THE ROLE OF PRODUCTION SPACES IN A POST-CARBON VISION

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Abstract

Heading to a post-carbon future requires a profound redefinition of the imaginary of the city and its spaces. The contemporary city is the result of a continuous override of spaces that are no more useful and are abandoned, but today a post-carbon vision must be able to define how to use these spaces discarded by economic flows and political flow of our cities.

Industrial districts, warehouses, factories, work spaces disseminated in our cities, are the picture of what is being left behind by our culture and carbon vision; a post-carbon cities have an absolute need to define a new relationship between factory (production) and the city itself.

The Emerging of digital fabrication technologies, DIY online communities, local cluster and new production processes are the key points to analyse the changing way of production. Different examples from GMDC of New York, The Green Garage in Detroit, the Silicon Roundabout in London or the FabLabs scattered all over the world are some of the realities that seek to integrate the reuse of urban production space with renewable energy and activities that create a social, economic and technological values in the districts in which they are inserted.

The analysis covers the evolution of production by analysing its characteristics at the urban scale, defining what is the contemporary production space and how the manufacturing processes is evolving in relationship with the environment; in order to start regeneration policies that create value and became engines of real practices and experiments towards the city we want to build.

1 Text

Today, there is broad consensus that the world to which we are projected will be radically different from what we have known in the past. In our history there is no historical period comparable to the that at the time that humanity is era that humanity is going to address, the various revolutions that have marked our history didn't possess the same charge of dangers and possibilities but also they didn't have the same amount of radical changes, simultaneous and converging one towards the other for which we are called to respond now.

The climate change and the emergence of a global growth increasingly unsustainable in terms of population, exploitation and consumption of natural resources and widespread pollution, are driven by an economic output that is subject to distorted parameters that prevent us to see the destructive consequences in pursuing this attitude.

This conflicted reality and its stratification find in the city their images and representations. Since the beginning of the Industrial Revolution the city was the theatre and the space for experimentation of the economic backing, the scientific and technical progress and of the belief in progress. The city of the nineteenth and twentieth century was formed and built around the industrial process, accepting the dogmas and shaping itself around this new dominant sphere. Factories become the place par excellence for human life by absorbing the daily life with working shifts that alternate themselves day and night without stopping. Roads increase in size in order to support a new structure for transportation, the only element of distinction between the productive space and residential complexes that are home workers.

The industrial city has assumed characters strongly different from the historical city. This is evident from the human point of view where there is a clear change of spatial perception of the surroundings as imaginary and sensations, but also from the point of view city planning

with an urban fabric that counterpose the organicity of historic urban settlement with a rational allotment according to specific guidelines, which often collide with the main transport routes.But as for the historical city, the industrial fabric assumes internally different contradictions, overlaps and stratifications that are the necessary consequence of an continuous evolution from proto-industry of the early nineteenth century [1] to the full mechanization of mid-twentieth century [2].

Figure 1 City of Turin. Contraposition between the historic city and industrial neighbourhood.

Unlike its counterpart, the mechanized city never developed a process, a *"digestive system"*, necessary for the assimilation of the changes, especially the urban scale: the time.The great progress that humanity has embraced with a growing enthusiasm, because it finally broke the chains that bound man to natural processes, was the overthrow by the industrial process of the conception of time and space. They are canceled by the introduction of new forms of energy and of a technological process that makes possible the communicate and travel faster and faster. Interesting to analyze the speed of these changes. Phileas Fogg, Jules Verne's character, if he decided to make his journey around the world only fifty years later, it would have taken only one week instead of eighty days [3].

In this way the time of man business detached from the time that marks the natural processes, defining one of the causes of climate and energy issues. We are no longer able to understand the consequences of our actions compared to the time that the environment needs to assimilate them, due to the lacking of a direct perception of these actions and thanks to persevering in the use of an economic process that doesn't take into account the cost inflicted on the planet. Proceeding in this direction is impossible to counter the dominant attitude. This approach is also reflected in the relationship with the industrial city, where new buildings, warehouses and roads overlap to a steady increase in empty spaces, abandoned at the end of their vital purpose, crushed by economic interests constantly changing and not re-included in the design process of the city.

Sometimes, the market economy has been so influential to undermine entire cities, bringing them almost to the disappearance. The case of Detroit is a good example of how a city defined by an industrial monoculture, following a situation of severe crisis, could literally disappear with a reduction of the population of 1 million [4] inhabitants since the early sixties of the twentieth century, with 36% of homes abandoned or foreclosed and an administration that doesn't have the resources to maintain the public space [5].A reality that has entered a deep crisis, threatening sometimes even disappear [6] when the economic and social system which was developed has reached the stage of decline.

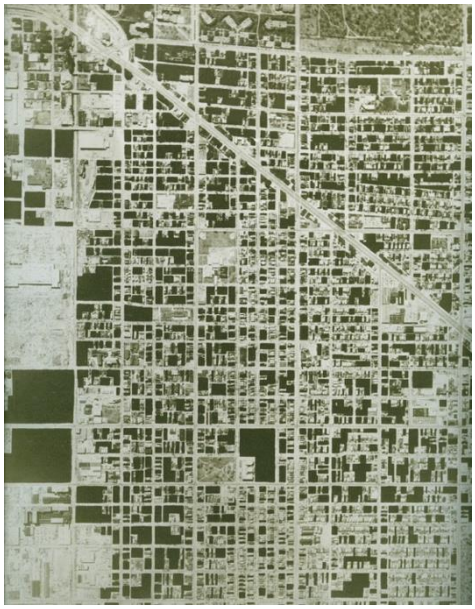

Figure 2 City of Detroit. Vacant land Map, Dan Hoffman.

Figure 3 City of Detroit. Google image showing the structure of the urban landscape and the dimension of the vacant space inside the city. The site is 4 km from the center.

Inside the contemporary city heading towards a post-carbon future requires a profound redefinition of the imaginary of the city and its places. The projection of the values of a digitized manufacturing towards urban space can become the vehicle for a redevelopment of the heritage of an industrial and carbon culture.

A vision post carbon city must be able to define how to use the spaces discarded, abandoned by economic and political flows of our cities, redefining the relationship between the production space and the city itself. Different examples from GMDC of New York, The Green Garage in Detroit, the Silicon Roundabout in London or the FabLab movement, scattered all over the world, are some of the realities that seek to integrate the reuse of urban spaces of production with renewable energy and activities leading social, economic and technological value to the districts in which they are inserted.

The contemporary city, a habitat for more than 54% [7] of the world's population is the result of a continues override that like never before have to face a discussion about what to do with the waste products it produces. Often the type of building in question does not develop a particularly important or valuable characteristics: it is standardized buildings, warehouses, abandoned buildings, offices, which come together in a multitude of generic spaces [8] within our cities. Private and public action may be able to use these scraps thanks to a renewed relationship between the space of production and the city.

Private actions such as the one made by GreenPoint Manufacturing and Design Center, a non-profit industrial developer in the city of New York has allowed the redevelopment of five industrial buildings, the relocation of production space for small and medium-sized companies within the urban tissue, where they can find the habitat for developing their business and the use of LEED certification as a strategy for energy development.

Especially the building at 1102 of Atlantic Avenue, in Brooklyn, has provided space to 14 different business and 76 employees with an average salary of around 47,000 $, which is 58% higher than Both the food and retail sector average salaries in New York City [9]. Additionally, 1102 Atlantic Avenue have a negligible carbon footprint and stand as a model for green development in a traditionally industrial neighborhood. This project includes a 58kW solar array on the roof, and is expected to achieve LEED Silver Certification for its efforts in reducing waste and minimizing harmful emissions, a welcome departure from the industry of the past [10].

In Detroit, Green Garage, a business incubator following strategies triple-bottom line, has included in the design for the renovation of its spaces the construction of a hybrid energy

system for heating and cooling that Integrates passive and highly efficient active systems to create an ultra-efficient and healthy for a building HVAC system, a ventilation system that Integrates mechanical ventilation components with moisture control to create an efficient and healthy system for the building, a building process that foresaw the reuse 90% of all non-toxic deconstructed materials and the integration of a new insulation of the existing building to lower the regime of consumption to at least at 70% of the previous state [11].

In addition, the re-use of 'buildings located at the 4444 in Second Avenue led to the improvement of the urban environment with the creation of the Green Alley, designed and built by volunteers and the beginning of a new project for the construction of a passive hotel in an abandoned residential building named “El Moore” built in 1898, in West Alexandrine Street [12].

Figure 4 Building property of GreenPoint Manufacturing and Design Center in 1102 Atlantic Avenue.

Figure 5 The Green Alley after the requalification by volunteers working inside the Green Garage.

These two buildings are example of how abandoned industrial buildings by a private process of re-appropriation can become engines for local development and re-appropriation by the community of the spaces in which the economic system in crisis did not see value, transforming them into new production areas according to an upgraded a sustainable vision.

But not only the architectural space has the opportunity, through proper design, to return to be part of the urban process, but the same production process undergoes to a transformation that resizes the necessary space, bringing new interest to small urban spaces abandoned within the city.

Realities like Shapeways, which opened in 2012 its first "Factory of the Future" on the suburbs of New York, possess only a 10% of its 2,400 m^2 as a space dedicated to the production, the remaining space is dedicated to its employees involved in optimize projects and products digitized by users who are subsequently made by additive printing [13].

The Factory space assumes different connotations from the imaginary of the twentieth century, not the biggest polluting and oversized production plants, but spaces that through the use of digital platform become defined like hybrid places merging workspace, public space and space for the community.

Such as the movement of the FabLab that has developed around the world and where services of digital fabrication and other semi-automatic machine give a chance to individual users to carry out their projects.

From the compartmentalized characteristics of the places defined by a Fordist reality where containers defined the spatial and social reality inside them, emerges a reality where industry, start-up and incubator, company space and public urban space coincide. In this really is focused the Third Industrial Revolution of Jeremy Rifkin, the revolution of the lateral power [14], where a mass society made up of self-employed, micro-entrepreneurs, inventors, makers, constitutes virtual relationships within the world of e-commerce.

At the urban level, the ability to use the industrial space for new production purposes has realized in the cities of London and Barcelona redevelopment an ample urban requalification in sectors that were characterized by low levels of spatial quality. The London case appears around the Old Roundabout, renamed Silicon Roundabout and is opposed to the intervention in the district of Sant Marti in Barcelona since the first spread by small private projects on the same territory while the second is a result of an action of the municipalities with the granting of loans by the European Union.

The Silicon Roundabout, also known as East London Tech City is a technology cluster located in the central and east London. It occupies widely the East End of London between Old Street and the Olympic Park in Stratford, with a primary focus in the area of Shoreditch. The Silicon Roundabout is the third largest cluster of technology start-ups after San Francisco and New York. The cluster initially developed without government support, around the Old Street Roundabout.

This suburb and degraded area in north of the city of London, historically had rents much lower than the rest of the city, mainly due to the lack of transport infrastructure that would allow quick movements, the urban fabric consists of warehouses and abandoned buildings of industrial character and a public urban degraded environment. Start-ups were encouraged to settle in the area by its low rents produced by the recession of 2008-2009, which caused the closure of many architecture firms, design studios and artists who had settled in the area, further decreasing rental rates. Ironically in 2009 the Old Street was not even served by fiber optic cables, while a few blocks away, in the City of London, where rents were much higher was already in place an extensive infrastructure. In 2010, Prime Minister David Cameron has announced a plan to accelerate the growth of clusters bringing frontline an interest of the municipalities and the state. Many were against this intervention that led to a high increase in rents that eliminates the smaller companies.

After the recognition of the importance of the area, the strategic action of greater impact for the community, was the creation of an integrated proposal for the management of roads flows with an extensive implementation of pedestrian and cycle facing reprogramming the public urban spaces that were inadequate. The municipality also build a structure called "Super City connected" in order to link from the point of view of the digital all the buildings and the realities that define its territory. [15]

The 22 @ district also known as the District of innovation, is the name given to the district for corporate business in the former industrial area of Ploblenou, in Sant Marti district, nicknamed "The Catalan Manchester" in the nineteenth century. The purpose of the project is to convert this industrial area into a technology and innovation district for the city, increasing and requalifying the green spaces and the residential spaces. The project, still under construction, is part of one of the largest urban renewal programs in Europe, which began in 2000. The plan covers 115 blocks and 198,26 hectares. Instead of applying a model of territorial specialization, the city of Barcelona has developed a mixed model that promotes social cohesion and urban and economic development in a balanced and sustainable context. The activities of the cluster co-exist with the traditional activities of the area by creating a rich and diversified environment. It involves the use of 10% of the land for public use (145,000 m2) with the determination of structures that include training research and the promotion of new technologies. These structures promote synergy with universities, technological and research centers and production activities in the area. At the same time these facilities help to alleviate the shortage of community facilities in the district.

The public space, as a supporting element for the urban fabric, for relationships and activities is one of the guidelines for the project configuration. The structure of green spaces Poblenou was proposed following a sequence of steps in which wide open spaces will gradually extend to the squares and the smaller streets and houses, becoming real meeting places for residents. The new infrastructure plan provides an investment of over 180 million € and allows the realization of a modern network of energy, telecommunications, district heating and waste collection. The design of these new networks gives priority to energy efficiency and the responsible management of natural resources.[16]

The industrial cases analyzed thrive into mixed-use neighborhoods , re-using abandoned factories for the emerging producing class. This adaptive reuse preserves the existing housing stock, demonstrating the adaptability of industrial buildings and highlights their suitability for the production of the XXI century.

With the growing ranks of designers and makers who attempt to scale their products to the market, through the tools of open source and platforms crowdsurcing, a small flexible space and shared knowledge on how to scale production it will become more important and above it all will be the guide line for the definition of the evolution of urban space.

In an urban policy that seeks to stop the use of land in the interior and on the edge, rethink the abandoned spaces or disused takes on a double meaning: bring to light a historical stratification expanding it with additional overwrite and restore urban infrastructure already existing. Reflect on urban production is not only a way to establish trends of the future industrialization, but is mainly a way to reflect on our city. Analyze the tales, re-establish contact, a story, a stratification between the built and urban life.

The venture towards a post-carbon means understanding how trends and capital flows can be conveyed in order to implement strategies that move in this direction. The city as we know it's the image of the structure of our society and it's essential to understand how the actors who take part to it are moving. While the economic case for the return of urban production are mature, spatial strategies to support production are scarce or non existent. For individuals, the urban manufacturing, allows high-wage jobs for people with a low level of education, allowing more economic opportunities and the "right to the city" as they would not have in other sectors. In the cities, the production claims the field of urban, generates innovation, serves as a strong economic multiplier and provide an economic resilience. The addition of industrial uses mixed-use areas therefore increases the quality of the public sector.

If we evaluate the macro-economic factors that allow the return of manufacturing in western cities, the architecture has an opportunity to fully revise the manner in which the production is embedded within the fabric of the city analyzing and aligning an economic process with the needs for the future.

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