

## **Recycling the existing city: improved mobility and possible scenarios of public space**

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### **Abstract**

As cities around the world continue to grow and attract population and productive activities, a silent revolution invests the question “mobility”. The demand for better sustainability of transformations and the right of all citizens to have access to the services and benefits that, in general, urban concentrations offer will produce a new way of interpreting the public space, progressively subtracted from traffic and the private vehicles. The role of public transport is crucial to supporting this process; the ability to make it free in European cities can be a decisive choice. If well managed, cities offer important opportunities for economic development and they enhance the access to basic services including health and education for a large number of people providing public transport, as well as housing, energy, water and sanitation for any urban population with a good level of population density. This is generally cheaper and less harmful to the environment than providing a similar level of services to a scattered rural or urban population. The new recycling culture is gaining importance in the new system of reasoning on the cities since these parts have been dropped in their original use and they have adapted to new types of life. If until now it was a matter of imagining the re-use of industrial areas, parts of infrastructures and out of date buildings, today the awareness is emerging on a greater complexity of the theme and, above all, of its ubiquity.

**Keywords:** Improvement of collective mobility, Recycling of road space, Renewed pedestrianism

## **1. The cities are the most populated part of the world**

The part of the world population that lives in cities became the majority for the first time between 2005 and 2008. This trend will continue to lead the growing population into urban concentrations and so by 2050 it is expected that at least 65% of the total population will live in urban areas. This scenario will not only affect the expansion of the developed cities and megalopolises such as Tokyo but also the developing world. The causes of this growing pressure on urban areas are varied and mainly related to the lack of territorial infrastructures in ensuring rapid access to urbanized areas with the greatest concentration of services. The cities have the ability to attract the populations in basis of their size and concentration of people and activities. Generally, nowadays, almost half of the 3.9 billion urban inhabitants of the world live in relatively small cities with fewer than 500,000 inhabitants, while only about one in eight lives in 28 megacities with 10 million inhabitants or more. Cities with less than one million inhabitants are those with the highest growth rate.

Above all, there is a certain concern in which great attentions should be given, at least on the national level, to the need for territorial policies able to keep the distribution and the size of urban centers under control.

In Western Europe there is plenty of valuable historical examples on controlling land use and settlements development together with the infrastructural system. However, it must be recognized that in this regard, the policies implemented by the United Kingdom have been particularly important and fruitful. In the wake of thinkers such as Ebenezer Howard (the father the Garden City concept) and his experiments in building two new towns (Letchworth and Welwin) between the years 10 and 20 of the last century. In London district (Benevolo, 1985), first with the Greater London Plan of 1943 (signed by Sir Patrick Abercrombie) (EJ & Goldfinger, 1945) and then with the complex and lasting political life of the New Towns. This country has created a great constellation of new cities throughout the national territory which are embodied an equally important infrastructure system. The first outcome was controlling the expansion rates of the capital and above all of the urbanizations with low and very low population density (50/60 ab / ha) on the national level, it has been possible to avoid the large displacements of the population that would have inevitably produced the abandonment of entire regions and the decay of local economies.

It is an important issue since the progression of urbanization process in the last decades has followed the distribution of the communication networks by the widespread expansion of a low-density settlement on the territory, which made it objectively difficult to recognize the limits of a city with traditional meaning. There is no need to look at the great urbanizations of Tokyo, Shanghai or Lagos to be impressed by the phenomenon, it is even in Italy, in the triangle of Bologna-Turin-Venice, in which most of the national population are now resided, over 30,000.000 persons. The extension of these urban

regions suggests how the theme of mobility is important (already today) and to what extent will be the demand for new collective services for the future and the problems that will affect the issues of environmental quality and forms of urban governance. The 2014 Revision of World Urbanization perspectives has provided new and updated information on global urbanization trends and the growth of the city (UN, 2014). Such information has a vital importance in defining political priorities to promote inclusive, fair and sustainable development for urban and rural areas. This version of this report has recognized the importance of small towns and villages also it has expanded the number of cities and predicts, for the first time, the population estimates and projections for all urban settlements in the world with 300,000 inhabitants or more in 2014. In this important monitoring has recognized that the most interesting urban dimension, especially in relation to the management of services of immediate utility (such as local public transport), will increasingly be those of medium and small cities, even if they are included as basic units in large metropolitan systems.

For many researchers, the role of the medium-sized cities (below one million inhabitants, and above all those with a population of around 500,000) will remain very important and they will have a real driving force, such as centers of culture, innovation and work.

“The management of urban areas has become one of the most important challenges of the development of the 21st century. Our success or failure on constructing sustainable cities will be an important factor in the success of the post-2015 UN development program”, declared John Wilmoth, Director of the Population Division of the United Nations Department of Economic and Social Affairs.

If well managed, cities offer important opportunities for economic development and they enhance the access to basic services including health and education for a large number of people providing public transport, as well as housing, energy, water and sanitation for any urban population with a good level of population density. This is generally cheaper and less harmful to the environment than providing a similar level of services to a scattered rural or urban population.

## **2. Cities are places of innovation**

Urban history shows that cities are places of innovation. These are the places where new economic ideas become a reality where diverse groups of people learn to coexist as neighbors and where democratic experiments emerge to make way for previously excluded social groups to be included as real decision-makers. The high density of people in the cities encourage economic growth through better sharing, adaptation and learning, and as Alfred Marshal wrote already at the end of the nineteenth century, only the pure concentration of people leads to new ideas because “the ideas are in the air”. People are different but housing density improves the coexistence of groups of different religions, nationalities, ethnicities and sexual orientations to live and work side by side and in doing so they know “the other” which leads to a global respect for diversity.

These preliminary considerations have completely outlined new urban problems which had never previously belonged to the city's history and culture. The new key words of the studies and proposals (but now also in most part of the policy) are: the sustainability of transformations, preventing pollution, controlling the land use, reusing and redeveloping urban areas. In recent years, a more precise definition of reuse and recovery has been affirmed among researchers: that of urban recycling. After the heavy industry crisis of the seventies, the greater awareness of the urban metabolism processes has spread which produces, like every living organism, remaining parts in which are useful to give new life. The new recycling culture is gaining importance in the new system of reasoning on the cities since these parts have been dropped in their original use and they have adapted to new types of life. If until now it was a matter of imagining the re-use of industrial areas, parts of infrastructures and out of date buildings, today the awareness is emerging on a greater complexity of the theme and, above all, of its ubiquity.

### **3. Need for new urban models**

In the field of mobility, we are observing a deep and silent revolution that will soon overwhelm all traditional approaches to urban planning and planning processes. New models of urban planning are appearing in regards to the changes in the way they move. The growing demand for high quality mass transport is associated with the prospect of an upcoming and rapid decline in private transport, the increasing need to more sustainable and less polluting system which is associated with the need to recover spaces closer to the dimension of living and social life to help the residents in moving around the city. Naturally the dynamics are not the same for all the cities and it is always necessary to consider different environmental, social and political conditions.

A referendum conducted in Tallinn in 2010 introduced free public transport for residents in 2013. Referring to Italy a very different situation was described which is especially characterized by significant differences between north and south. The effects of the growth of this new awareness and the confirmation of the right to live better in our urban realities will affect all parts of our cities and not just some cases.

Interesting conferences have been promoted by various national associations and by some local administrations in Italy. They have had the aim of involving and raising the awareness of the public administrations to adopt “real” measures to change the paradigm and to promote more efficient and less impactful mobility, with many evidences and reflections for a strategy of sharing and redesigning urban space. The recovery targeted the areas to be taken from roads or deteriorated zones and redesigning them in terms of urban quality and the “active” mobility of people, in fact it strengthens the success and acceptance of other traffic management policies. The quality of the design of networks and mobility services, conscious to their integration into the urban landscape, can

contribute to urban regeneration. There has been a talk of new Urban Mobility Plans, of accessible cities for children and girls, of traffic moderation, of redevelopment of mobility in industrial districts, of transport infrastructures quality. From this and many other similar initiatives emerges the need to formulate not only new hypotheses for the governance of mobility but also that of revising the forms and functions of existing urban public spaces.

#### **4. Rethinking urban transport**

Private transportation in the city is experiencing a crisis that in many ways appears irreversible. It is not just a matter of replacing the traditional thermal engines of electric cars (perhaps better with the hybrid, at least in the short-medium term) but of understanding that policies of a strong containment of private mobility will soon emerge. The programmatic decisions of entire states such as the Netherlands and Sweden, although still to be consolidated with definitive measures, indicate a completely new path that will not only progressively stop the cars from invading every public space but allow us to glimpse a new way of conceiving the urban redevelopment. From the 90s onwards, experiments have multiplied for new types of buildings and urban ones that are able to be smarter. For the buildings it was a matter of pursuing forms of sustainability, above all energy, and for the efficiency of the waste and water cycle; for urban spaces, experimentation has also involved more complex issues such as the reduction or elimination of vehicular traffic and, above all, new ways of interpreting public space (Wright, 2005).

The cases with adequate outcomes are now many, on different levels and certainly important for their contribution on giving a new culture to the city: from Laguna, in Brazil to Varese, in Italy; from Amsterdam to Cairo, from Dubai to Málaga. Wildpoldsried, in southern Bavaria, currently produces 500% more energy than it needs through renewable energy systems and it sells the excess energy to the electricity grid. A success is not without challenges but supported by smart grids. At Nottingham Trent University Congress Center in the United Kingdom, the administrations of nine cities met to sign a new manifest of cooperation. The signature has closed the collaboration that is already a reality within the Lighthouse community; however, the manifest represents another important step in the European Union's efforts to optimize project results and to ensure that they are replicable models even outside the test field. The need to coordinate a team of nine leads to the concept of REMOURBAN: Regeneration MOdel for accelerating the smart URBAN transformation. Project aimed at reducing network dependency and emissions especially in the cities of Nottingham (RU), Valladolid (Spain) and Tepebasi (Turkey) and others. The keyword of REMOURBAN is *regeneration*, a concept that is expressed through a series of specific measures designed for the three realities. The partners are looking forward achieving the following results: to reduce the domestic

energy consumption up to 50%, to increase the share of renewable sources up to 50% reaching an exclusive use of renewable sources for thermal consumption and decreasing the energy waste in transport, to use electric vehicles and to reduce the time spent on urban journeys by 15% thanks to the improvement of public transport. In these three cities more than 190 electric vehicles have already been introduced (including public and private cars) coupled with the necessary recharging points, and 900 apartments (over 63,000 m<sup>2</sup> of surface area) have been upgraded from an energy point of view.

Even today, the European level does not have a specific fund dedicated to smart cities but several possibilities for an access to different types of loans. In addition to the programs of individual Member States that are based on the integration of national resources and structural funds (ERDF, ESF, FESR), there are directly managed European funds that can finance particular aspects of a smart city, such as Horizon 2020, the Mechanism for connect Europe, the Cosme and Life programs.

European grants can intervene in three areas: infrastructure and urban development; supporting cooperation and capacity building; supporting research, innovation and competitiveness.

## **5. Special features of the European city**

Despite the fact that the experiments which have also represented important advances, both technically and scientifically, as well as that of administrative policies, they do not take into account a true relationship with the nature of cities - especially the European ones - with their historical sedimentation, with their organizational, spatial and social form. Until we recognize that a true sustainable development of our cities can not relate to individual buildings or even building complexes but must address entire urban systems, considering all the complexity, it will remain very difficult to start significant renewal processes of our cities.

We cannot imagine making a clean sweep of the existing urban environment to produce a new set-up even though smart. It is necessary to accept the idea that the building cycles and the urban complexity of European cities are linked to dynamics of transformation in which the relationship with history and with the protection of private law is always important.

The urban renewal policies implemented in many countries try to trigger building replacement processes, focusing primarily on greater safety and energy efficiency but deep regeneration processes of existing urban fabrics will increasingly attribute the importance of using public space in a different way, starting from what is there. The neighborhoods of our cities are experiencing awful difficulty in finding space for social, recreational and other mobility activities: recovery and redevelopment of public space

cannot be separated from a substantial reform of urban mobility, especially in local territory.

The exponential growth in the mode of transport, both public and private, has highlighted the failure of the existing road network to satisfy traffic flows and the difficulty in controlling the consequent atmospheric pollution for some time. Traffic issues are even more severe in historic urban landscapes since its shape has not been designed for vehicles. As Pierluigi Spadolini recalled, as early as the beginning of the 1990s, the problem is not only linked to pollution but also to the serious alteration of the sense of collective space and its overwhelming decline, in a substantially rigid context. This decline, together with pollution, triggers phenomena of serious environmental degradation. The transport policies of the past, designed to maximize the demand for traffic and parking, have weakened slow mobility (pedestrians and bicycles) and led to the formulation of rules aimed at separating the functions rather than integrating them. In this process, public spaces have become fragments of specialized and hierarchical mobility, congested by vehicular traffic, polluted, unsafe and uninhabitable for the pedestrian.

In order to solve the congestion of the historical urban landscape due to the vehicular traffic, which is also detrimental to the cultural heritage because of the induced vibes as well as the devastating pollution, the Administrations have taken some measures. In particular, they have worked to prevent the transit and stop of vehicles by placing different kinds of bollards; to protect the pedestrian from road accidents by creating lifesaving islands and pedestrian crossings; to promote the vehicle movements by transforming the city gates in roundabouts. These solutions, often chosen by product catalogs valid for any part of the city and placed according to motives that correspond only to the Highway Code as highlighted by Bruno Gabrielli in 2015, they are not always compatible with the identity of the places and most of the time represent an obstacle to the usability and accessibility of public spaces.

Already in 1991 Pierluigi Spadolini proposed to think of the different parts of the urban landscape as “city districts”, which are self-sufficient citizens’ nucleuses having such a dimension to be walkable, and intending in each of them: to increase the pedestrian network to allow citizens to weave relationships; to implement public transport in order to facilitate both internal and external movements; to identify a system of parking areas located in perimeter zones of urban areas (and in any case not interfering with neighborhood life) to reduce the use of the private vehicle.

The proposal by P. Spadolini anticipated the contemporary people-oriented policies. Many cities have tried to encourage the use of public space, minimizing the movement of motor vehicles and encouraging green mobility sharing (car sharing, bike sharing, etc.). Today, almost all historical urban landscapes have identified Limited Traffic Zones or pedestrian areas and in very large urban areas there are even rules like moving with alternate number plates and circulating with specific vehicles. In some cases, the subsoil

was used to cover the road infrastructures, incompatible with the character of the places located on the surface: this is the case, for example, of the redevelopment of Lyon square in order to include the underground parking or covering of a long stretch of the Madrid ring road to recover the environmental value of the park along the Rio Manzanares.

## **6. Pedestrianization and urban regeneration**

Pedestrianization programs have recently experienced a significant increase in attention in the urban landscape (historical and non-historical), leading many administrations to expand the existing pedestrian areas and to make the public spaces more accessible to pedestrians and bicycles, with gaining advantages such as decreasing traffic and noise and atmospheric pollution. The project “Back in the Center” proposed by the Administration of Bologna seeks to solve the problems related to accessibility and livability of some public spaces located in the city center through interventions focused on the pedestrian.

But at the same time in recent years there have been multiple interventions for the recovery and redevelopment of parts of the ordinary road system and its nodes: interventions almost always generated starting from annihilated or degraded infrastructures (or parts of them), which, however, showed their ability not only to provide the neighborhoods with more suitable spaces to social life but also, more generally, to trigger effective processes of real estate development. To make an effective project of pedestrianization, however, it is not enough to prevent the transit of cars but it is necessary to study the relationship with the mobility system, in order to facilitate access to the pedestrian area through appropriate parking areas located near the area itself, as well to increase the public transport to be used as an alternative to private ones and to create several routes for the different user groups based on the current services.

In this sense, the “Siena parking” project has been launched. The project has built about seven hundred parking spaces on the surface along some of the main roads near the historic core and over four thousand parking spaces located in strategic points of the city. Rest areas include: differentiated rates depending on whether they are located in a built structure or flat; reception areas for tourist buses; digital and IT technologies to update the user in real time on free / occupied places and facilitate payment (pre-paid card).

The fight to control pollution will be through progressive exclusion of traditional thermal engine cars, car-sharing and bike-sharing, expansion of the slow-mobility circuit; these are measures that must be supported by policies to substantially improve local public transport and contain parking for private vehicles on city streets. In this regard, in Italian cities, it will be necessary to proceed step by step, focusing on the average period (5-10 years) to reduce free parking and to encourage the construction of collective parking lots, especially in the neighborhood.



In this phase, the introduction of free public transport can be effective, even in support of political action.

## **7. Reforming public transport**

As it is clear from official data, the use of public transport in our cities is completely secondary, especially if the larger cities are excluded. Urban and district mobility is essentially assigned to the private vehicle. The reasons are varied and ranging from a cultural bias which consider moving by car is the best mode of transportation that guarantees greater freedom and security, to the general distrust of the public transport, considered unreliable and excessively expensive. The result is that, in addition to environmental damage and the continuous occupation of every part of the public space, in Italy the commercial speed is the lowest in Europe - in terms of urban and interurban - with the consequence of the greater cost of transport, both for people and goods.

Without going into details of this information, widely documented by studies, researches and censuses (Istat, 2015), it is quite clear that making a serious assessment on the cost of a policy of growth of public transport and of its improvement is not only concerning the transport costs and tickets prices but specific variables need to be included in such policies. The social cost derived from the current system is too high, both in terms of environmental damage (with its consequences in terms of health), and energy waste (the need to move 40/50 vehicles is much larger than what is used to move a bus or a tram), both for social problems (the inability to live and play in the streets due to the invasion of cars) and for the injustice to the weaker sections of the urban population whose right of moving is limited or prevented due to the high costs of transportation (including public transport) or its low quality (long travel times, unreliability of schedules, inconvenient and uncomfortable and obsolete vehicles).

## **8. Possible new urban scenarios, the recycling of road spaces**

The changes in the way of moving and transporting in urban areas shall therefore be followed by a substantial transformation of the connective space: that of the current viability, in the first place. It is a matter of heritage which is as big as it is underestimated, to which currently corresponds one of the main financial commitments of local administrations to meet the needs of adaptation and maintenance. Excluding the oldest urban fabric, in our cities the endowment of road surface area is excessively wide and almost double compared to the area occupied in the urban areas better governed and built with attention and correct definition of infrastructure. The reasons for these high-cost expenses are to be found, above all, through the disorder in expansive phases, but also in the common belief that the roads should in any case serve also as parking for private vehicles. The urban morphology that we have generated, especially from the late 1940s

to the present, can only be changed in a medium-long time (between 20 and 50 years) and with continuous and careful planning, supported by policies of forward-looking regeneration.

Researchers and groups of scholars are engaged in our Schools of Architecture at “G. d’Annunzio University” to work on the future of these spaces. And this could be a key solution by creating a comprehensive theme for the future of our cities; a scientifically relevant topic both for the fact of covering large parts of the current urban territories, and for the widespread interest of the population.

A Community measure to support policies that encourage the use of local public transport also for free of charge modes should become a subject for scientific research and should be supported by their results: However, they should be aware of the multiplicity of different urban and territorial characteristics in order to create a progressive urban design scenario.

In the Department of Architecture at “G. d’Annunzio” University, we applied this vision through by selecting specific context in the city of Pescara, particularly interesting for the size of its conurbation (500.000 ab ca.), for its peculiar topography of hills and flat land and for the morphological variety. We have simulated a program in which the structure of some reference neighborhoods was kept unchanged in order to predict the progressive release of the road system from private cars; a partial reform of the modes of public transport; the construction of some parking islands; the transformation of roadways, nodes and traditional parking areas into spaces for collective neighborhood life and for the definition of new networks of general slow mobility. The interest of the study derives above all from the possibility of planning a deep transformation of functionality and urban quality in relation to an ordinary commitment of public finances.

It is precisely on the improving and innovating public transport systems that local administrations, especially in central and southern cities, need to be supported in a meaningful way and this support must be achieved by an adequate methodology that is capable to put together the large number of variables involved in order to measure the correct ratio between costs to be incurred and benefits to be achieved.

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