Reconciling Nature and City

Landscape Issues in Future Cities

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The present article is the text of a lecture by Dr. Nathalie Blanc, geographer, at the conference of "Art, city, nature" which is publishing with a bit of summarization. This conference is the eighth meeting from a series of meetings with the title of "Phenomenology of urban landscape" which is held in the 1st of September 2016 by Nazar research center and with the support of Beautification Organization of Tehran. Nathalie Blanc is director of research at CNRS and director of LADYSS. She also teaches at the University of Paris 7-Diderot. She is specialist in the themes of "nature in the city" and "environmental aesthetics".

Introduction | While 70% of the world's population will be urban by 2050, reconciling nature and the city is an essential issue for maintaining the balance of ecosystems and the quality of life in the city. Urban civilization suffers from the negative effects of climate change, which it contributes to producing: atmospheric pollution, heat islands, heat waves or floods ... Yesterday, the city was seen as an antinomy of nature; Today, urban development must be compatible with the protection of nature and the natural habitats necessary for the well-being of the inhabitants. The city has become a key player in the various forms of biodiversity. The urban landscape is renewed on the basis of social representations and practices and materiality. How did these changes take place? How do they transform the urban landscape?

Development of green areas, greening of urban spaces, action at territorial scales, development of ecosystem services, consideration of uses, are all actions deployed to promote the place and effects of nature in the city. These new approaches also challenge the actors of the territories and transform modes of action calling for other forms of citizen participation and involvement. In the future, should not we give way to other ways of managing spaces, to promote ownership and political responsibility but above all citizens on these issues related to the common good?

A New Geological Era

This exposition takes place at a time in human history and at a very peculiar time. I do not know if you have heard of these international debates about a new term: Anthropocene. This term is supposed to mark a geological epoch that would have begun with urban expansion from the 18th century, more precisely from 1750, say some critics, from the invention of the steam engine and during which human beings would impact the earth on a geological scale. It is important to see that it is no longer simply a light impact on local environments, but an impact that transforms also the geology of the earth.

One of the main reasons for the human impact on the earth is deforestation and the passage from the forest, or from unused natural grassland, to agricultural plains or agriculture work. This impact is massive in developing countries. Nevertheless, in Europe and in the western countries, which have undertaken effective environmental policies, the impact of these policies is gradually decreasing. Another issue after agriculture, the issue of urbanization, is a major feature of the Anthropocene era. In the world, since 2007, more than 50% of the population is urban. In France 22% of the territory is urbanized, and I believe that in Iran 70% of the population is urban. So we consider that urban environments are quite characteristic of this new geological era.

The growth of urbanization and its rates also are very different in the world. In Africa we are at a lower rate than in other continents, but the growth is much more. In Europe and North America, this growth is estimated to have been stabilized. So there is a difference in what is called "the urban regime".

This urbanization on the surface of the globe has very important environmental consequences. It has in particular a consequence in terms of light pollution. Light pollution is not just an aesthetic issue but it is also important for animal species; because it plays a very important role in the development of certain animal populations. This significantly changes what is called biodiversity, which is the diversity of living things.

Another thing that has to be considered, and which particularly affects Tehran, is the link between urban density and energy consumption, or the question of transport in other words. The denser the city, the less energy it consumes (Pic. 1). US cities are the most energy consuming; because the model of urbanization in US is extremely dense.

Therefore, in the face of all these urban problems, the challenge of reconciling nature and the city and transforming the urban landscape is an essential issue for maintaining the balance of ecosystems and contributing to the quality of life in the city, including health issues and environmental health. Urban development must be compatible and take account of the protection of nature which is necessary for the well-being of the inhabitants. But how did these changes take place?

The Urban Environment

From the 18th century, the city was seen as the antithesis of nature. In texts like those of Victor Hugo or other well-known French authors, we find that nature is perceived as dangerous, a source of "miasma", poor health and pathological development; so all the urban development of the last two centuries is finally perceived as the antithesis of nature having to force this nature to finally be outside the city.

The first urban developments in the 19th century mobilized many medical sciences and then engineering. It was a matter of circulating water, air, a number of components of nature in the city in such a way as to avoid any stagnation of these elements in the city. If we take up the medical sciences in the 19th century, which have greatly contributed to urban development, the idea of "miasma"- which is an idea perhaps difficult to translate, the idea of disease as the result of a nature that stagnates- was very important in the foundation of these first cities. However, from the 1960s, whether in the United States or in Europe, we see that an ecological discourse changes this representation of the city. This first urban ecology which takes a long time to finally take root and renovate the discipline of urbanism or even the discipline of landscape, will try to take an interest in what has been called "global balance". The balance of the climate, including for example the forest; but it does not address the issue of local balance. The reflection on the city from an ecological point of view has begun to take root in Europe in the texts and professional practices of the municipalities from the 1990s.

Today, when these first upheavals of urban policies in the 1980s will finally try with sustainable

development to have a more holistic understanding of the city and more transversal urban municipal services, in France and elsewhere we are still in the same point. That is to say, a great difficulty in making the transversality between the services, which are all concerned with the issue of the urban environment, and the urban landscape. The issues of climate, nature, urban planning and etc. are still treated separately, rather than having a more comprehensive and complex understanding of the urban environment and landscape issues.

One of the reasons for these difficulties is the failure to take cultural issues into account beyond the technical question. That is to say that one always deals with this question of nature in the city with an engineering design while forgetting that it is above all a relationship of the human being to its environment.

I will give a double definition of the relationship between city and environment. We consider the city as forming an environment, that is, as a living environment for its inhabitants; or we consider the city as inscribed in the environment: itself, its regional- and also national or even international- environment.

If intuitively it is easy to understand the city as environment, it is more difficult to understand the city in its environment; meaning the city as a whole with its dependence on the regional environment from the point of view of wastes and also from the point of view of, for example, food or water.

Environmental Aesthetics

Environmental aesthetics seeks to increase the debate on environmental management and management of unknown dimensions (aesthetic and ethical values); It makes it possible to value the environmental resource in other words than those associated with rational and scientific action. It also aims to grow people through their capabilities associated with opportunities offered by their living environments.

It is a question of returning to the "sharing of the sensible"; this system of sensible evidences which gives at the same time the existence of a common and the divisions which define the places and the parts, and review the modalities of access and contribution, control and participation in environmental resources and their production (and appreciation) that no longer rely on rational knowledge alone. It talks about taste in common. The environmental aesthetic aims to determine:

- The way in which aesthetic satisfaction intervenes in the appreciation and creation of natural and constructed environments,

- To better understand the stakes of a contemporary aesthetics that concerns the environment factory,

- To determine the way in which a feeling of "community" emerges in the establishment of a shared aesthetic with regard to the environment, which includes a social game combining knowledge, power stakes and information sharing.
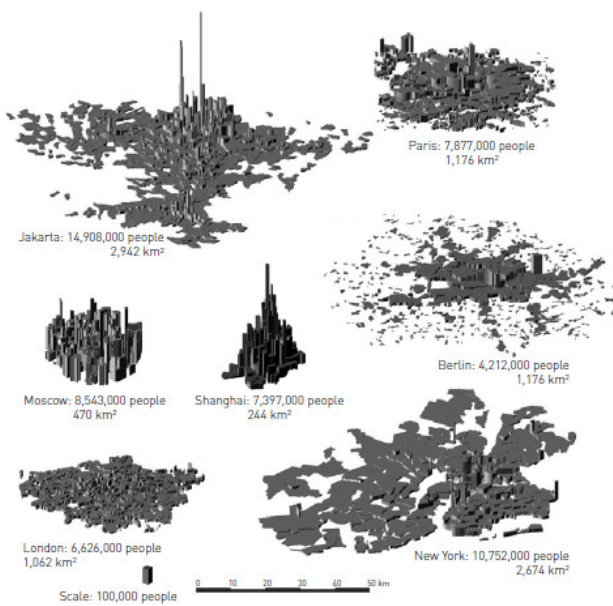
It's aim is political, but it is not simply a matter of reviewing the modalities of the production of a democracy in action, but of reflecting with others on the conditions of possibility of a political regime which implies equality of human beings Citizens) of participation in the political exercise of which the production of the environment is part.

There are two main vices to the urban aesthetic aim: 1) the aesthetic and the production of a framework of life from images (the spectacular, etc.); and 2) the esthetic, the production of a city dominated by sensory experience and the idea of a pleasant environment. Rather, it is a question of feeling what amounts to the aesthetic commitment in the production of the environment, whatever the scales concerned. This environmental aesthetics lends a pioneering character to processes and stories.

Nature in the City

In order to study the relationship between citizens and their environment, I study the relationship between citizens and vegetal and animal spaces in urban spaces. In the early 1990s when I started studying this, everyone found it ridiculous to consider that

Pic 1: Sustainability and cities: overcoming automobile dependence. The denser the city, the less energy it consumes. Source: https://sapiens. revues.org/docannexe/image/914/img-4.jpg.

there was nature in the city. It was thought that the nature only existed outside the cities. I began by demonstrating that in the cities too, there were very special species that formed urban landscapes and micro-landscapes very important for citizens and their quality of life.

In fact, not only in green spaces the most diverse forms of vegetation and landscape are found, but also there is biodiversity. We must consider all the green spaces in town: the neglected ones, the highway borders, the traditional gardens, the wasteland trees and the trees' feet, the roofs, the facades, all the filter ponds and all of these spaces. It is not so much to increase the number of green spaces as to determine all the spaces on all the scales which can give the opportunity to rethink the presence of the diversity of the living in the cities.

● Urban «natural» environments, fragmented territories

These natural environments in the city are first of all fragmented territories. This is very important in terms of landscape ecology; since a fragmented territory does not so easily allow living species to reproduce; so one of the issues of urban environment

and landscape policies in recent years in western countries is to develop these landscapes at the scale of the region. It's about a dynamic of implantation of vegetated spaces in the scale of Greater Paris to see the Ile-de-France region in such a way that these divided natural territories are linked together. "Micro-environments" are very small natural environments that landscape designers are encouraged to find ways in cities to connect them. Places with an inventory, and conduct a first inventory of the species present in the cities, is very important to conduct this policy in the cities. That is to say to see what species were present and why they were present in the cities. Some species are present thanks to citizens; because many citizens have species (pets) that they bring into the domestic space for their leisure, but which they set free in the urban space. There are species that are accidentally introduced by travelers, for example, who carry seeds on their feet. There are species that go back south from north with climate change. And then there are species that exist more in urban areas because the urban environment is a specific medium. For example the cockroach is indeed a tropical species which is supposed to be representative to a certain urban atmosphere; nevertheless it only arrived at 19th century with the installation of the urban heating.

● New spaces for biodiversity

Ecological gardens: These inventories have allowed urban planners and landscapers to set up special natural spaces in the heart of cities. "Ecological gardens" or "natural gardens" are gardens that are not managed. It means, the management in this particular case is to do nothing but to let grow freely and maintain the wild species that are proliferating in these spaces. These gardens are places of learning for the children of local nature; since no exotic species is introduced into these gardens and they are only the result of a local nature (Pic. 2).

Urban wastelands: One of the policies regarding this issue is to promote urban waste. The wastelands

Pic 2: The André Citroën Park is partly managed in a natural way. Today in the gardens it is considered that part of the surface must be absolutely left to the natural dynamics without human intervention. Source: archive of Nathalie Blanc.

are spaces that were previously declared as unused spaces but were to be urbanized soon. Now, these wastelands are valued for themselves and no longer as spaces destined to be urbanized in future. There is a railway belt around Paris that will be requalified in terms of a space dedicated to nature for the inhabitants. In other words, walkways have been laid out to enable the citizens to enter this natural space which was previously considered as urban wasteland (Pic. 3).

Community gardens: Another of the most important policies is what is called "shared gardens" or "community gardens". These are spaces that the municipality gives to the citizens to cultivate them. There is a contract between the municipality and the citizens which gives certain rights to the citizens but also certain duties. That is to say that they are required to maintain and open this space to the public in

exchange for which they can cultivate not only flowers but also fruits and vegetables. This policy has been very successful in the Ile-de-France region. We have about 5 hectares today cultivated in intramural Paris by citizens (Pic. 4).

Green roofs: Other form of nature in the city, the green roof, is also an expanding policy. There are now a number of hectares on the roofs that are especially dedicated to vegetation. This reduces heat and energy consumption in the city.

So what is important when studying the relation of the inhabitants to their environment is to see which inhabitants can benefit from this environment, what networks inhabitants can constitute to take care of the spaces, and then on a larger scale, on a city scale, as a landscape artist or as an urbanist, we see how all these networks of inhabitants make it possible to

Pic 3: Small railway belt of Paris. Source: archive of Nathalie Blanc.

Pic 4: Shared gardens in Paris. Since 2003, the number of shared gardens has increased from 5 to 124, or 4.4 hectares cultivated in intramural Paris. Source: https://commons.wikimedia.org/wiki/File:Premi%C3%A8res_plantations_dans_le_jardin_partag%C3%A9_du_Petit_Paris.JPG.
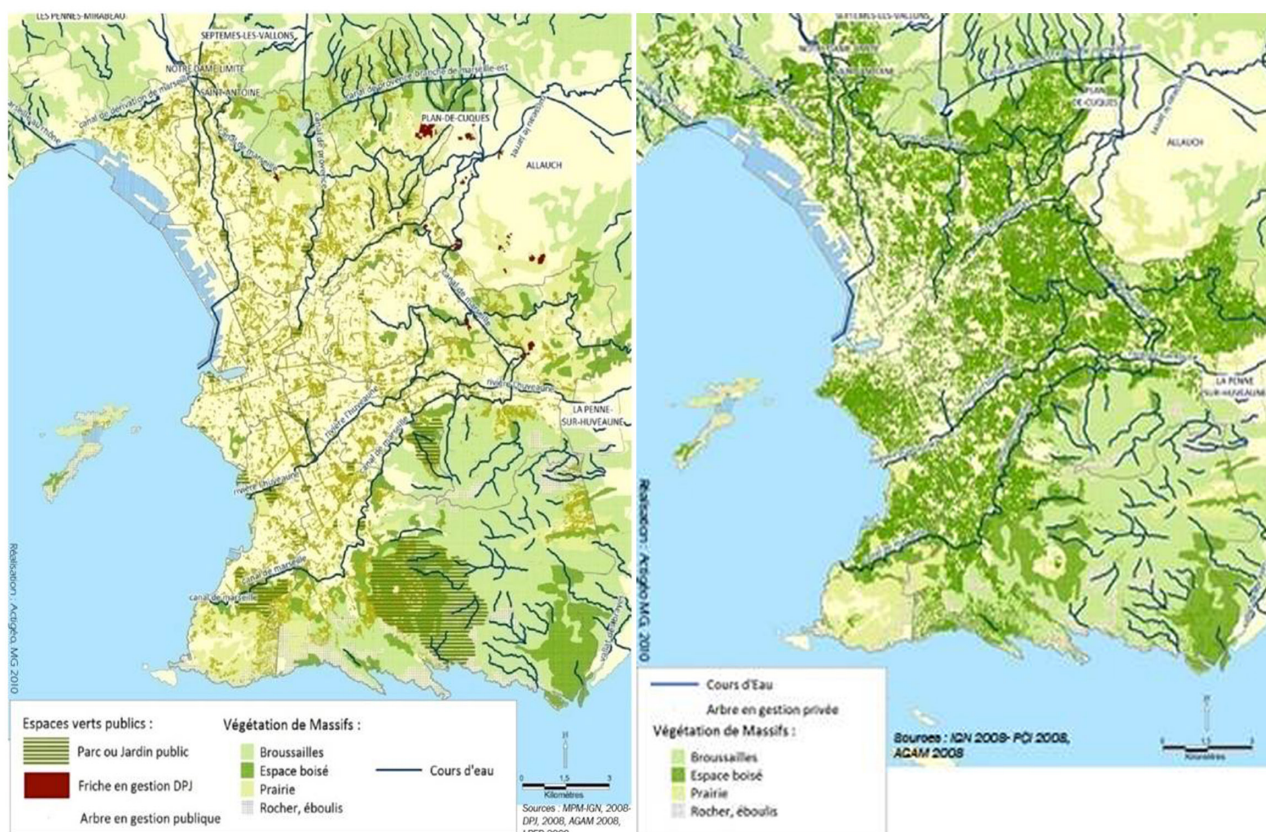
draw a new urban landscape.

Green and blue networks: Since 2016, a new policy has been put in place in France called "the green and blue networks". The green network concept formalizes ecological/biological and human/functional continuities. These continuities must benefit both the flora and fauna, and the local population; especially through the soft motilities (pedestrian paths, bicycle paths). We are not talking only about green spaces or nature in the city, but also about green infrastructures. The implementation of these green networks is difficult because of the interlinking of the scales and associated issues.
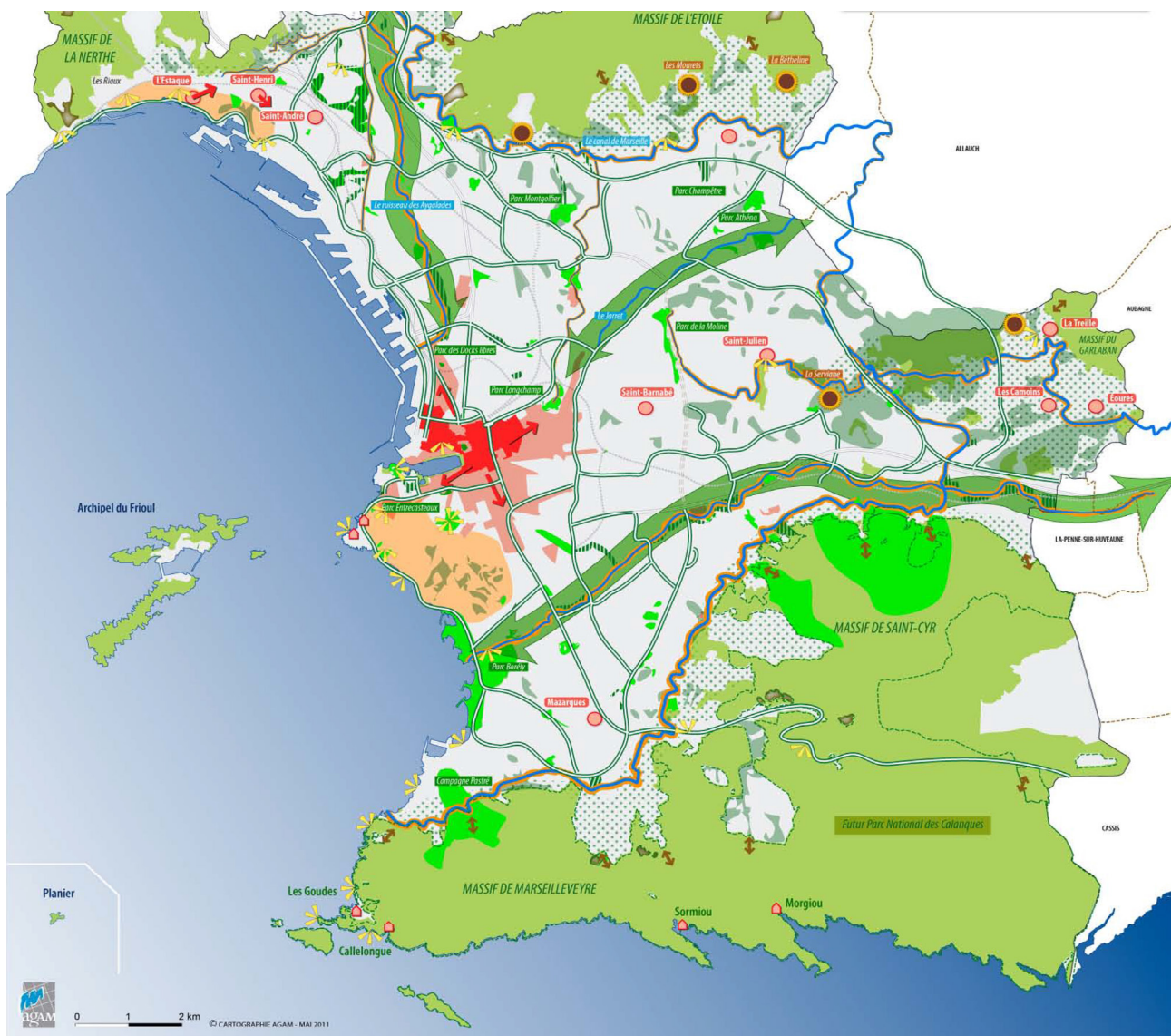
There are two kinds of nature in cities: public nature; which is located on areas that belong to the municipality, and private nature; small gardens that are not collective gardens and belong to individuals or social landlords. To make green and blue networks is to take into account both the public space and the private space; and thus to found a policy that allows to associate the citizens who hold these private green spaces with a public policy that is played on the public green spaces (Pics 5&6).

● Social movements and nature
One of the issues related to this is to move the population on these issues of environment and local quality of life.

Pic 5: In Marseille there is much more private green space than public green areas. To make green and blue networks is to take into account both the public space and the private space. Source: https://developpementdurable.revues.org/9268.
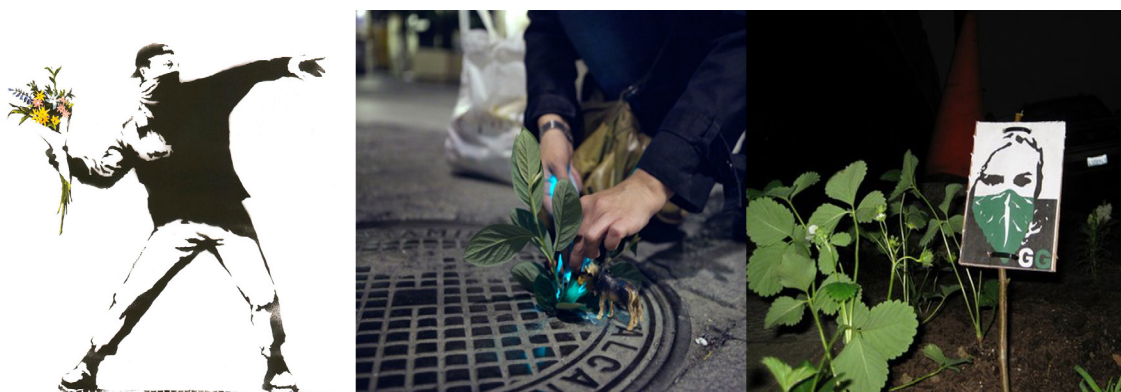
Pic 6: The green network: included in the "municipal project" of Marseille. Source: http://www.marseille.fr/sitevdm/document?id=13784&id_ attribute=48.

The territory constitutes a key point of the fight against the symptoms of the "urban crisis to inhabit it", as of the action for the civic environmental practices.

Charter of planting flowers at tree feet: We have already spoken of shared gardens. There is another policy that is pursued in different cities to take care of the planted trees. This policy aims to make citizens responsible in regard to this urban nature. There are the charters for planting flowers on the feet of trees in Paris. This has also been done in many municipalities that allow children to take care of the tree feet knowing that much of the urban biodiversity is found on these tree stands. These feet of trees are spaces that are often degraded, especially in many cities where smokers use

Pic 7: Guerilla gardening; these people believe that they are changing the world by throwing seeds and planting on unauthorized areas.
Source: archive of Nathalie Blanc.

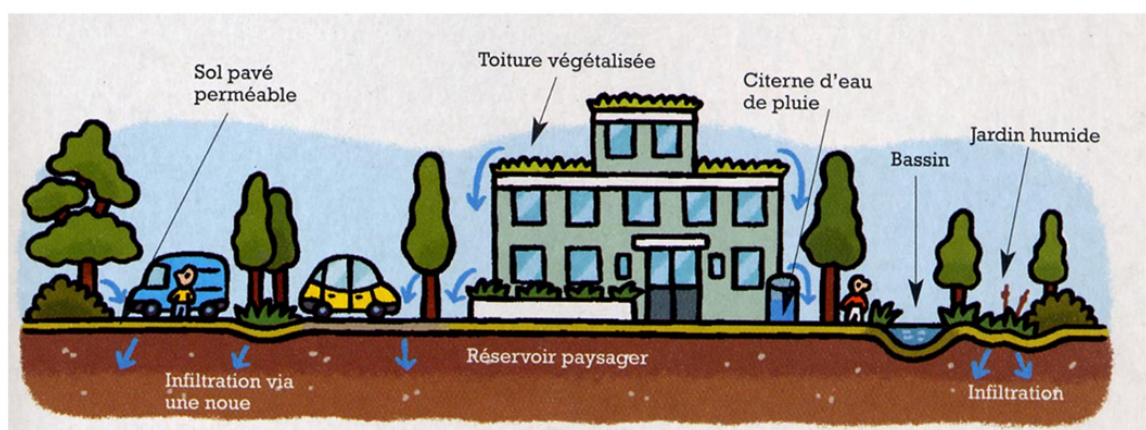it as ashtray, but the policy of upgrading the tree feet allows many species to spread in the heart of the cities. **Guerilla Gardening:** Another movement that is also important in the cities is what is called "Guerilla Gardening". It is people who plant the areas unauthorized to plantation. It is a way of fighting against the influence of the car or the fact that many vegetated areas are converted, either into shopping malls or into other spaces for other destinations. These people believe that they are changing the world by throwing seeds and planting on unauthorized areas (Pic. 7).

Nature-Based Solutions

Another way of looking at this problem, which the mayors are rather concerned about, is to put nature into work. It is a matter of ensuring that this nature makes it possible to find solutions for the management of the city. Biodiversity is considered to contribute to the quality of urban habitat, to store carbon, to ecosystem services, and to play a role in major biogeochemical cycles. The carbon cycle and how carbon will be stored by trees, which affects the atmosphere, the quality of the air, the pollution and finally the soil. Playing on these cycles through urban planning has become one of the issues (Pic. 8). For example it is considered that three trees per building will save 5 to 10% of energy for heating and air conditioning. There are calculations which have demonstrated this and which make it possible to finally rationalize this urban development.

There are several proposals from there for the development of subdivision or neighborhood that can take into account these different techniques; for example, "sustainable neighborhoods" or "ecological districts" in Europe, which were

Pic 8: Integration of water management into the urban fabric: Water and vegetation are managed at the same time. Vegetated roofs, permeable pavements, gutters replaced with a kind of vegetated pond. It means vegetated filtering devices that allow water to seep in.
Source: archive of Nathalie Blanc.

Pic 9: Stagnant pools at Vauban neighborhood; these vegetated ponds allow water to gradually seep into the soil and they supply the underground water resources. Source: http://www.hqe.guidenr.fr/images/depollution-eaux-pluviales-noue-fosse.jpg.

initiated by citizen movements. The Vauban district in Fribourg, which is an exemplary district with an ecological management: the paving stones are not joined in such a way as to allow the water to infiltrate and the vegetation to be established between the cobblestones. It is a new ecological aesthetic. The sensitive landscape is being transformed into the initiative of the inhabitants; since this district was the result of a very important movement in Germany which initially aimed at the implantation of a nuclear installation and which eventually was

the establishment of an ecological district. So it is not just a technological desire but a desire for a new quality of life.

This arrangement goes hand in hand with limiting spaces for the car, with the use of natural materials, rainwater and stagnant pools[1] (Pic. 9). The gardens are open. There is no barrier so that people can see from the outside what is going on in their gardens. At the neighborhood scale, all of these developments form a green network that is connected to the forest behind the neighborhood.

Conclusion | I will conclude with a few words on the questions of justice in relation to nature. In fact this nature makes services in terms of quality of life, and a quality of life that is not promised only to the people with access to large gardens. It is a nature that can be found in thousands of places in the city and it is thus a redistribution of the quality of life in urban scale. It is also, from a food standpoint, to allow populations with less money to access the opportunity to grow food on small lots; while they have a difficulty in terms of alimentation.

Finally, it also allows us to have what is called solidarity at the scale of these spaces. That is to say to strengthen social bonds for the inhabitants who work on these spaces; while previously they were eventually segregated into their apartments separately. So the idea with respect to this nature in the city is not just a formal decorative issue, it is an issue of quality of life in the social sense of the term and a new sensitivity to urban spaces, which are no longer simply dormitories but spaces where you can breathe you can eat and you can live together.

Endnote

1. Noue (in French); is a grassed basin like a gutter that allows the water not to rush to the other end of the pipeline but to gradually infiltrate as the flood eventually escapes. It is a device that also manages extreme climatic events.