

Article

Nature-Based Solutions to Regenerate Mediterranean Cities: A Case Study in Catania, Sicily

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Abstract: This work is part of research conducted within the Di3A Landscape Design and Redevelopment Laboratory at the University of Catania. Its objective is to improve the enjoyment of public spaces through the study of landscape design in highly urbanised and historical areas. The case study used was the historical centre of the city of Catania in Sicily. This study focused on the green aspects of the redevelopment of some open spaces of the Antico Corso district using international and national thematic studies on public spaces as a reference. In particular, the research concentrated on the design of the Garden of Via Biblioteca inside the former Benedictine Monastery of San Nicolò La Rena, a UNESCO world heritage site redeveloped by the famous architect Giancarlo De Carlo. After a careful analysis of the area, we decided to use contemporary project themes with the aim of enhancing the present historical elements and nature-based solutions, which, through the introduction of carefully selected plant species, favour biodiversity in the urban environment. The method adopted was divided into three main phases: (1) spatial analysis; (2) a SWOT analysis method; and (3) the planning and design of the green redevelopment of places to be reconverted into public spaces. This methodology has already been tested on the open spaces of the former Vittorio Emanuele Hospital inside the Antico Corso District, showing how the multidisciplinary approach applied can be replicated in other urban contexts in historical centres. The results of these studies may be useful in the context of urban planning reforms envisaged by Regional Law No. 19/2020 and Regional Law 13/2015 in Sicily and to help the Superintendencies of Landscape and Cultural Heritage to preserve and to enhance historical greenery. The adopted strategies may also be useful in the application of the PUI (Integrated Urban Plan) of the Province of Catania that follows the PNRR (National Plan of Reconstruction and Resilience) parameters to provide local services to the municipalities involved. These pilot projects should be extended to bigger areas. The applicability of the methodology could be tested in other parts of the Municipality of Catania with a particular focus on run-down areas, followed by further testing on territorial sections of the province.

Keywords: landscape architecture; historical centre; nature-based solutions; public space



Citation: Leonardi, M. Nature-Based Solutions to Regenerate Mediterranean Cities: A Case Study in Catania, Sicily. *Sustainability* **2023**, *15*, 12112. <https://doi.org/10.3390/su151612112>

Academic Editor: Rob Roggema

Received: 13 April 2023

Revised: 25 July 2023

Accepted: 1 August 2023

Published: 8 August 2023



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1. Introduction

A landscape is, by definition, an area as perceived by people, and its character comes from the action and interaction of natural and/or human factors [1]. This action and interaction between man and nature give a landscape different features, including visual, physical, and perceptual characteristics.

If a landscape is defined as a synthesis of factors inherent in the natural order of places and the acts of transformation that humans perform on them, from a morphological point of view, it can be understood as the formal manifestation of the overlapping and interweaving of different relationship systems.

The study of landscape, therefore, uses as a reference the reading of the multiplicity of identities, solutions, signs, rules, and transformations, which, like an overlapping of different layers, allows us to interpret it as a sum of different values: from the social to the economic, from the memorial to the cultural [2].

In Eugenio Turri's metaphor of the "landscape as theatre" [3], it is argued that it is possible to recognise man's need to be portrayed in the signs of territorial anthropisation. Thus, for Denis Cosgrove, the landscape is "an idea capable of representing the way in which certain categories of people have given meaning to themselves and their world" [4].

For Eric Dardel "Rather than being a set of picturesque details, the landscape is a lived moment" [5], which represents the way in which humans fit into the world, their methods of acting and thinking, their existence in society, and their lives in relation to others.

This implies that the values and meanings superimposed on the structural aspects of the landscape are related to physical, natural, historical, and social elements.

This is particularly noticeable in Mediterranean countries, where landscapes are multi-layered and tell the tales of settlements, some of which originated millions of years ago, and of multiple civilisations that have followed one another throughout history, leaving traces that are sometimes distorted but which, if recognised, form our own identity systems through the rediscovery of our roots.

Therefore, when considering issues related to diversity and the distinctive qualities of the landscape, attention should also be given to enhancing our natural and cultural heritage. This could be achieved by creating new tourist and educational itineraries that are incorporated into the landscape and by rediscovering pre-existing historical or contemporary buildings as fonts of knowledge with the selective use of monuments that document collective memories and the origins of our civilisation.

Landscape architecture focuses on the components of the analysed landscape that relate to its stratification and the impact of natural and anthropic events. It ensures that environmental elements are preserved, redevelops the landscape, and considers both cultural and educational aspects when proposing different uses.

This was the aim of the work carried out by the architect Giancarlo De Carlo in the restoration of the Benedictine Monastery in Catania, a UNESCO world heritage site. He opened this great monument to the city as the first step in the regeneration of the Antico Corso District. Giancarlo De Carlo worked in Catania for 25 years, but he could not complete the redevelopment of the entire neighbourhood.

His unfinished works include the reconfiguration of the former Benedictine Flora [6] inside the Vittorio Emanuele hospital complex adjacent to the monastic building, which today is used as the Department of Humanities of the University of Catania, and the Garden via Biblioteca inside the former Benedictine monastic complex which is the subject of this study (Figures 1–3).

We tried to present a project to the municipality of Catania in an attempt to finish the work of the architect. The project, which was part of a thesis on the design and redevelopment of the landscape and run-down areas (Silvia Porcaro, A.A. 2021-22) [7], continued Giancarlo De Carlo's work by maintaining the existing healthy plants and adding those envisaged in the previous project together with minimal design elements to improve it aesthetically and to optimise its use.

After a careful analysis of the area, which is characterised by the remains of the historic walls of Charles V that once surrounded the city of Catania and by the lava flow of 1669 that is still visible today, we decided to work on contemporary project themes which would enhance the present historical elements together with nature-based solutions which, through the introduction of carefully selected plant species, favour biodiversity in the urban environment.



Figure 1. Catania, Antico Corso district.

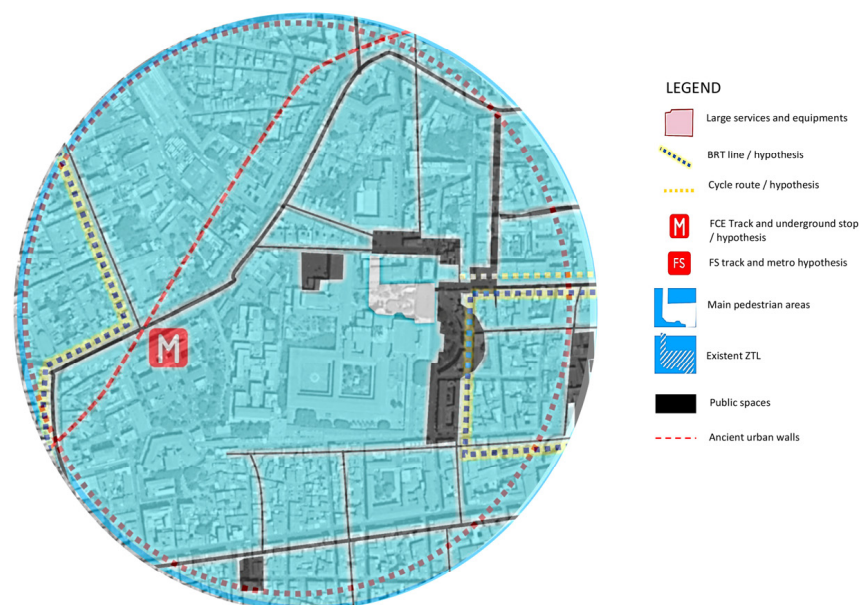


Figure 2. Catania, Antico Corso. Mobility system.



Figure 3. Catania, Antico Corso. The green and historical systems.

2. Materials and Methods

The method adopted had already been tested in the historical centre of Catania at the Green Experience Laboratory at Di3A, University of Catania [6] and was structured in the following phases.

The analytical phase (Phase 1) was preceded by a bibliographic and cartographic study of libraries and historical archives. The search also focused on existing landscapes and urban planning. Starting with the existing cartography, the current condition of the locations was mapped with the aid of CAD software 2019. Bodies and associations committed to increasing the enjoyment of these places were also involved during the site inspections to represent the needs of local stakeholders. In particular, the Officine Culturali association organised meetings with the inhabitants of the Antico Corso District on Sundays to hear their opinions on the regeneration of the Garden in Via Biblioteca. A report was then written and given to the Municipality.

Both the plant species existent on site and their condition were analysed, together with a critical analysis of case studies taken from the work of leading landscape architects in contemporary design, including the work of the architect Giancarlo De Carlo in the gardens of the Benedictine Monastery.

This work was useful for understanding the approach taken in the design of open spaces in historical centres and how contemporary projects were connected with pre-existing elements.

For example, Giancarlo De Carlo in the Novice Garden followed the module and the axes of the former Benedictine Flora and took the medicinal species used by the monks into the monastery (Figure 4).

De Carlo envisaged the Garden of Via Biblioteca as a multifunctional area for the citizens.

The “garden of wonders” is an outdoor educational space under a structure of white steel. Its shape is a reproduction of a design found in Ursino Recupero’s Library (Figure 5).

Before De Carlo intervened, the garden had been used as an illegal parking area. His project was conceived and financed as part of the “Urban Plan”, a programme that also included the redevelopment of the Antico Corso district.

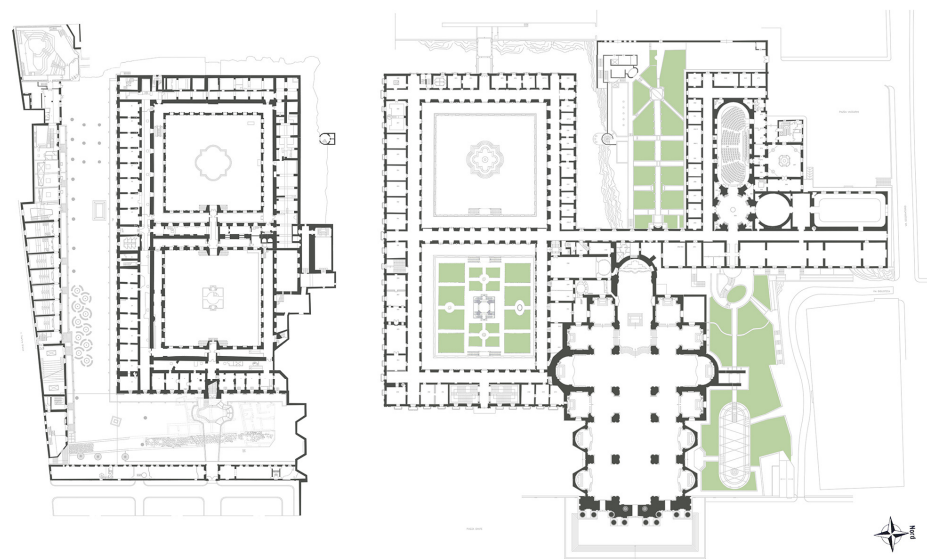


Figure 4. Catania, the Benedictine Monastery. Survey of the current state of the gardens. Arch. Giancarlo De Carlo (ph. M. Leonardi).

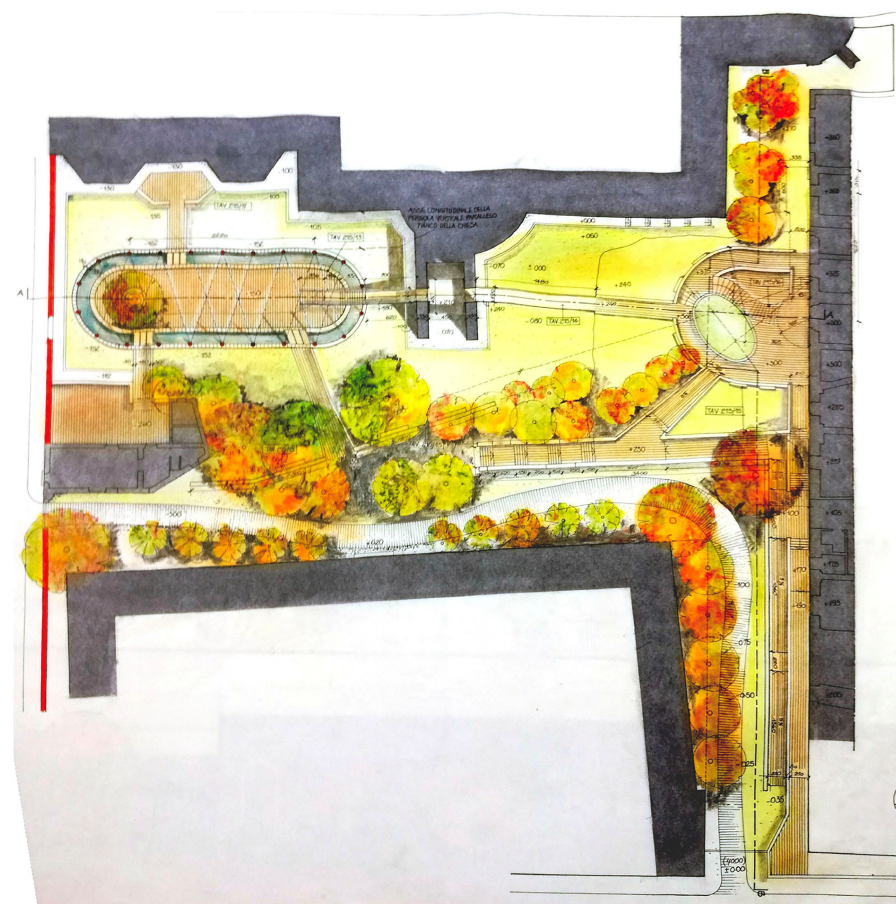


Figure 5. Catania, the Garden of Via Biblioteca. Arch. Giancarlo De Carlo's project (ph. Historical Archive of the Benedictine Monastery).

The main objective was to render the whole area accessible by pedestrianizing it and connecting it with the important points of the building.

The focal point of the project was the demolition of the wall that bordered the road, the consequent removal of asphalt, and the planting of a garden full of vegetation, with tall trees and species that are all part of the Mediterranean tradition. Particular attention was paid to the location of the trees, which, due to the lack of sun because of the shade cast by the imposing structure of the church, are mainly arranged along the route of the wall.

The road that connects the two entrances from Piazza Dante, with its magnificent decorated portal and via Osservatorio (where the Astrophysics Observatory used to be), has been paved with basaltic-lava material.

On a large lawn near the religious building, there is a modern seven-meter-high elliptical aerial installation made of tubular white steel and topped by lampposts, reminiscent in the form of the ancient Refectory of the Monastery. In place of walls, there are creepers that today, in 2023, reach the top.

A two-metre-wide pool of water surrounds this so-called “room of delights”, and inside there is a raised flower bed, which also serves as a bench, with a carob tree in the centre that was dedicated to the memory of the magistrates Falcone and Borsellino who were killed by the mafia, but this has unfortunately been destroyed by vandals (Figures 5–8).



Figure 6. Catania—the current state of the Benedictine Monastery. The entrance and the cloisters (ph. Silvia Porcaro).

The international case studies analysed included the work of the Landscape Designer Gilles Clément and his recreation of the ancient gardens of the Castle of Blois in France (Figure 9). They were the first Renaissance gardens in France and were once intended for the cultivation of fruit, vegetables, and medicinal plants. Landscaper Gilles Clément redesigned the space in 1992, creating three historical periods: Middle Ages, Renaissance, and Classical. There are lilies and irises in the Royal Flower Garden and aromatic plants and herbs in the Simple Garden.

Another delicate, minimal, and elegant approach to the relationship between ancient and new has been taken by Katryn Gustafson in her work on Cyfarthfa Plan in Wales (Figure 10).



Figure 7. Catania—the current state of the Benedictine Monastery. The library and the Novice gardens. (ph. Silvia Porcaro).



Figure 8. Catania—the current state of the Benedictine Monastery and of the Garden of Via Biblioteca (ph. Silvia Porcaro).

The aim of her study was to imagine ways to rejuvenate the historic assets within the area by creating outstanding contemporary and complementary ideas to elevate the park's status as an attraction in the hope of re-energising both the area and people's pride in its history, culture, and environment.

The goal was to provide a future based on environmental leadership, creative educational development, real social assets, community wealth generation at a local level, and significant national and international economic investment.



Figure 9. The gardens of the Castle of Blois. Landscape designer Gilles Clement.



Figure 10. Cyfarthfa Plan, Wales. Landscape designer Gustafson Porter + Bowman (2020) [8].

The landscape designers intended the plan to become a model for outstanding urban, social, and economic renewal that all of Wales would be proud of.

These analyses were useful for determining the correct design approach for the redevelopment of the spaces (third phase).

After conducting an in-depth analysis of the project area and of the botanical species present through a study of the existing literature and the historical plans of the city of Catania, in particular of the Antico Corso District [6], the critical points and potential were synthetically assessed using the SWOT analysis method.

As an example, in Figure 11, the critical points have been highlighted in red, and the potential in green.



Figure 11. Critical points and potential of a portion of the Garden of Via Biblioteca in Catania (Ph. S. Porcaro).

This work was useful in understanding the objectives that would be followed during the design phase (third phase).

As an example, in the following figure, the critical points in red are shown by the state of deterioration of the walls and of the soil, while the lava stone pavement represents a potential because it is in a good state of repair and follows the genius loci.

Another critical point is represented by the rubbish collection systems.

The strengths of the SWOT analysis results included the presence of a large variety of plant and animal species; a great tourist attraction; a haven for university students; an urban historic centre; and a UNESCO world heritage site.

The Weaknesses were the presence of weeds, vandalism, and lack of security.

The Threats were vandalism and the spread of alien plant and animal species.

The Opportunities were public potential for greenery in the city centre, the presence of archaeological and historical elements of great value, and the presence of architectural assets.

The planned garden also has an educational function. ICT technologies are used to provide visitors with the story of the history of the locations and describe the botanical species. A QR code has been created that is a link to take visitors to a description of the botanical species of the area, and the entire system of illustrative panels in the garden has been redesigned.

With the results of the analysis and synthesis phases, the planning and design of the green regeneration of the site (Phase 3: Design) could start. All the multi-scale components of the project were monitored, from the initial master plan to the construction details of the design elements.

The philosophy used was centred on the principles of “La saggezza del giardiniere. L’arte del giardino planetario” written by Gilles Clément in 2021 [9]. The landscape was arranged in the form of a picture, recreating the raised areas and flowerbeds and organising the spaces intended for meetings and recreation.

For Gilles Clément, “The garden is an enclosure intended to protect the best we have: the best of fruits and vegetables, the best of the flora that nourishes us and which we use in all its diversity, the best of trees and flowers, the best of the art that characterises a space of beauty and preservation. This is the millenary art of gardens, which over the centuries has evolved between architecture and decoration. But today the art of gardens has a greater challenge: to preserve and help revive life in all its aspects, enhancing and helping to spread plant and animal biodiversity that our forms of life increasingly threaten” [9].

The objectives pursued in this phase follow the evolution of Gilles Clément's thought, which can be found in the ideas of Massimo Pica Ciamarra's "Seven conversions" [10]:

- From the unfair city to the ethical city;
- From Utilitas, Firmitas, Venustas to Environment, Landscapes, Memories;
- From architecture to living environments;
- From the era of separation to the era of integration;
- From conflicts to cooperation;
- From sectoral perspectives to systemic and transgenerational vision;
- From environmental erosion to ecological conversion.

These studies have been useful in finding strategies to redesign ancient neighbourhoods; preserve the ancient stratifications; and connect modern, minimal design to a multidisciplinary approach.

3. Results

The test case study is the Garden of Via Biblioteca which is located next to the historic church of San Nicolò l'Arena in Catania. Here, the monks had planted fruit, citrus, and olive trees. Within the area, there is also ample evidence of the historic lava flow of 1669. The remains of an ancient arched building constitute the centrepiece of De Carlo's garden.

At the end of the 19th century, the garden began to change. Over time, the citrus fruits and aromatic plants were replaced by Palazzo Ingrassia (a new building for the Anatomy Institute of the University of Catania), and a road was built between Piazza Dante and the Astrophysics Observatory. The road was paved in the 20th century to allow the transit of vehicles that pass through the 18th-century gate that still overlooks Piazza Dante today. In the 1970s, the ownership of the architectural complex passed to the University of Catania, and a request was made to pedestrianize Via Biblioteca. The area was in a state of decay and neglect. The garden, therefore, was brought back to life with young trees and the smells of the Mediterranean plants, highlighting the grandeur of the 1669 lava bank.

Prior to De Carlo's project, the garden had been used as an illegal parking area. He created a project that was conceived and financed under the "Urban Plan" programme, which also included the redevelopment of the Antico Corso district.

The main objective was to render the whole area accessible by pedestrianizing it and connecting it to the important points of the building. The road that connects the two entrances from Piazza Dante, with its magnificent decorated portal and via Osservatorio (where the Astrophysics Observatory used to be), was paved with basaltic lava material.

The focal point on which the whole project revolved was the demolition of the wall that bordered the road and the consequent removal of the asphalt and the planting of a garden full of vegetation, with tall trees and herbs that are all part of the Mediterranean tradition. Particular attention was paid to the location of the trees, which, due to the lack of sun caused by the shade cast by the imposing structure of the church, are mainly arranged along the route of the wall. On a large lawn near the religious building, there is a modern seven-meter-high elliptical aerial installation surmounted by lampposts and made of tubular white steel, which is reminiscent of the form of the ancient Refectory of the Monastery. In place of walls, there are climbers that today, in 2023, now reach the top.

A two-meter-wide pool of water surrounds this so-called "room of delights", and inside, there is a raised flower bed, which also serves as a bench with a carob tree in the centre, which was dedicated to magistrates Falcone and Borsellino, who were killed by the mafia, but unfortunately this has been destroyed by vandals. The citrus trees, the olive trees, and the climbing plants that fill the air with Mediterranean scents. The floor is made of lavic stones. The designer envisaged a structure that would be invaded and engulfed by vines, starting three meters above ground level, and that would create a green oasis where students and citizens could read, chat, and relax while listening to the noise of the water and contemplating the sky. Other elements, again in white steel, can be seen within this area: the entrance hall to the Civica and Ursino-Recupero libraries is white; the small bridge

that passes through the buttresses of the church and leads by a staircase to the library is white. The works ended in 2006.

The project remained incomplete; although the architectural part was finished, no landscaping and planting of the garden was ever undertaken. It was maintained, but its full potential was forgotten and never harnessed; many people from Catania do not know of its existence, while visitors do not always understand that a public garden is a common good. Abandoned over the years, it soon became a target for vandals. The area is still not properly and completely utilised, and its potential remains untapped.

The work, as part of a thesis in the design and redevelopment of the landscape and degraded areas (Silvia Porcaro, A.A. 2021-22), [7] would continue the project created by Giancarlo De Carlo by maintaining the existing healthy plants and adding those imagined in the previous project, together with minimal design elements to improve the space aesthetically and optimise its use (Figures 12–16).

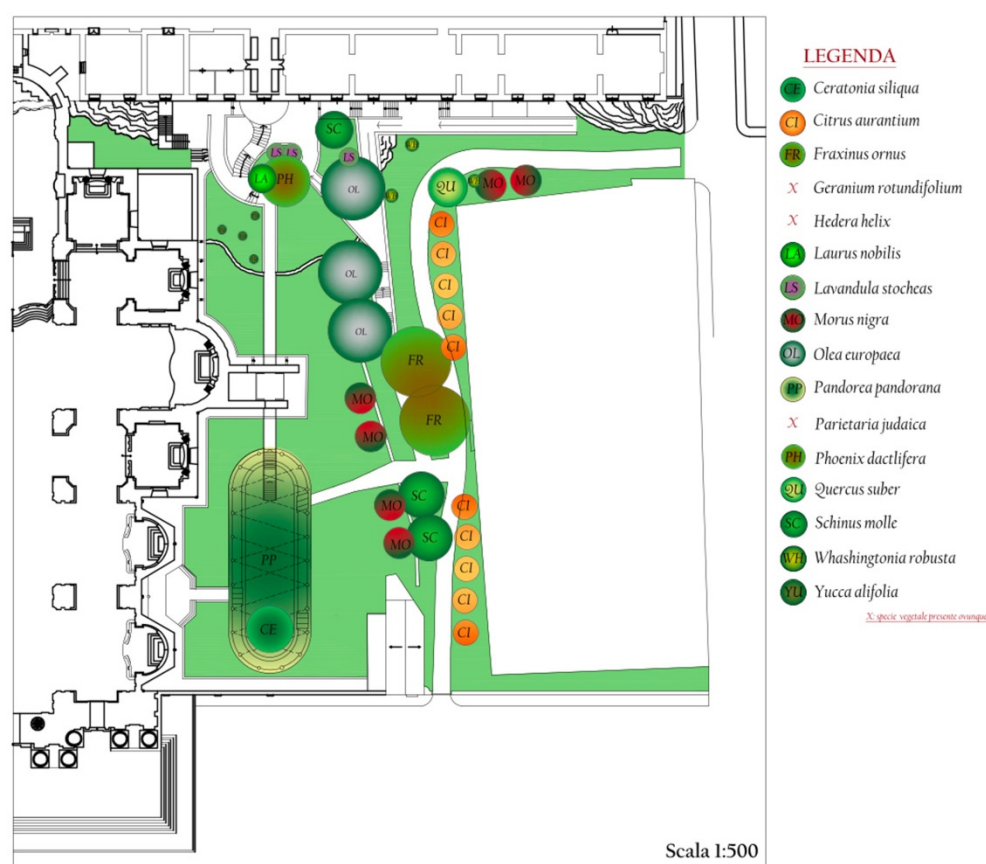


Figure 12. Catania—the vegetation of the garden of Via Biblioteca (ph. S. Porcaro).

Natural heritage is very important. Trees and plants make up our urban landscape and are a significant part of our history, and have become our heritage, too [11].

All the multi-scale components of the project were monitored through to the construction details of the design elements. The organisation of the design methodologies used also considered the needs and possibilities related to the use of space derived from emergency conditions, such as those of the COVID-19 pandemic [12].

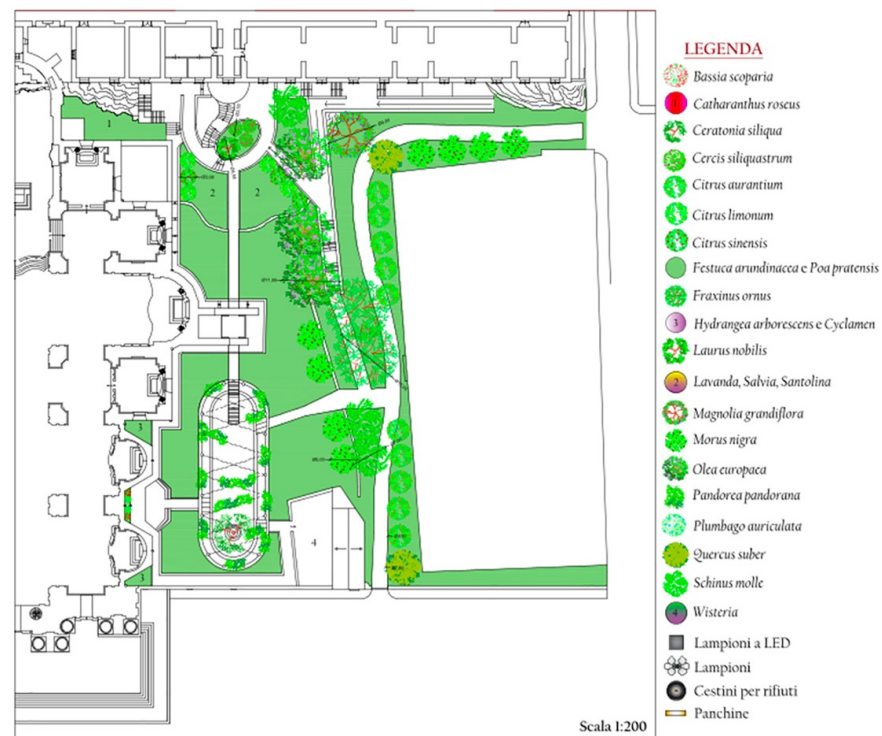


Figure 13. Catania—plan of the vegetation of the garden of Via Biblioteca. New hypothesis (ph. S. Porcaro).

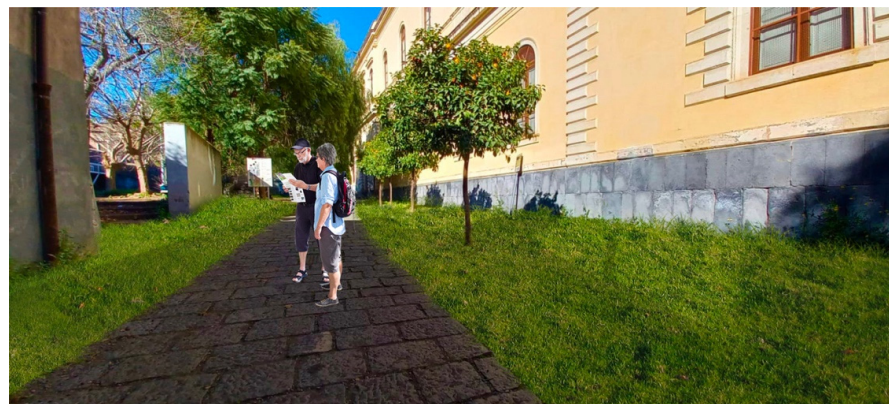


Figure 14. Catania—access to the garden of Via Biblioteca. New hypothesis (ph. S. Porcaro).



Figure 15. Catania—the vegetation of the garden of Via Biblioteca. New hypothesis (ph. S. Porcaro).

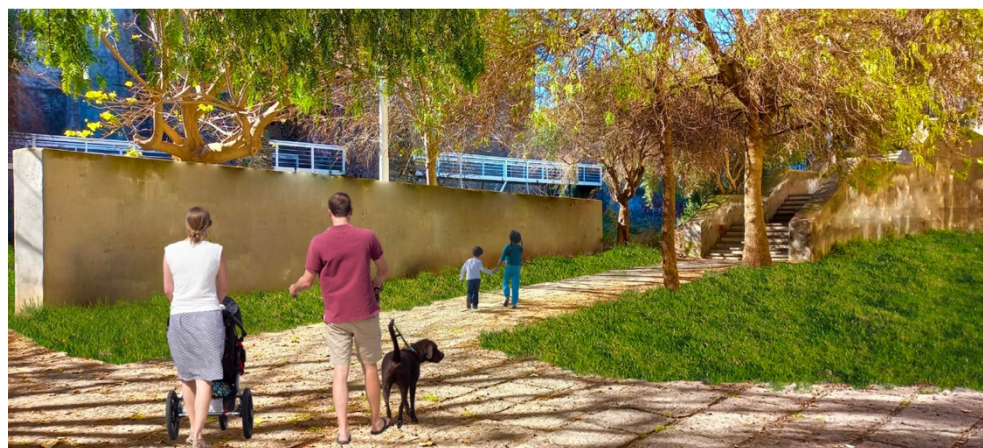


Figure 16. Catania—the wall of the access of the garden of Via Biblioteca. New hypothesis (ph. S. Porcaro).

4. Discussion

Laboratory results have been applied to abandoned open spaces in highly urbanised historic centres which are to be converted into public spaces. This methodology has already been tested during the Green Experience Laboratory [6].

Among the critical issues and limitations encountered in the Green Experience Laboratory was the difficulty of communicating with public bodies and stakeholders.

For this project, we tried to encourage collaboration with Officine Culturali, an association that seeks to improve the development and cultural use of the Benedictine Monastery.

In particular, Officine Culturali association organised meetings with the inhabitants of the Antico Corso District on Sundays to understand their concerns about the regeneration of the Garden in Via Biblioteca. A report was then written and given to the Municipality.

In addition to the principles derived from the international UnHabitat experiments [13] on public space regeneration and the ideologies supported by Pica Ciamarra [10,14], especially his ideas on ecological conversion, this approach also seeks to follow the Public Space Biennial [15] which introduces green proximity services inside the city.

With reference to a critical reading of Pica Ciamarra's seven points of ecological conversion: as part of the transition "from an unfair city to an ethical city", an attempt has been made to create pleasant and stimulating living environments and places of the social congregation that offer psychophysical well-being to the inhabitants of the neighbourhood.

In the transition from "Utilitas, Firmitas, Venustas" to "Environment, Landscapes, Memories", emphasis in these multidisciplinary projects is placed on the relationships between these elements and the work is part of a larger whole that includes all of the historic city centre.

In the transitions from "Architecture to living environments"; from "the Era of separation to the Era of integration"; "from conflicts to cooperation"; and "from sectoral perspectives to systemic and transgenerational vision", attention is drawn to how the quality of the living environment affects behaviour: it accommodates, and it promotes safety, well-being, economy, sociability, spirituality, and happiness for those who frequent these spaces. The term living environment is used because it summarises the result of actions usually defined as urban planning or architecture, and which are reflected in the wider environment. There is no individual that can escape being conditioned by the quality of the environment in which they live.

The transformation of living environments is an urgent and serious issue. It concerns not only the physical environment but also collective and individual behaviours. It is favoured by density, by mingling, and by proximity.

Irrespective of its size, the city can express unity and socialisation; it can reduce inequality; it can decarbonise, and eliminate noise and any other type of pollution; and it can benefit from good air quality and the presence of birds.

The passage of time renders the culture of quantitative standards anachronistic, indifferent to the diversity of contexts and individual realities, and the rejection of mixité with strict classifications of intended uses. We need to know whether and how to make coexistence possible and how to integrate different activities. The understanding of the values of diversity, coexistence, and mixing and hybridisations makes a multiplicity of points of view essential and valuable.

The city increases the complexity of intercultural characteristics and requires the transition from isolation to participation. Actions with long-term, perhaps even transgenerational visions, are needed [10,14].

The most relevant works highlight the importance of complexity and intercultural characteristics, with particular attention paid to references made to the history of the place [16,17].

With regard to the above points, the choice of vegetation was made by taking into account the climate and the need to increase biodiversity in the pilot area and in its neighbourhood.

The participation of local people was fostered thanks to the Officine Culturali Association, and a multidisciplinary approach was adopted with landscape architecture, urban design, and social and ecological disciplines.

To involve the younger generations, ICT was used for the panels and explained the history of the spaces, the 1669 lava flow, and the different vegetal species.

5. Conclusions

The living landscapes described above are part of an attempt to foster participatory and multidisciplinary approaches where different skills offer a synergic contribution.

As of 22 February 2022, the Italian Constitution includes, as a fundamental principle, the promise to “Protect the environment, biodiversity and ecosystems in the interest of this and of future generations”, and this has had an impact on our living environments by reducing soil sealing and land consumption in favour of sustainable energy and urban forestation. The project promotes flora and fauna biodiversity.

These pilot projects should be extended to bigger areas. The methodology should be tested in other parts of the Municipality of Catania with particular reference to run-down areas, with further testing on territorial sections of the province.

We have also worked on a survey of the historical gardens of Catania to help the Superintendencies of Landscape and Cultural Heritage to preserve and improve them.

Private and public gardens exist and are present in the urban fabric, albeit with different degrees of maintenance and often differing levels of authenticity when compared to the original design.

Today, more than ever, we understand the value of greenery with its power to oxygenate, reduce CO₂, filter harmful gas, capture harmful particles, and, last but not least, its positive and indispensable function on the human psyche. But we also understand the importance of preserving the history of a city, the knowledge of its genesis, its changes over the centuries, and the reasons for its transformations.

The redevelopment of entire neighbourhoods is certainly not easy, but certainly less traumatic than wiping out entire areas, erasing their history and their unique features. Regional Law 13/2015 makes it possible to define urban redevelopment areas within historical centres, and these studies can also be useful for redesigning historic neighbourhoods by preserving ancient stratifications and linking modern, minimal design to a multidisciplinary approach.

Agriculturalists and landscape gardeners should act by balancing modern needs, such as saving water and resistance to parasites and/or various pathologies—often recently introduced—with the authenticity of the original design.

The whole garden has to be accessible to disabled users and school groups with the adoption of the least invasive measures possible.

A register can also be kept of all the different plants classified by Family, Genus, Species, and Variety, with an indication of the geographical origin and that of the individual specimens (Access Number). Eventually, the main plants could be indexed using various types of media that indicate the data kept in the register. In addition, both here and also in the register, it would be good to include a barcode on the tag, possibly two-dimensional (called “QR”), or alternatively a passive radio frequency microchip. This would enable a visitor equipped with a smartphone to obtain the desired information on the plant in question. The caretakers could also obtain information required for the management of the garden. If the owners of the various gardens could create an association, visitors could easily, through a common register, find which garden has the species they are looking for.

During the work, it could be useful to provide suitably positioned and hidden shelters, primarily for animals and birds, which can help restore the ecological balance of the surrounding environment.

A consortium of owners of gardens, both small and large, could also facilitate the management, use, and knowledge of gardens abroad by including them in international circuits. The creation of a brand, a statute, and rules valid for all would make a great contribution to the management of the gardens [18].

Some other case studies are being tested on public spaces of the Municipality of Acireale near the city of Catania.

An example of this is the “Redevelopment of the external area belonging to the former Gulli and Pennisi classical high school (ex Saint Dominic Convent)” project.

This work focuses, in particular, on the open spaces of the architectural complex with the aim of redeveloping and organising them according to environmental sustainability and by encouraging flexibility and accessibility.

It has raised awareness of the theme of green space design in historical contexts, demonstrating how the redevelopment of historical and cultural heritage can go hand in hand with environmental sustainability and people’s well-being. The green spaces of the former convent of Acireale represent an example of good practices that can inspire other future designs in similar contexts, thus contributing to the protection of our historical-cultural and environmental heritage, as well as to improving the quality of life of the people who use it [19].

These studies can also be useful strategies for the urban planning reform envisaged by Regional Law no. 19/2020 in Sicily, that is, in the process of implementing new PUGs (General Urban Plans). This requires a basic knowledge of the territory and a useful design strategy to protect, manage, and plan green urban areas as a potential resource in territorial management policies.

The adopted strategies are also useful for the application programme of the PUI (Integrated Urban Plan) of the Province of Catania that follows the PNRR (National Plan of Reconstruction and Resilience) parameters [20] to give proximity services to the municipalities involved.

In particular, the strategy is focused on five themes: environment, attractiveness, services and sociality, accessibility, and smart cities.

The environmental strategy means raising the environmental and ecological quality of the city, introducing green areas as a priority, and increasing tree cover for the purpose of urban resilience.

The second objective is to increase the attractiveness of neighbourhoods for residents, young students, and users of the city by focusing on safety, quality of services, and spaces for activities.

Services and sociality are aimed at rehabilitating the urban environment to increase its functional diversity and introduce activities for social purposes (housing, neighbourhood services).

The fourth theme is to increase accessibility through integrated public transport and soft mobility, extending protected routes and restricted traffic areas.

The theme of smart cities refers to improving the city in the fields of sustainability, energy, environment, and circular economy.

Funding: This research received no external funding.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Archive of Benedectine Monastery, Officine Culturali Association, University of Catania.

Acknowledgments: Thanks to: S. Porcaro for having provided the images of her degree thesis (supervisor M. Leonardi A.Y. 2020–21), and thanks to the historical Archive of Benedictine Monastery, Officine Culturali Association for providing the images of Giancarlo De Carlo's projects.

Conflicts of Interest: The author declares no conflict of interest.

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