Greening the void: actions for the de-sealing and renaturalisation of soils in brownfield regeneration processes

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Abstract
The decommissioning of industrial sites has started a complex 'season' in which different actions for their reuse have emerged. In addition to the preservation of existing structures, projects have emerged that have chosen to combine the actions with soil de-sealing interventions. This 'demolition without reconstruction' has generated a new permeability and created the conditions for new public facilities and the partial renaturalisation. The analysis of a selection of brownfield redevelopment experience makes it possible to compare both the spatial effects and the relative variety of planning policies adopted. The contribution proposes the identification, analysis, and comparison of some regeneration processes of large brownfield sites, selected in two different Italian cities, which are characterised by the promotion of soil de-sealing and the implementation of NbS.

Keywords
Browfield, de-sealing, Nature-based Solutions, Urban regeneration, Urban planning tools

Introduction

We often make the mistake of considering human settlements as natural events because they are influenced by autonomous, uncontrollable, and unpredictable laws of development like those of biological organisms. Cities do not grow out of their own, inscrutable instincts, but are built piece by piece by their inhabitants (Rykwert, 1976). With deliberate actions, communities continue to modify the city, increasing it with multiple elements according to an alternation between use, disuse and reuse that appears as an entirely physiological fact in the history of human societies (Scaramellini, 2018). Within this latter assumption, we can place those phenomena of the decommissioning of large industrial areas, which took place from the 1980s onwards, and which triggered a long phase of investigations, reflections, and applications. It was a complex season that recognised in the recovery of brownfields a common challenge for public policies (Atkinson at. al., 2014) and a relevant factor for the activation of territorial redevelopment processes (Erba, Guastamacchia, 2002).
In the transition from a society with a strong industrial identity to a new post-industrial one (Arcidiacono et al., 2015), different approaches have arisen to rethink these places (Garda, 2018). In addition to the maintenance and re-functioning of existing structures - for only those cases worthy of conservation - and the construction of new buildings by means of demolition and reconstruction, one can recognise experiences that have taken a different approach. As in the two cases discussed in the following paragraphs, one can recognise transformation processes that have also adopted partial or total demolition of the built-up areas with consequent increase in soil permeability and renaturalisation. With this third approach, which is more oriented towards promoting an idea of 'urbanism of demolition' (Rusci, 2021), it is possible to obtain the liberation of areas previously 'sealed' by volumes or built-up areas, increasing soil permeability, creating the conditions for the restoration of certain functions inhibited by sealing processes (Garda, 2020) and promoting the activation of renaturalisation processes. This idea of the removal of built-up spaces as a precondition for the return of soil permeability and nature is recognised in the concept of de-sealing (Garda, 2022) which 'means restoring part of the former soil profile by removing sealing layers such as asphalt or concrete, loosening the underlying soil, removing foreign materials and restructuring the profile' (EU, 2012).

In the paper, going just beyond the definition just mentioned to include interventions of greater entity and complexity, with the concept of de-sealing we intend to consider a set of actions that foresee, in addition to the removal of two-dimensional elements, such as parking surfaces, also the demolition of three-dimensional elements, such as unused buildings, to guarantee the achievement of different benefits. The advantages that can be obtained by interventions to increase the permeability of soils and the consequent renaturalisation, acquire great importance for urban areas, especially those characterised by intense soil sealing processes (Adobati, Garda 2020) due to the numerous negative effects produced by anthropogenetic soil sealing (Scalenghe, Marsan 2007; EEA, 2013). With de-sealing it is possible to mitigate or compensate for this negative situation by ensuring: i) increasing green areas that are crucial for the health of inhabitants (Kabish et al. 2015); ii) reducing the urban heat island phenomenon (Magliocco, Perini 2014); iii) restoring soil infiltration and improving the water cycle management capacity (Brears, 2018); iv) recovering the ecological function of soils by promoting ecological reconciliation (Francis, Lorimer 2011). Through these new urban porosities (Viganò, 2010), it is also possible to (re)activate ecosystem functions (Garda et al., 2023) and promote the application of Nature-based Solutions (NbS).
This contribution confronts the issues just presented through the analysis of two experiences of redevelopment in the Italian cities of Trento and Milan. In both cases we are dealing with complex processes of radical transformation of physical and morphological assets that have favoured the creation of new green areas through de-sealing, albeit with dissimilar results in terms of green areas created.
The two case studies were selected because of certain common features:
- These were two redevelopment processes in which all the interventions included in the projects were almost fully realised.
- The industrial areas were unified in terms of architectural and ownership structure.
- Before the transformation, the areas had high levels of soil sealing.
- The projects that guided the transformation reconfigured the two areas morphologically and functionally.
- The creation of new green areas was an aspect that characterised both urban planning instruments and specific urban projects.

Case Studies Presentation
The former Michelin of Trento includes a rather important area for the city, located in the south/west area of the urbanised territory and about half a kilometre away from the historic centre of the city. The history of the industrial site began in the 1920s when Michelin took the decision to build an initial production plant in Trento to manufacture tyre materials. The company, after several reinforcements, reached its maximum level of development in the 1970s, involving approximately 1,800 workers to become the most important labour pole for the province. The importance of this place for the city was not only due to its territorial extension, albeit considerable with its 116,000 square metres, but was justified by other reasons. A significant role was played by the economic operator who for decades owned and employed this site, profoundly conditioning the labour market and community life. Even the functional choices hypothesised and then realised during the transformation process have connoted the new district because of new territorial relations, as well as the interaction with territorial elements that have been at the centre of political and urban planning debate (e.g. the role of the Adige River). At the same time, the former Michelin can be considered as the metaphor of a city that in recent decades, like other Italian cities, has been confronted with structural phenomena (Mazzeo, 2016) such as the end of the long cycle of demographic growth, the progressive ageing of the population, the decommissioning of some military structures and the crisis of the industrial sector (creating some 'urban voids'). The spatial conditioning of these

irreversible processes has long influenced the debate and characterised the scenarios adopted in municipal urban planning instruments, also because of the strategic role attributed to many of these areas (Franceschini, Ulrici 2011). After Marcello Vittorini's new urban plan of 1989, many modifications to the plan alternated, attempting to confront the needs of an area in search of a new balance, until assimilating the development hypotheses proposed at the beginning of the 2000s by the Catalan urban planner Joan Busquets and the subsequent master plan for the city of Trento (Cerone, 2004).

The new district that replaced the decommissioned industrial structures, now known as Le Albere, is the outcome of a long process of transformation that since 1998, the year in which the Michelin company decided to shut down operations, has solicited stakeholders, places, and planning tools. The first hypotheses for the area had already been proposed by the 1989 Urban Plan, which had envisaged a fragmentation of the structure into mixed-residential blocks set in green spaces, aimed at inserting a new centrality in the city system. This forecast, given the criticism raised locally with respect to fears of an acceleration of the process of dismantling, had been eliminated with a variant to the urban plan in 1994 (Ulrici, 2011) to postpone an inevitable change to the future. A few years later (1998), the Trento City Council returned to this specific case, undertaking to start the process of revising the urban plan with the aim of reconsidering the urban destination hypothesised in 1989.

The 2001 update of the urban plan played a fundamental role in the new trajectory. Alongside the management of some general issues, such as the need to consider the river Adige as a structuring element for future urban planning policies and environmental requalification actions, the updating provided for the former Michelin the need to draw up a 'guiding plan' to which to subordinate the subsequent drafting of implementation plans.

The masterplan was drafted in 2003 by the Renzo Piano Building Workshop, which had been commissioned directly by the new owner of the area (‘Iniziative Urbane’). The study proposed for the masterplan dealt with themes that have become recurrent throughout the Le Albere experience, such as the desire to promote the reconnection of the area with the rest of the city and the recovery of the relationship with the river Adige. The two main design choices proposed by the project concerned the creation of a multi-scalar mix of functions. The second theme dealt with the choice of concentrating the new building volumes in a limited part of the area, creating the minimum conditions for the formation of a large park. The masterplan, in addition to more specific choices on different issues (tree-lined paths, road network, building fabric, etc.), provided for a series of interventions along the boundaries of the project area at the expense of the public administration, fundamental to accelerate the realisation of a more comprehensive urban redevelopment of the district (Antoniaconi, 2010). These interventions concerned the construction of several pedestrian subways under the railway (elevated), road and pedestrian bridges over the Adige, and the construction of interchange car parks. These works also included a project of particular importance for the new park and for integration with the Adige, namely the burying of Via Sanseverino as an element of strong separation between the area and the river.

After the City Council's approval of the masterplan (2004), the following year it was the turn of the subdivision plan, the drafting of which was once again assigned to Renzo Piano's Studio, guaranteeing a certain continuity in the design approach. This further refinement involved the definition of six design guidelines that dealt with four different 'systems' (energy, water, green and built), the road system (including paths) and the relationship between park and water. The importance given to the green system and, above all, the hypothesis of creating a large park area were again recognised as fundamental and characterising aspects for the new district.

The building works begun in 2008 led to the construction of new structures for residential (approximately 44,000 square metres), tertiary (approximately 29,000 square metres) and commercial (approximately 10,500 square metres) use. Another important and symbolic

intervention implemented concerned the construction of the Science Museum (MUSE), again designed by Renzo Piano, located in the northern part of the district. In addition to an important share of mainly underground parking areas (about 2,000 parking spaces), the interventions on the open spaces must also be mentioned, which involved both squares, pedestrian paths, and water channels (about 28,000 square metres), and the construction of the new public park that affected a large portion of the district (about 50,000 square metres).

The biography of the former OM of Milan, an area located to the south in a particularly urbanized context, is rather extensive. Its history began at the end of the nineteenth century when the Miani Silvestri industry, then engaged in the manufacture of railway materials, decided to settle in this part of the municipal territory. A few years later (1899) the area took on the name Officine Meccaniche (OM) and in a short time, thanks to the positive effects of its proximity to the Porta Romana railway station, it became one of Milan's most important industrial realities (4,000 workers). Starting in the 1930s, this company underwent various changes in its management and ownership structure, gradually becoming part of the FIAT Group and modifying its production of vehicles destined to operate in different economic sectors. Between the Eighties and Nineties, just a few years after the definitive replacement of the OM trademark with that of 'Iveco' (1975), the gradual process of divestment of production activities began at a historical moment that for Milan, as for other major urban areas in Europe and North America, represented the start of that powerful season of planning, political and cultural reflection about abandoned areas.

In Milan, the debate on the fate of large ‘urban voids’, from the point of view of urban policies, was tackled by means of newly planned instruments that were often far from the more traditional town-planning schemes at the municipal level then governed by national and regional regulations. Since the 1980s, Milan has decided to adopt rather innovative 'Documents', not without criticism for their reference to deregulation aspects, which, moving away from the ordinary and regulated forms of planning, have taken on a look more interested in promoting the strategic dimension.

A first relevant act produced by the municipal administration, created to go beyond the urban plan and take advantage of the start of works for the construction of the new commuter train (Oliva, 2002), was the ‘Documento direttore per il progetto passante’. This was a tool introduced as a strategic and management contribution to coordinate public and private interests (Bolocan, 2009) and to stimulate reflection on certain areas worthy of reconfiguration through the activation of urban projects. Many of the areas considered by this tool, then affected by phenomena of progressive decline, have frequently returned in the reflections of the following years also because of their size and strategic location in the metropolitan system. Among the various proposals identified by the cartographic elaborations of the Document, the former OM still appeared with a secondary role and as an area of possible redefinition because it was susceptible to urban redevelopment through the rethinking of permitted uses and the redesigning of substantial parts of the territory (Doni, 2009). Parallel to the first Director's Document was another document (‘Studi di inquadramento’) which, through a more in-depth analysis of Milan's disused or underused areas, came to suggest new transformation strategies. For the OM area the theme and the potential role of urban greenery emerged for the first time, suggesting the need to build a 'green system' capable of redefining the relations between the city and the external agricultural spaces (Doni, 2009).

In the mid-1990s, a second important moment for urban planning policies, especially for future decisions concerning the former OM area, was the project ‘Nove Parchi per Milano’ (1995). This design experiment proposed a set of urban transformation measures for extensive peripheral areas of the city that were to take place around a large new park. Through the creation of new neighbourhoods equipped with public spaces and facilities, the aim was to define new centralities in the peripheral areas with the aim of contrasting the monocentrism that

traditionally characterised the forma urbis of the city. Similarly to the experiences proposed for Barcelona and Paris, there was a tendency to rethink the structure of the city starting from the identification and action of urban projects characterised by the foundation of a new urban park (Marinoni, 2007). In this new vision for the OM area, several hypotheses were envisaged, later taken up in subsequent years in other more concrete and effective initiatives with respect to the real transformations of the area. For example, an expansion of the existing Parco Ravizza, located north of the area, was suggested, through the creation of new green areas in the industrial area, obtained by demolishing the industrial buildings. The Nove Parchi per Milano Project also envisaged the creation of new connections, called promenade, between the project and other significant areas. With this indication, the OM area found itself inserted along the 'Naviglio Romana' promenade, which also included the Porta Romana railway station and part of the railway belt.

The process of radical transformation of the area began institutionally with the municipality's participation in a national funding call intended to support building and functional redevelopment of urban areas. After the preliminary identification of the urban areas to be evaluated for a possible request for financing, some real estate companies responsible for the area submitted a proposal for the ‘Programma di riqualificazione urbana’ (PRU) of the former OM (later named 'PRU OM-Pompeo Leoni'), for a total area of 313,652 square metres, which was subsequently approved by the Municipality and forwarded to the Ministry for evaluation. Following the positive outcome and the allocation of the financing, the Programme Agreement was signed in 1997 between the Municipality, the Lombardy Region, and the Ministry of Public Works. With the Agreement, all the fundamental design indications were defined to start the subsequent technical design phases and, at the same time, guarantee the simplified modification of the 1980 town-planning scheme in force, which did not provide for the transformation of the area. Work began in 1999, while construction was mainly concentrated between 2003 and 2005. The reconversion of the area led to the creation of a new neighbourhood characterised by a rather ordinary mix of functions common to the urban projects promoted in Milan. On the whole, of the approximately 153,000 square metres of floor area ratio, a very significant part was destined for residential use, i.e. 79,000 square metres, following the strong demand for housing present in the local market. The remaining quantities were destined for commercial structures (9,000 square metres), spaces for the tertiary sector (34,000 square metres) and, finally, spaces for manufacturing functions (approximately 31,000 square metres).

Of the approximately 116,000 square meters that made up the project for the former Michelin (later renamed ‘Quartiere Le Albere’) a considerable part was allocated to the formation of the new green areas and a new public park (about 43%), which, as mentioned in the previous paragraph, represented a characterized and identifying choice for the entire redevelopment process. The creation of these new green areas was made possible by a combination of the complete demolition of existing building structures and the concentration of building potential in the eastern part of the neighborhood. The new fabrics created were designed with the aim of defining a specific relationship between built volumes, open spaces and building heights, comparable to that present in the historic center of the city of Trento. The increased permeability of the areas was manifested as the result of the conversion project of an area that, due to the morphological and functional conditions of the previous activities, was characterized by a high degree of soil impermeability.

De-sealing took the form of a necessary action to facilitate the creation of the new public park and meet certain needs (Garda, 2020). The first need, emphasized by the planning documents, concerned the attractive role given to the large, equipped park, which was supported by the provision of specific elements. The spatial components, intended to ensure attractiveness and that characterized its spatial composition and organization, concerned the creation of paths, equipped meadows, and wetlands. The second requirement proposed by the project was related

to the desire to restore connections with the Adige River by encouraging a return to the dialectical relationship that had been denied with the progressive urbanization of these areas. The park was, likewise, considered as a connecting element between the consolidated city and the river and between the latter with the new architecture of the neighbourhood and the planned receptive/commercial functions. The specific choices adopted included both the proposed burying of Via Sanseverino, which was essential to give continuity to the park given its condition as a physical barrier, and the creation of a network of canals and bodies of water intended to serve different functions.

Water represented a complex issue for the project because of the functions: i) recreational due to the presence of ponds made swimmable thanks to a phyto-purification system; ii) technological due to the realization of water surface ponds to be used as storage basins for irrigation, firefighting or first rainwater lamination; iii) didactic-scientific due to the possibility of intercepting a cultural type of fruition.

The proposed design framework for the final subdivision plan adopted a taxonomic approach because in it the different elements that made up the large, equipped park are treated separately. In the technical-descriptive report and the in-depth documentation, the organization of the spaces took place through the use of "diversified landscape environments" that corresponded with: i) a central environment treated as a lawn and equipped with paths; ii) a wet garden composed of essences usual for river environments; and iii) groves consisting of prime tree essences distributed along the edges. It is an archipelago of spaces with a strong ecological, physical, and functional characterization that has found, as stressed in the project, in the tree rows a connective system together with the networks of pedestrian paths and water channels.

The complex system of green areas that now characterize the Le Albere neighborhood faithfully return the principles and design directions provided by the former Michelin transformation project. In it it is possible to recognize both the spatial design imagined in the various elaborations of the project, and the variety of elements that characterize it which return a certain complexity in the interpretation of the concepts of urban nature.

The principles adopted in the design of the new green areas planned for the former OM area in Milan centred on a different approach than in the Trento case. According to the design proposed by French landscape architect Frederic Cristophe Girot, the new park was organized into different spatial and thematic areas. This hypothesis compared with the indications included by the PRU project carried out by the municipal administration albeit with some difficulties and limitations related to the impossibility of surmounting the physical barrier constituted by the railway line and Viale Toscana. The obvious criticalities prevented the implementation of the idea of creating a unified public park, as also envisaged by the Nine Parks for Milan project, achieved through the connection and continuity between the existing Ravizza Park, located north beyond Viale Toscana, and the new park planned for the former OM area. The architect proposed a park structured in three environments alternating with the new buildings, organized along east-west directions, and integrated with the Vettabbia canal that ran through the entire area (for which reclamation and redevelopment were planned).

Further north, between the railway and Toscana Avenue, the Culture Park was planned, characterized by the construction of a large amphitheatre for 1,500 people, new wooded and planted areas with fruit trees and outdoor sports facilities. In the center was planned the Park of Industrial Memories instead intended to ensure a possible integration between new green areas (lawns and rarefied trees), bicycle and pedestrian paths and some technological and architectural elements maintained to preserve the historical memory of the industrial area. To the south, the project envisioned the Vettabbia Park, which derived its name from the presence of the Vettabbia canal and its relationship with this hydraulic element. In this case, the design indications were oriented toward the enhancement of the canal through the creation of bicycle and pedestrian paths, tree-lined strips, and small squares that overall related to the new lawn

areas to be placed between the Vettabbia and the new built-up areas. Between the Memorial Park and the Vettabbia Park were the areas intended for the construction of the new residential and tertiary buildings.
In the center of the built-up spaces, again along the east-west axis, was the main road axis for the entire project (the present Giovanni Spadolini and Carlo de Angeli streets) whose design was characterized by the presence of paths alternating with green spaces (lawns and tree rows) aimed at improving the aesthetic and environmental quality of the new road system. Given the current condition of the area, this specific part of the new neighbourhood can be considered as a boulevard and a characterizing thematic section.
The various thematic sections were connected along the north-south axis by pedestrian-cycle paths intended to provide continuity between the areas due to the discontinuities planned to interrupt the otherwise wide frontage of new blocks and buildings. Girot's proposals were later considered in the project carried out in 1998/99 by the Land studio and renowned landscape architect Andreas Kipar, who developed the executive proposal by adapting it to new requirements agreed upon with the City of Milan without radically altering the original layout of the project. Park construction was started immediately and completed in 2006 except for the Culture Park, which is currently still being concretized following the decision, after several decades of disuse and the formation of large fragments of the 'third landscape', to build an underground station for electric buses and new green roofed areas set aside for loisir-related functions.

Fig. 1 The image shows the former Michelin area in its current state, in the centre of which the extensive park created by the transformation of the area can be identified (source: Google Earth)

Fig. 2 The image shows the former OM area in its current state, in the centre of which can be identified the new buildings created by the transformation of the industrial area and the new parks and green spaces (source: Google Earth)

Discussion

The proposed Trento and Milan case studies allow us to reflect on some issues while recognizing common or, in some cases, divergent elements. The first aspect to remember inevitably concerns the concept of de-sealing, which in the two processes found full implementation through the demolition of buildings and covered surfaces, the increase in the permeability of the freed soils and the consequent creation of new equipped green areas and new NbS. In both cases, the new permeability was more the indirect result of a design approach more interested in building a new ecology or supporting the demand for new recreational spaces (e.g., new park facilities).

This first consideration is linked to the issue of the design and technical language that guided the two proposals, which is characterized by the use of concepts that are not directly aligned with the current debate on urban regeneration, on opportunities to contribute to the fight against climate change through the reconfiguration of urban spaces, or by concepts that are increasingly usual (e.g., NbS, Ecosystem Services, Green Infrastructure). Despite this distance, if only from the concept of de-sealing, which is almost absent, the two neighbourhoods make an active contribution to the urban contexts in which they are embedded, for example, in terms of ecosystem services provided (for microclimate regulation and temperature reduction). Another aspect concerns the urban planning tools used in guiding the transformation of the two industrial areas. With the same starting conditions, i.e., areas with relatively similar architectural and morphological characteristics, the two cases show the adoption of different planning and design tools.

For the former Michelin, the redevelopment process was sustained with a traditional approach both with respect to the direct relationship between the indications of the municipal plan (always updated to encourage transformation) and the subsequent implementation plan, which was approved and used in full compliance with the municipal plan, and with respect to the type of instrument used (this type of instrument was introduced in Italy in the late 1960s). For the former OM, it was a different path that benefited from some instruments introduced at the local

scale directly by the City of Milan (such as the Director Documents as a variant to the municipal plan) or from instruments adopted at the national scale such as complex programs like the Urban Redevelopment Programs (indifferent to the indications of municipal plans). Given the fairly similar results at least in terms of high allocation of vacant areas, it could be argued that the adoption of new instruments is not always essential for the implementation of an innovative idea.

Comparison of the structure and composition of the green spaces created in the Le Albere neighborhood and in the former OM area shows important differences with respect to the overall organization of the various components that make up this system and the characterization of the individual elements. In Trento, the new park and the network composed with the other secondary elements have the function of ensuring integration between the various spaces, but, above all, of creating strong relationships with an important territorial and ecological element present beyond the boundaries of the new neighborhood. The concentration of the new green spaces, especially of the more forested areas, along the west side, the burying of Via Sanseverino (a previous element of separation between the former Michelin and the River) and the creation of a green point, are part of a strategy to redefine the dialogue between the city and the Adige River. With respect to the individual elements that make up the overall system, there is considerable variety and diversity among spaces intended to provide outdoor recreational functions (equipped gardens, pedestrian paths), forested areas and wetlands.

This variety not only ensures a certain diversity in the ecological and ecosystem functions provided, but also pursues an objective of education and dissemination consistent with what is proposed by the Science Museum (MUSE) present in the Le Albere neighborhood. These are spaces that between two-dimensional (meadows) and three-dimensional elements (rows or forested areas) are characterized using vegetation essences consistent with the territorial context of reference.

The overall structure of the green system present in the former OM area of Milan, shows different characters. Its division by thematic areas and the absence of prominent structural and multiscalar elements, as in the case of Trento, reduce the perception of the presence of a general pattern of organization. Observing these spaces, one has the perception of a buffer zone role to separate and distance (Bricocoli, Savoldi 2010) the new architecture built at the center of the neighborhood and the urban context of reference, seeking a spatial, psychological, and symbolic isolation that has characterized many other interventions of similar size proposed in Milan in recent decades. From a compositional point of view, the new surfaces present less articulation due to the greater presence of lawns and trees that on the whole respond more to recreational purposes for the residential functions of the neighborhood and the urban context of reference. From an ecological-environmental and biodiversity point of view, therefore, the case of Milan shows less variety research in contrast to the case of Trento.

Conclusions

In the transformation processes of large brownfields, renaturalization interventions play a key role in fostering the improvement of the well-being of built spaces (Lehmann, 2021) due to their ability to remind people of the importance of biodiversity, ecosystem services, and green infrastructure.

The two proposed cases offer an opportunity to observe how topical issues and needs, for example, increasing soil permeability and promoting renaturalization interventions to improve the urban environment and counteract the problems generated by soil sealing and climate change, can also find ‘unconscious’ support within urban design experiences that arose at a stage that anticipates the full awareness we now have toward the many global crises (Garda, 2022).

The unawareness referred to concerns the adoption of design approaches and concrete interventions that, although supported by a language seemingly distant from the concepts adopted today, such as Nature-based Solutions, we can nonetheless reinterpret with today's sensitivity and awareness, thanks above all to the actual outcomes of such choices. This also supports the idea that, to implement innovative interventions consistent with current needs, we should not necessarily wait for the introduction of new technical and regulatory tools, but on the contrary seek to reorient even the most traditional methods.
The redesign of brownfields and the concomitant release of soil are the first step in a series of possible choices for the return of nature to denser urbanized areas after the long season of growth.

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