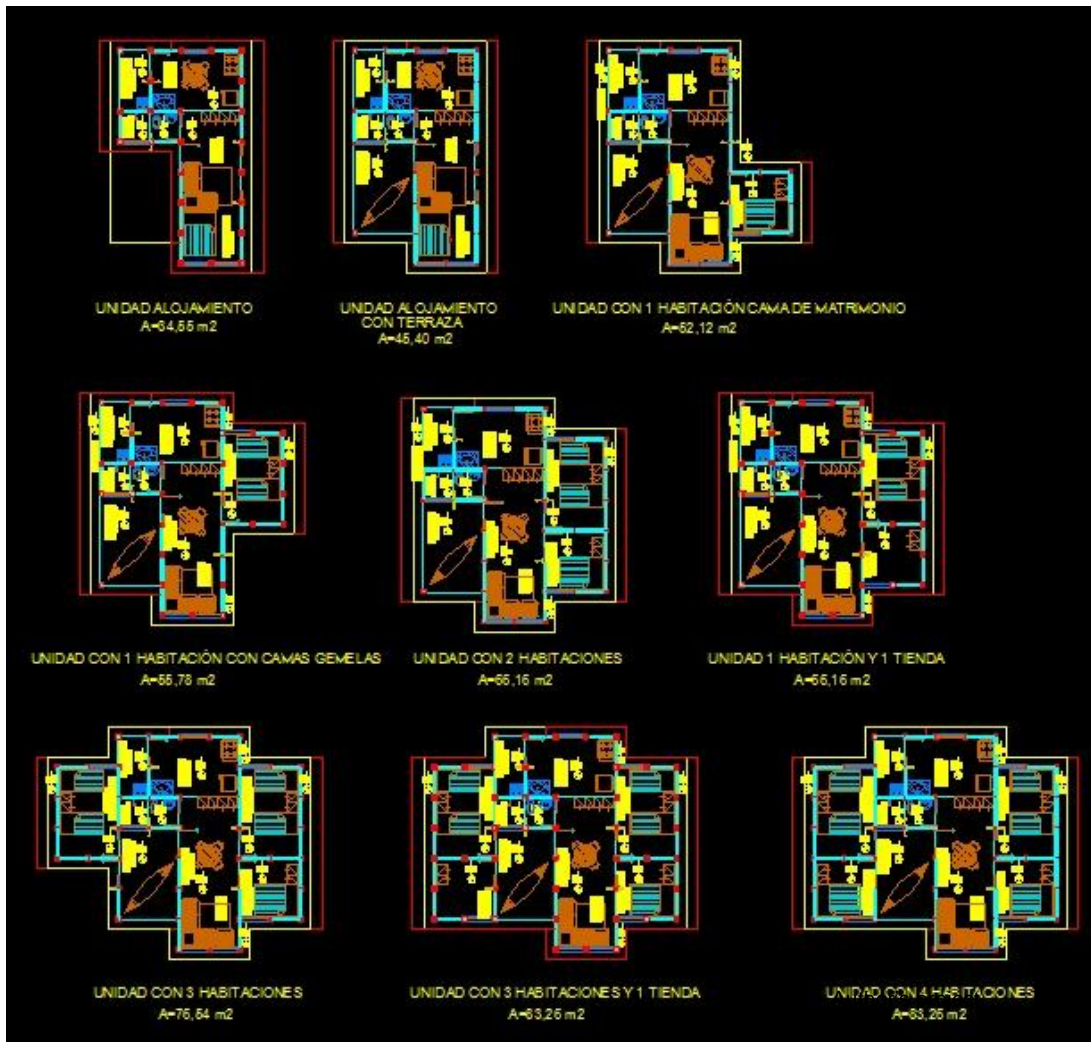
The correct development of the Functional and Space Program is the first step for an architectural plan, although professionals in Brazil do not give it the value it has. Architects prefer to answer the demand as soon as possible with draws. The same way, it happens with the building location - Engineers usually do not give it the value it has. Location is fundamental for the correct construction of the buildings' components that means, in last analysis, quality and lower costs. Inside a Quality System, Functional and Space Program more than a list of willing and demands, it is a quality record. This kind of paper, after approved, should be part of the contract between architects and clients. Based on them, architects could discuss with their clients the concept of the projects. They could also quantify areas and constructions' costs. Without any draw, they can figure out if the land's area is enough to receive the project, considering legal limitations and ground's characteristics. Through the Functional and Space Program, architects and clients could obtain a lot of information without an expressive investment.

After approved the Functional and Space Program by clients, architects develop their Preliminary Studies. It is not an easy task when we are talking about Housing Solutions. Usually, there are many people interested in the project and they all attend to a project's presentation meeting (**Picture 5**). After this preliminary meeting, it is advisable to divide all these people into shorter groups, considering the family's composition that will generate different individual projects or solutions. Forms and statistics treatments should be demanded in order to support the best decision for the problem presented.



SOURCE – Author's Photos.

PICTURE 5 – Collective Construction of the Functional and Space Program.



PICTURE 6 – Projects of different types of houses.

SOURCE – Author's project.

In order to configure Preliminary Studies, more than an architects' direct answer to the Functional and Space Program demands, a respect to the local laws and skillfully observation of the land's characteristics; architects must consider the constructability, economical viability, enterprise's sustainability and urban insertion, considering that housing solutions usually come to be a traffic generator. The weather and the passive comfort must be also considerate by architects, observing that this kind of client does not have enough money to invest in equipments to produce active comfort. Functionality, flows and mobility must also be considerate by planners, not only to the people that have all senses, but also to kids, fats, pregnant and olds. To plan the buildings, we considered the Post-Modern scenery, full of ephemeral components, exclusive and personal designs, changes of places and relationships. We've decided to plan homes that should be composed by modular components that can be putted together in order to build different spaces, depending on the way these modules could be adjusted and adapted to the families' necessities and payment capacities. These modular components, previously prebuilt, can also be moved from one place to the other in the same building, giving to it other shape and other use for the spaces. These prebuilt components can be also sell or buy, depending on the specific necessities of the family or changes in its composition. Just as an example, considering that this article talks about method, we've developed nine different projects for houses: Shelter, Shelter with terrace, House with double bed in the room, House with two beds in the room, House with two rooms, House with one bedroom and one office, House with three bedrooms, House with three bedroom and one office and House with four bedrooms (Picture 6).

The main idea is to obtain a very diverse composition. Each family could, with the help of an architect and considering willing and financial limits, build up its own home, by the use of these modular components. The final propose of this research is to define a composition system, like the ones used to sell cars by the use of Internet. Specific Software must be developed, by specialized professionals or groups, in order to help architect to do their work. By the end of this computational routine, buyers can see compositions and costs, and elect the one best fits with the family's interests and economic' limits (**Picture 7**). Families can also define component colors and if they prefer living in apartments or isolated homes. Architects will work on these compositions to create house or apartment that answers each family demand.

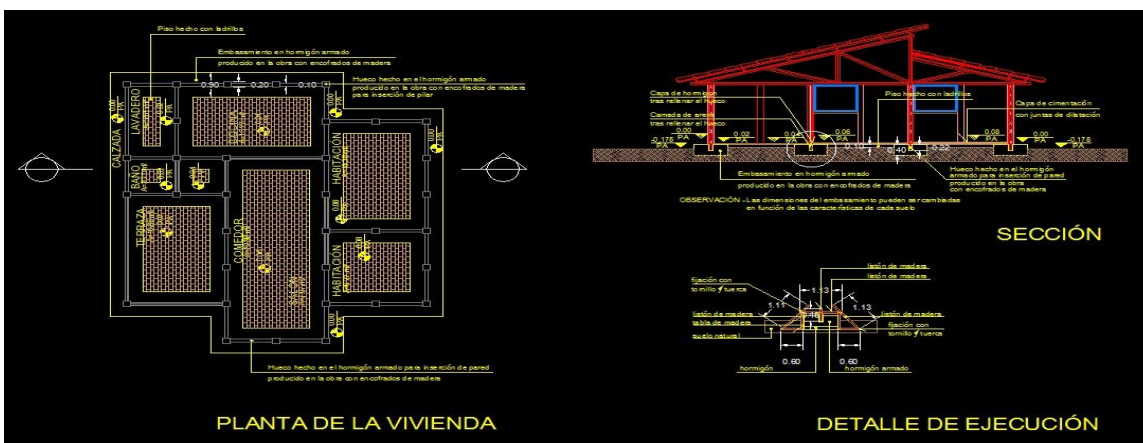
 Universidad Politécnica de Madrid Escuela Técnica Superior de Arquitectura de Madrid Curso de Doctorado em Periferias, Sostenibilidad y Vitalidad Urbana														
Tesis: La cuestión de la vivienda social en Brasil. Una propuesta de implantación urbana y de producción en serie de unidades residenciales														
Costes por unidad espacial														
EDIFICACIONES	UNIDADES ESPACIAS	Terraza	Salón 1	Salón 2	Cocina	Baño	Habitación 1	Habitación 2	Habitación 3	Comedor	Lavadero	Tienda	Área construida m2	Coste unitario RS
Área por Unidad	m ²	19,35	19,35	7,47	16,27	3,21	4,26	4,72	19,35	19,35	3,41	4,72		
Coste por Unidad	RS	888888	7.144,00	4.947,00	7.210,00	2.255,28	4.423,17	4.721,54	7.247,00	7.293,00	2.534,02	888888		
UNIDAD ALQUAJAMIENTO		1	1	1	1	1	1	1	1	1	1	1	34,55	70,
UNIDAD ALQUAJAMIENTO CON TERRAZA		1	1	1	1	1	1	1	1	1	1	1	45,40	70,
UNIDAD CON UNA HABITACION CON CAMA SIMPLE		1	1	1	1	1	1	1	1	1	1	1	52,12	70,
UNIDAD CON UNA HABITACION CON CAMA DOBLE		1	1	1	1	1	1	1	1	1	1	1	55,78	70,
UNIDAD CON DOS HABITACIONES		1	1	1	1	1	1	1	1	1	1	1	66,16	70,
UNIDAD CON UNA HABITACION Y UNA TIENDA		1	1	1	1	1	1	1	1	1	1	1	65,16	70,
UNIDAD CON TRES HABITACIONES		1	1	1	1	1	1	2	1	1	1	1	76,54	70,
UNIDAD CON TRES HABITACIONES Y UNA TIENDA		1	1	1	1	1	1	2	2	1	1	1	83,26	70,
UNIDAD CON CUATRO HABITACIONES		1	1	1	1	1	1	2	2	1	1	1	83,26	70,

PICTURE 7 – Cost composition for each space unit.

SOURCE – Author's worksheet.

We select to work, as an example, to show the developed system, a prebuilt modular component nowadays used in Brazil, considering our graduation in architecture and urban planning and the main target of this research that is a method, but an engineer that works with materials could creates and uses other kind of component that certainly fits with the developed system. They can use until urban rests that should be also preferable, as raw material, for these components. We propose, for the example, a group of buildings, part isolated houses, part apartments, in order to show possibilities of this system in each one of the cases.

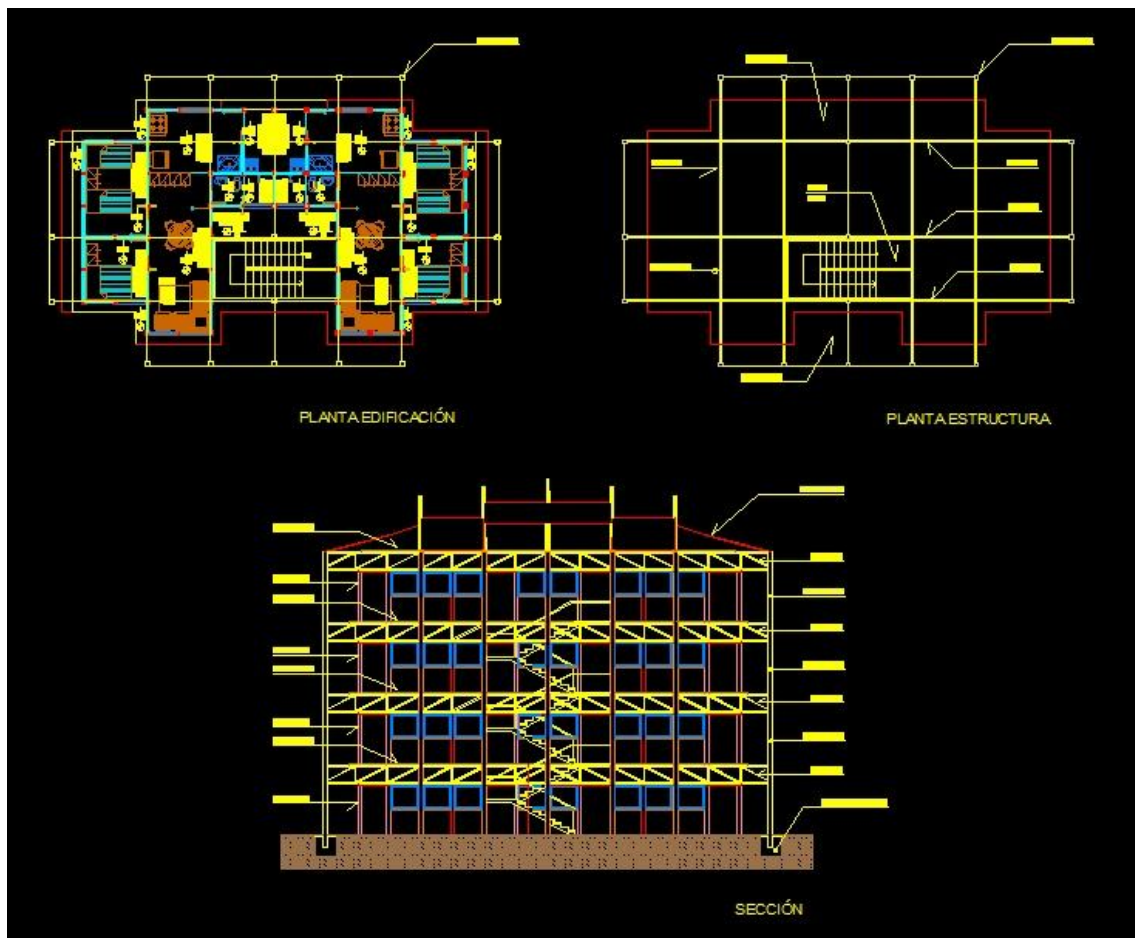
To the isolated houses we defined the following components: i) a continuous concrete basement, produced in the building field, with wood mold. Holes and grooves will be molded in this basement in order to receive wood columns and prebuilt walls. The wood mold will be placed directed on the natural flatten ground; ii) the inner part of the basement will be completed with organic bricks or bricks made by constructions' rests; iii) the columns will be made of wood in commercial sizes. Grooves will be made in these wood columns in order to receive the prebuilt walls. Wood is a very common material in Brazilian constructions; iv) also made of wood are the beams that support the roof and the windows; v) clay tiles will cover a wood roof structure; vi) the walls will be prebuilt plates made of urban rests; vii) doors and windows will be in industrialized sizes and shapes; viii) pipes will be also industrialized ones, but planners will rationalize sizes and uses (**Picture 8**).



PICTURE 8 – The construction of the isolated house.

SOURCE – Author's Project.

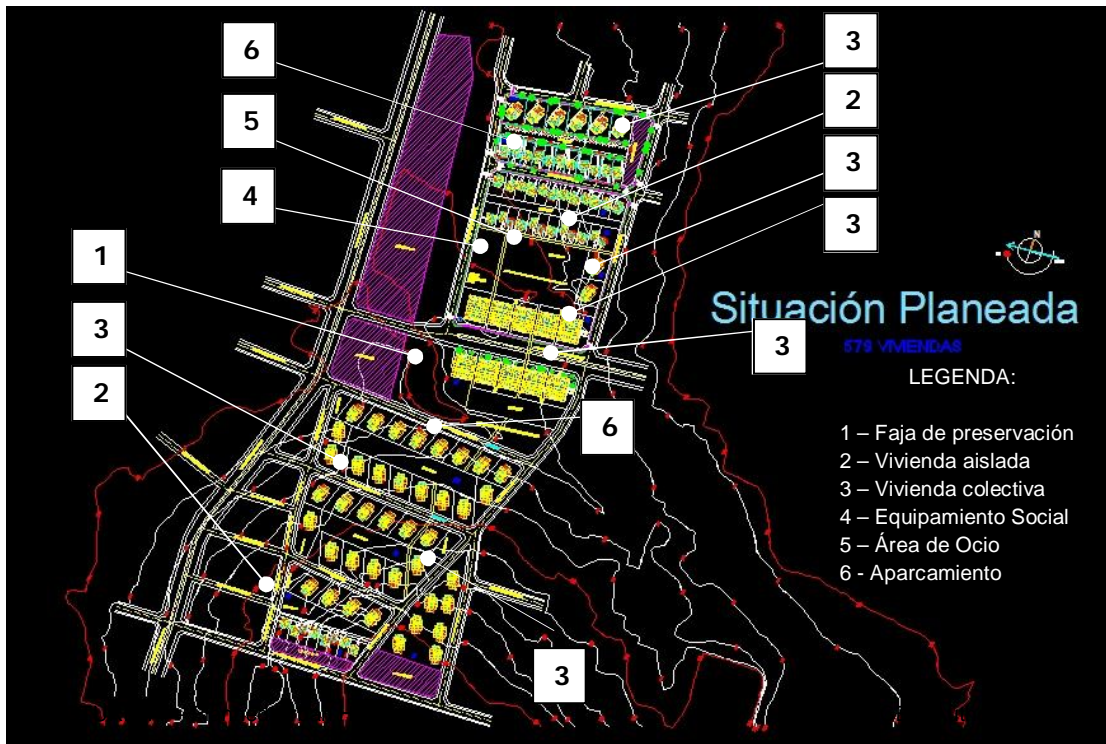
The buildings of apartments will be built with steel structure. They will receive concrete foundations made on the buildings' field. Primary steel beams will support prebuilt slabs and the apartments' wood columns that will work the same way in isolate houses. Secondary wood beams will sustain windows, prebuilt walls and ceilings. In order to add sustainability to the buildings, green roofs will cover them; part of these garden roofs will be protected by textile covers. Walls, the same way in isolated houses, can be changed, depending on families' demands, and pipes will be also industrialized ones, but planners will rationalize sizes and uses (**Picture 9**). The final propose is to offer to users different colors building components in order to turn more dynamic the urban landscape, although apartments should be so similar. The project, every time as possible, should offer apartments and isolate houses in the same land; part of these units shall receive offices to answer a local demand of commercial activities at home. Concerning urban space, the main purpose is concentrating cities' functions: housing, working, circulation, health, education and entertainment.



PICTURE 9 – The building of apartment's construction.

SOURCE – Author's Project.

In the example, we tried to put together buildings and isolated houses, and offices were part of the homes planned. These offices were close as possible to the streets that have more concentration of people. In this project, we put close to the larger avenue, the buildings that presented more inhabitants' density and in these buildings we placed the offices. Some of these high density buildings will be linked by citizens' bridges that were placed above the largest avenue, a way to protect people against traffic dangers and also to bring buyers to the buildings' offices. These kind of buildings received internal sidewalks to turn easier the locomotion for buyers and residents. A garden in front of buildings and isolated houses were built in order to decrease traffic pollution and to give to the local habitants' opportunity to rest in the parklets there planned (**Picture 10**).



PICTURE 10 – Planned Urban Housing.

SOURCE – Author's Project.

The permanent preserved area, there defined by local law, received a park treatment that can both serve to local and city's communities. In order to concentrate different urban services, also there, we defined a Day Care Center where teachers educate children and make possible their parents work; and a Primary Health Care where physicians protect citizens against simple diseases that crowd Hospitals in Brazil. In the terrain, were also planned parking areas for buildings' inhabitants and reserved streets' spaces for residents' guests. In streets, there were some areas preserved for bicycles' circulation and park. Peripheral zones were reserved for isolated houses. Close to the main avenue were placed the apartment buildings. This kind of constructions' location has the purpose to turn landscape more dynamic. Also dynamic must be the distribution of types of families in the territory. Streets and sidewalks received traffic signals and special pavements to turn easier the use by deficient people. Part of the sidewalk will receive trees, grass and parklets, in order to give more comfort to the walkers. Bicycles' traffic areas were defined in the streets' level to protect riders and sidewalk users, and also to offer laser to the inhabitants or another way for moving in the city or a better work with bicycles. We also thought in the street width, considering comfortable vehicles' mobility, and inhabitants' faster displacements. Cars, vans, ambulances, police vehicles and garbage trucks will also use these local streets and bigger trucks preferable run in avenues. Walls, made the same material as in buildings, will be used to separate private area from sidewalks.

Main conclusions

Monotone cities, in Europe and Brazil, are realities that can be observed by until untrained eyes, although we can't see an effective inhabitants' reaction in Europe; but it is very uncomfortable for Brazilians. Different reasons made cities monotone in Europe and in Brazil. In Europe, it is a direct consequence of the post war reconstruction effort in order to guarantee shelter for the citizens. In the industrial system, the construction of similar buildings reduces effectively costs and greatly increases production speed. Same strategy of optimizing is still used nowadays in European constructions to maintain costs that can be afforded by consumers. In Brazil, although buildings could be done in the same way or similar, users change little by little their buildings, in order to give colors and shapes that better fit with the owners and be different of all others.

The parametric design here presented is one strategy developed to Brazil to decrease cities' monotone. Although Brazilians who live in Housing Projects do not have the same financial capacity as Europeans, they have more desire on changing similar homes. Same strategy can be also applied in European territory. Computers, in the last few years, changed the way we see society. Nowadays, it is a helpful tool used in projects. It can help planners to build up projects that skillfully adjust to each user, deeply attending demands presented by owners. Computers can also help architects to better fit constructed buildings to new users' demands or changes that happen in families' compositions. In a Post-modern world where consumers used to customize products, it is not more reasonable that buildings, a so expensive property, can't be adjusted to owners' desires or to families' composition changes.

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