

The new generation of urban parks and health-promoting landscapes in eco-neighborhoods

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Abstract

The quest for sustainable development and biodiversity protection leads to the creation of a new generation of urban parks where man allows natural plant succession, soil regeneration, and rainwater infiltration. New urban nature parks are also places for the promotion of social contacts and physical activity. They can be regarded as health-affirming places. The common features of urban parks presented in this paper can be seen in modern eco-neighbourhoods in France. Public parks of this new generation are planned for the centres of new eco-neighborhoods. These parks are being constructed in the first stages of development. Similar commonalities have been observed for eco-neighbourhoods around the world. The paper presents three examples of good practices: three new parks of this new generation in the eco-neighbourhoods of Paris.

Keywords: architecture, urban design, new generation of parks, eco-neighbourhoods

1. Introduction

Public parks have formed part of the urban landscape since the mid seventeenth century. There are examples of public parks such as Central Park in New York, and Parc Monceau in Paris, where people flock in their spare time. Over time, there have been many garden styles and fashions, but the main foundation has remained stable. Public open green spaces are places that are completely mastered by humans, who shape nature to given shapes and forms. The plants and more general landscape, are treated as a substance and material which can be shaped to achieve the designed aesthetic values.

Today, we are facing the process of changing the basic foundation of the presence of nature in urban settings. This new generation of parks is being developed. These parks are places where the strive for sustainable development progresses alongside new forms of biodiversity protection. Nature is left undisturbed, so the natural processes of plant succession can occur. There are even parts of these parks that are being fenced off so as not to allow any human disturbance. These places could provide a natural habitat for a variety of creatures and enable their reproduction. They are places of engendered plant protection. The traditional method of garden development and maintenance, horticulture, gives way to a sustainable, more ecological and a more traditional approach.

2. The new generation of parks

The new generation of parks ensures that maintenance is limited to keeping the parks clean. No chemical substances are used for plant protection or as fertilisers. Only plant compost is allowed for fertilising the soil. The dry leaves are often left as a natural ground cover for the winter. The plant choice is limited to native species. This condition is difficult to keep in the northern hemisphere, where people long for colourful flowers after long and cold winters, but usually the percentage of non-native plants is limited, and natives prevail in these parks.

Sustainable water management includes rainwater infiltration, storage and reuse with sustainable drainage systems. New swamp areas and marshes are installed to increase biodiversity. New technologies for energy efficiency are also used, including photovoltaic lamps, wind engines, and heat pumps.

These new parks are often built as part of urban regeneration projects. They are planted on brownfield sites where soil remediation is sometimes needed. There are remnants of industrial buildings that are being revitalised and remodelled to host new functions. Additionally, they form part of social regeneration projects. They are places transformed according to the needs of the local population during the process of social participation. Social capital is important in these new parks. The new parks are places where social events are organised to bring the inhabitants together and prevent social exclusion. Open-air theatre, concerts, gastronomy festivals, sports competitions, and other mass events are organised in parks. Community gardening makes up part of the new generation of the park movement. Hortitherapy sessions are also important. A new park is a place for the education of children and adults about sustainability, the environment and the human need for contact with nature. The new park becomes an important place for the local community. It is a place for contact with nature, psychological and physical regeneration, physical activities and social contacts (Drapella-Hermansdorfer, 2006).

The ideal terrain for the new generation of parks is the eco-neighbourhood.

3. Parks come foremost in eco-neighborhood design and they are parks of the new generation

In France, the movement for the development of eco-neighbourhoods is strong. The national label Eco-Quartier is a certification process that puts the new development into sustainable frames. What is interesting about the French model is the fact that it is the public park that is being developed first and the construction of buildings with apartments, commercial services, and other functions follows (Trojanowska, 2017; 2018). When new inhabitants arrive, they can start using the park's recreational facilities right from the beginning. There were situations in the past where large residential projects were constructed without any recreational space. Usually, they were designed with open green spaces that were never actually constructed. Large empty spaces are perceived as sad, depressing spaces (CABE, 2010). Today, some of eco-neighbourhoods are constructed inside these large residential projects from the past (ZAC Le Mureaux). The development of a new public park is the first part of the revitalisation process (Parc départemental du Chemin de l'île, Nanterre). Putting the public park first is a lesson learned from the past. Another interesting point is that the percentage of green areas is comparatively higher in eco-neighbourhoods. Eco-neighbourhoods in France have a larger proportion of natural open spaces in comparison to traditional urban tissue, amounting to approximately one-third of their surface (Lefevre, Sabard, 2019).

Similar features to those mentioned above have been noted for eco-neighbourhoods around the world, not only in France, but also in other parts of Europe: Sweden – Hammarby Sjostad, Bo01; The Netherlands – EVA lanxmeer, GWL-terrein; England – Greenwich Millennium Village (GMV), Hockerton Housing Project; Germany – Freiburg im Breisgau, and Finland – Viikki, Helsinki; and other in parts of the World such as the US, Canada, Australia, New Zealand and in Asia, the Middle East and South America (Holden, Charling, Molina, 2015).

There are numerous examples of eco-neighbourhoods with centrally located public parks of the new generation. Three of these have been chosen as case study examples of good practice. They are located in the Paris area and were developed after 2010.

4. Parc départemental du Chemin de l'île, Nanterre

This park of 14 ha was designed by Mutabilis Paysage et Urbanisme + Guillaume Geoffroy Dechaume Gilles Clément, Chemetov et Huidobro C+H+ Architecture. The water and soil purifying systems were designed by Phytorestore. This park was completed in 2006 and enlarged in 2012 with 2 ha of additional promenades.

This park demonstrates how to take the sustainable development of a piece of land seriously. Parc départemental du Chemin de l'île is a good example of the reconciliation of nature and human activity. This park was developed in a place where urbanisation was chaotic and marked by strong forms: an elevated railway, a highway, a paper factory plant and a high-rise blocks of flats. This ancient land of slums has been completely modified to form a welcoming public park (David, Chateigner, 2012). Guillaume Geoffroy-Dechaume underlines that during the design process, nature was treated by the designers as an ally and not as an invited guest. The old and used materials which were present on the site were reused for the construction of new architectural forms. Old blocks of prefabricated concrete were used for foundations, clay was used for sealing the basins, any plants removed from the site were used as mulch or natural fertiliser. Recycling old materials was part of the ecological agenda.

One of the most important features of this park is the river and water. The park is situated above the level of the Seine. The Seine water is brought in the park space using an Archimedes screw, filtered through a series of seven purifying gardens and used for irrigation of community gardens and transported

back to the Seine. Filtering plants and micro-organisms are used to purify the water. The cleaner the water, the closer the visitor can come to experiencing it. The entire process can be observed in successive basins. Water is also exposed to pools, fountains, and streams. The Seine water is used to create a variety of ambiances. The filtering basins have regular shapes that form a contrast with green prairie and forms of plants. The regular architectural forms close to the central path are gently transformed into naturalised river banks further away.

A new eco-neighbourhood was constructed adjacent to the park. The park was designed to accommodate the both needs of existing inhabitants and those of new users. The major goal was to change the vicious circle of social exclusion and stigmatisation of the location – this objective seems to have been satisfied.

To make the park space friendly and attractive, a variety of recreational equipment was needed. There are three playgrounds for various age groups of children located along old towpaths. Additional recreational space filled the place under the highway bridge, which was an area of 2,500 m² devoid of any vegetation. This space was used for street workout, football pitches for adults and children, a basketball court and other sports fields. The elevated highway provides a roof and shelter from the rain. This space becomes full of life.

The community gardens are located on the opposite side of the highway from the filtering basins. Biodiversity protection was a goal of the park's designers. Native species were chosen for planting. Ecological management is employed and pesticides are not used. Beehives are located in a quieter zone of the park.

The “Maison du Parc” offers organised events to facilitate the integration of new citizens and promote ecological education. Visits of school children are regularly organised to familiarise the children and teenagers with ecological

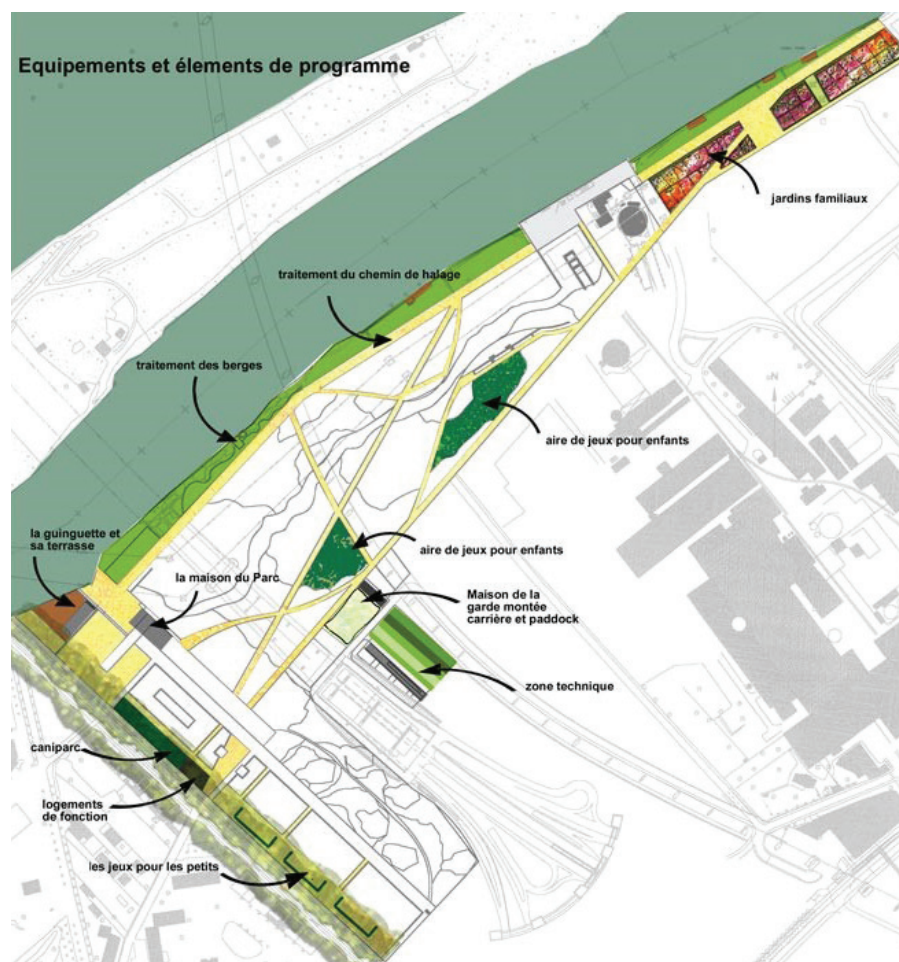


Fig. 1. Parc départemental du Chemin de l'île, Nanterre, locations of specific elements (source: Le Parc du Chemin de l'île Mutabilis..., 2006)

solutions. The societies of volunteers take care of community gardens. It is expected that citizens could actively change the park. They are welcome to personalise the collective gardens. Their opinions would influence further amendments to the park. The park is a place for all and should offer interesting activities to all age groups. However, it is nature that is the host in this park, thus it is expected that some natural processes of overgrowth would occur.

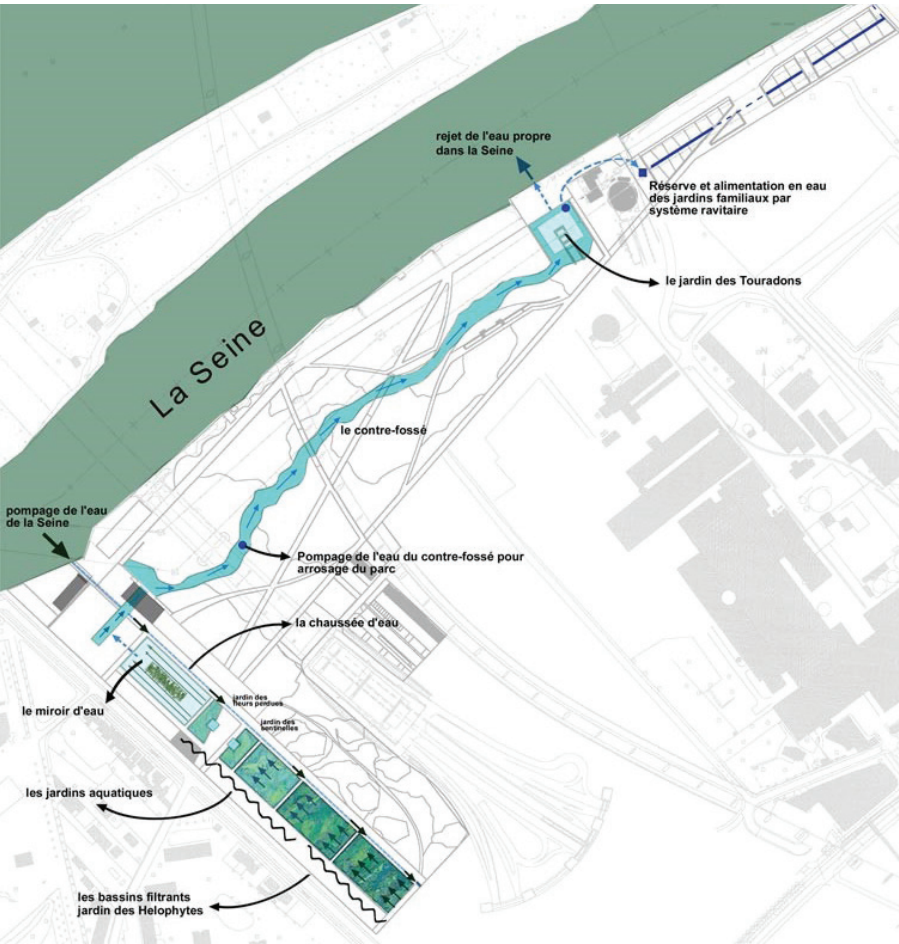


Fig. 2. Scheme of the water purification installation of Parc départemental du Chemin de l'île, Nanterre (source: Parc du Chemin de L'île. Nanterre, 2006)



Fig. 3. Water treatment basins of Parc départemental du Chemin de l'île, Nanterre (photo by author)



Fig. 4. Water treatment basins of Parc départemental du Chemin de l'île, Nanterre (photo by author)



Fig. 5. Water treatment basins Parc départemental du Chemin de l'île, Nanterre (photo by author)

4.1. Parc des Impressionists, ZAC Bac d'Asniers

This park occupies 5 ha in the Bac d'Asniers neighbourhood. It was opened in 2010. Designed by Agence HYL, this park was created on a brownfield site – a former gas plant which had been shut down for over 30 years. This space was a flat surface raised by around six meters above street level, which isolated the entire Clichy neighborhood from the city and the River Seine. The soil was deeply polluted and needed specialised remediation. Part of the terrain was covered with self-seeding trees which were over forty years old. Special attention was placed on inserting this park into urban tissue to make it a friendly urban space.

The concept is based on ten structuring elements: the pedestrian avenue; accessibility to people with reduced mobility; the promenade; the 1,000 m² water garden; arboretum; pavilions with the gardener's office; changing rooms and public toilets, a large open space of 10,000 m²; playgrounds.

The efforts to protect the biodiversity included the protection of existing plants. The semi-natural forest was planted to accelerate the biological revitalisation. Over thirty species of trees were planted, both exotic (eucalyptus, acacia), as well as native (linden, beech, and red oak). Only natural methods are used for maintenance – no chemical products are allowed. The developing ecosystem attracts a diversity of wild animals. Natural meadow is maintained with only one mowing per year. The water garden consists of five artificial basins that create the humid ecosystem. They are filled with phyto-restoring plants.

The name comes after the Impressionist painters who lived in the Bac d'Asniers neighbourhood in XIX century: Paul Signac, Emile Bernard, Georges

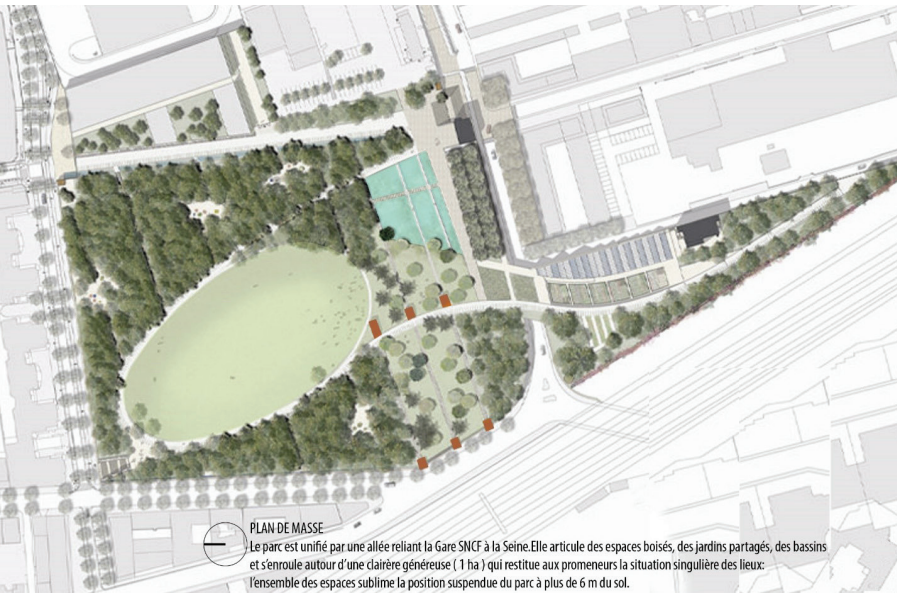


Fig. 6. Masterplan for Parc des Impressionnistes, ZAC Bac d'Asniers (source: Parc des Impressionnistes, 2006)



Fig. 7. Water basins in Parc des Impressionnistes, ZAC Bac d'Asniers (photo by author)

Seurat. There is a variety of places inside this park; within the semi-natural forest are small, quiet places to rest. The open space is used for mass events and gatherings.

The process of the development of the park is ongoing. In 2018, a small restaurant was opened in the park by a local inhabitant serving breakfast and lunch to park visitors. There are other organised events to prevent social exclusion and promote placemaking efforts. The local inhabitants participated in the process of designing the new park expressing their needs and opinions. New citizens are invited to join in.



Fig. 8. Naturalistic path along the park pavillions in Parc des Impressionists, ZAC Bac d’Asniers (photo by author)



Fig. 9. Naturalistic path between fenced spaces for nature in Parc des Impressionists, ZAC Bac d’Asniers (photo by author)

4.2. Grand Parc des Docks de Saint Ouen

ZAC Docks de Saint Ouen is a new eco-neighbourhood which spans an area of over 100 ha on the banks of the River Seine. The park was designed in 2010 and opened to the public in 2013. In the centre of this development, the 12 ha Park of the Docks was created; it was designed by Agence TER to become a central focus point of the new development. The Park of the Docks is showing how natural systems of water cleaning and storage can be combined with a popular urban park with multiple installations of recreational equipment.

The ambition of this project was to create an inclusive space. The main theme of the new park is water, which is exemplified by the treatment of rainwater. The park alternates between two types of space – places for nature and gardens for the public. Additionally, some parts of the park are designed for nature to be visible but with restricted access for visitors. The planted meadow areas have ditches which can be filled with rainwater. The entire park area is a huge hydraulic system – it acts as a reservoir that filters water and uses it to irrigate the community gardens. Valleys, ponds and large sunken surfaces of meadows gather rainwater, highway runoff and floodwater from the Seine. The ponds and filtering gardens attract a wide range of fauna. The park design promotes the biodiversity of local species – over a hundred species of tree have been planted in the park.

In the park, one can enjoy various kinds of environments – quiet intimate spaces and busy active places. There are wide open views and framed vistas. People can stay in the sunshine or find shelter in the shade. The park offers a sequence of compositions, orientations, and views of the distant landscape, of the city or the park itself.

Numerous facilities are located in the park. The educational greenhouse (1,400 m²) is linked to the allotment gardens (5,000 m²). The greenhouse includes meeting spaces, a kitchen and a large multi-purpose space for gardening material, experimentation and events. Events are held daily to promote common gardening and for people to spend time together. The society of local inhabitants was organised to promote common activities and prevent social exclusion. The greenhouse is accessible and open to everyone who wishes to learn more about horticulture.

On the other side of the of the park at the edge, a large skate park and urban amphitheatre with 320 seats were constructed. Three playground areas are located on different sides of the park and serve multiple age groups. The



Fig. 10. Grand Parc des Docks de Saint Ouen
(source: Landezine International Landscape Award, 2017)

custom-designed creative playgrounds make use of the topography and the context of the site. One of these extends towards a large grass field (10,000 m²) with playful water elements.

The Saint-Ouen castle is a historic building that stands as a witness to the history of this place just at the edge of the new park.

This park was awarded LILA 2017 – Landezine International Landscape Award granted by Landezine – Society for Promotion of Landscape Architecture. The jury underlined that *Saint Ouen – Park at The Docks is a complex landscape system that offers optimistic answers to questions concerning social equity and water resilience* (Landezine International Landscape Award, 2017).

The relationship between the park and eco-neighbourhood is growing stronger over time. The collective gardens are attracting the citizens to join the societies of local gardeners. The pedagogical greenhouse is open to the



Fig. 11. Grand Parc des Docks de Saint Ouen – educational greenhouse on the right, apartments blocks under construction in the background (photo by author)



Fig. 12. Grand Parc des Docks de Saint Ouen – community allotment gardens and playground (photo by author)

public every day. Everyone is invited to join local associations. The total area of 5,000 m² of community gardens is divided into small individual plots of 8 m² on average. The municipal employees take care of the regular organisation of workshops for school children and entire families. They organise meetings with local inhabitants to facilitate the process of adapting the park to the needs of users. The process of participation which started before the construction of the eco-neighbourhood is ongoing.

With time, nature is expected to take over some parts of the park which were planned as havens for biodiversity protection. Over a hundred native tree species have been planted and are expected to thrive.



Fig. 13. Grand Parc des Docks de Saint Ouen – water purification installations (photo by author)

5. Conclusions

The examples of eco-neighbourhoods with parks of the new generation located in their centres demonstrate how urban planning is gradually evolving towards the creation of health-promoting places. The human need for contact with nature which was identified in early twentieth-century urban design guidelines for the cities of tomorrow by Ebenezer Howard, Patrick Geddes, Clarence Perry is being catered for in a sustainable new form. The design of open public green areas in the three eco-neighbourhoods described in this article can serve as examples of good practice. They are living laboratories with advanced solutions for rainwater treatment and reuse, biodiversity protection and social justice promotion. All of the new presented parks were developed on a limited budget. The environmental, societal and economic issues were all solved to advance sustainable development. The local actions were designed according to the principle of acting locally and thinking globally.

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Nowa generacja parków miejskich i krajobrazów terapeutycznych na terenach ekoosiedli

Streszczenie

Dążenie do zrównoważonego rozwoju i ochrony różnorodności biologicznej doprowadziło do stworzenia nowej generacji parków miejskich, w których człowiek pozwala przyrodzie na naturalną sukcesję roślin, regenerację gleby i infiltrację wód opadowych. Można je uznać za miejsca promocji zdrowia. Nowy miejski park przyrody jest także miejscem promocji kontaktów społecznych i aktywności fizycznej. Na terenach nowoczesnych ekoosiedli we Francji można zauważyć następujące prawidłowości – w centrum ekoosiedla zaplanowano park publiczny nowej generacji, jest on realizowany w pierwszym etapie inwestycji. Podobne prawidłowości zauważono w przypadku ekoosiedli na całym świecie. W pracy przedstawiono trzy przykłady dobrych praktyk: trzy parki nowej generacji zrealizowane na terenie ekoosiedli w Paryżu.

Słowa kluczowe: architektura, urbanistyka, parki nowej generacji, ekoosiedla