

## Article

# Sustainable Co-Design with Older People: The case of a Public Restorative Garden in Milan (Italy)

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**Abstract:** The demographic aging and the evolution of lifestyles require new strategies to promote the well-being and active aging of elderly. Active aging depends on many factors: some of these are related to objective data such as physical environment, others are personal elements; it is important to improve environmental physical factors to encourage personal attitudes to the green spaces in use. To design a small sustainable restorative green space in Milan, Italy, restorative garden design criteria are summarized in the first section of the paper and both social and environmental sustainability are considered. The methodology section describes the co-design process and how it was applied to include different older user groups in the design of the area. In the results section authors apply a taxonomy based on the four properties of restorative settings according to the Attention Restoration Theory by Kaplan (compatibility, being away, extent, fascination): this provides a unified system to classify users' expectations and to describe the final project. The proposed co-design process combines social and environmental sustainability, as it provides designers an insight about the user's experience in nature. Such information can be fruitfully integrated with professional competences about comfort aspects and environmental protection in order to improve the whole design project.

**Keywords:** urban green spaces; community garden; biophilia; landscape design; urban regeneration; attention restoration; focus group; elder; co-design

## 1. Introduction

The Italian elderly population (aged 65 and over) was 20.1% in 2007, 22.8% in 2019, and it is projected to be 24.2% by 2025 [1]. The elderly population cannot be considered as an homogeneous group: aged 65 and over is a heterogeneous group of elderly people with different needs and abilities [2]. Following socioeconomic, cultural, and political changes, elderly people have higher degrees of education, better health, and higher incomes. These elements enable seniors to have more time for leisure, recreational, and learning activities [3]. As a result, their expectations for outdoor spaces are also changing and they concern "active aging." Active aging pertains to elderly people's wishes and needs in terms of integrating physical activities and being outdoor in their daily routines. According to the World Health Organization (WHO) [4], active aging depends on many factors: some of these are objectives such as physical environment, health and social services, economic conditions, climate; others are personal as—for example—behavior, cultural attitude, and social involvement [5]. It is important to improve the environmental physical factors to encourage personal attitudes towards green space use.

In Italy 31% of males and 51% of females aged from 65 to 74 do physical activity less than once a week [1]. This situation confirms the need for more open spaces inside cities to promote the well-being and active aging of elderly. In the old population, restorative gardens serve therapeutic purposes at three levels of physical interaction: active, averagely active, and passive [6]. Physical rehabilitation and engaging in horticultural therapy are examples of “active” interaction with the garden, while sitting in the garden, observing plants and animals, and listening to nature sounds are examples of “averagely active” modes of interaction. However, the garden can also be experienced “passively” by viewing it through a window from the inside.

The positive effects of natural environments can be further enhanced by designing public open spaces that can be adapted to the needs of people as they change over time. From such a perspective, aging-friendly green spaces can offer to seniors an active engagement in outdoor spaces supporting their physical and psycho-social well-being. Public green spaces are supposed to offer even to this specific group of people, who are too often neglected, a break from daily routine and a different experience of connection to nature. Although well-designed gardens are proved to encourage seniors to actively enjoy nature, urban planners and designers are more focused on the elderly’s physical comforts and needs in the built environment rather than in green spaces [7]. The question around what are the best design solutions for green open spaces to enhance social well-being and active aging for the elderly is still open and this study provides a contribution to this issue through the design of a small sustainable restorative green space in Milan (Italy) using a co-design process. To this end, a literature review was drawn up regarding the older people–nature relationship (to highlight the benefits of exposure to nature), sustainable green spaces for the elderly (to underline the link between social sustainability and environmental sustainability), design criteria (to point out solutions useful to increasing benefits), and a co-design-process (to understand how to involve users in a constructive way). The methodology proposes focus group activities including the use of Attention Restoration Theory principles and the results show the project that derives from this process.

## 2. Literature review

### 2.1. Older People’s Exposure to Nature

As a species we have an inherent affiliation to the natural environment, called biophilia [8]. Biophilia is “the innate tendency to focus upon life and lifelike forms, and in some instances to affiliate with them emotionally,” namely, to feel connected to nature [9]. Humans are genetically set to efficiently live in natural environments and there is evidence that they have a preference for the natural environment [10,11]. The Attention Restoration Theory (ART) [12] and the biophilia hypothesis of Wilson suggest an evolutionary basis for emotional and physiological responses to nature and positive attentional and physiological effects deriving from exposure to natural environments. In ART voluntary attention is contrasted with involuntary attention. The former is effortful and can be tiring, whereas the latter is effortless and allows the attentional system to rest and recover. Unfortunately, everyday situations call for voluntary directed attention and the result is mental fatigue. In natural environments, bottom-up involuntary attention is mostly captured and people do not spend energy in suppressing distracting stimuli [13]. In ART this type of involuntary effortless attention is referred as “fascination” and it is the most important aspect for a restorative environment [9]. Natural settings engage fascination, so directed attention can rest and be restored from mental/attentional fatigue. In general, ART proposes four beneficial properties of natural environments for individuals: being away (distancing, physically or psychologically, from usual activities), compatibility (correspondence of the environment with the individual’s goals), extent (coherent structure of the elements located in the environment), fascination (soft attraction occurring when exposed to pleasant stimuli). An exposure of less than ten minutes to restorative environments is enough to recover from mental and attentional fatigue [13]. A more restored individual, in turn, can more effectively act in complex settings like home, workplace, urban settings, social meetings, etc.

Staying in an “incompatible” setting, from a cognitive point of view, is for the elderly a consistent interference with their attentional capacity [13,14], and this is particularly evident in urban settings. Attention is the key point of human efficiency [9], it helps in solving problems, inhibiting impulses and inclinations so to have a proper attitude. The elderly are more vulnerable to attentional fatigue as a consequence of age-related decline of attention and also because of high exposure to environmental stress because they are more dependent on environmental physical features. Stress occurs when environmental demands exceed available resources, therefore it may be useful to conceptualize settings potentially relevant to human health with the appropriate level of stimulation, coherence, and complexity, the presence of affordances, allowing for control and privacy and restoration [15]. The presence of restorative properties attenuates attentional fatigue in the elderly, facilitating many activities that can allow them to be autonomous, including not only attention-related activities but also “memory updating,” i.e., being able to modify schemas to accommodate new input, “environmental memory,” e.g., wayfinding abilities and memory for routes, and “prospective memory,” i.e., memory for future events, together with planning ability [16].

Natural places that allow a shift towards more positively-toned emotional states, positive changes in physiological activity levels, and in behavior and cognitive functioning are called “restorative environments” [12]. Cognitive aging as well as day-to-day cognitive performance of older people can be affected by environmental factors that make places more or less “cognitively sustainable” for older people [14]. Exposure to enriched, complex environments, presenting elements of novelty, can have a direct impact on brain structure and cognition [17]. Enriched environments may also promote an active lifestyle, e.g., physical activity, which, in turn, is associated with better cognitive performance in older age [17]. Studies on environment have shown that cognitive skills such as voluntary attention and executive functions are positively associated with preference ratings of lived environments [18,19].

Moreover, the aesthetic appeal of the environment can influence lifestyle, and the design of the environment influences its perceived usability, for example, in terms of opportunities for physical exercise, and therefore the engagement in active lifestyles, which in turn benefits cognitive health, especially in older age. For these reasons it is time to examine the design criteria to create restorative green areas in the urban context.

## 2.2. Design Criteria

Literature [20] shows that gardens have to be appropriately designed to maximize user benefits; in fact, the beneficial effects of gardens can be enhanced by supporting design elements that encourage people to spend time outdoors, encourage socialization, engage in exercise, etc. It is only by a careful analysis of these aspects during the planning process that a garden can fulfill its full potential as a restorative setting [21]; otherwise, the garden merely provides an attractive view, which is important but not as crucial as actively experiencing its healing qualities [22]. Well-designed gardens can encourage older adults to spend more time actively outdoors [23]: although outdoor usage is influenced by several aspects, such as weather, health conditions, lack of interest and individual attitudes, it is also strongly related to the characteristics of the physical environment [23,24]. Green spaces in urban areas play a key role, as they can simultaneously support physical activities, social relationships and access to the positive impacts of nature [25]. Well-designed gardens have to be not only regenerative environments consistent with the four factors of ART, they must also support users’ needs by creating a prosthetic environment, a place where it is easy to stay.

In order to be considered restorative or healing, green spaces have to meet specific requirements also in ecological terms. This is cited by the principles of ecopsychology [26], a young discipline that combines psychology and ecology. It arises from the ascertainment of a correlation between the growth of existential, individual and social unease and the increase in environmental degradation and biodiversity loss, parallel to a rapid urbanization process; “we cannot be studied or cured apart from the planet” [27]. Ecopsychology intervenes with therapeutic or educational proposals that aim to promote the bond between human beings and the environment. A form of applied ecopsychology is “Ecotherapy,” the therapeutic implication of biophilia [28]. It analyzes the processes of

accommodation between people and the environment, bringing nature into the therapeutic environment as a living partner: an ecological approach that refers to human holistic growth, the healing process, and the concept of "eco-health." In order to be defined as restorative or to operate as a therapeutic partner in supporting positive health outcomes and well-being, the environment has to respond to the concept of "healthy landscape." When restorative experiences occur in natural environments, the combined levels of biodiversity and ecological connectivity are better predicting factors than the mere presence of nature, and so healthy ecosystems seem to be more relevant than nature for restorative experiences. There is synergic compatibility between environmental attitudes and healthy ecosystems that triggers restorative processes. This synergy can be defined "regenerative compatibility," a potential that emerges when people's attitudes and ecosystems are aligned in sustainability [29].

The garden design should be developed according to natural models, to allow landscape to express itself in a more realistic and recognizable way and to make its ecosystem functions greater and more evident. Sustainability is linked to multi-functionality, which can be envisioned as the stacking of ecological, production, and cultural functions [30]. Each design element plays multiple interconnected roles: aesthetic–architectural, cultural, social, and ecological ones. The design complexity allows the urban garden to play a significant role in enhancing resilience and contributes to the local ecological network not only as a green space but as an element that provides ecosystem services, despite their limited extensions.

The design components that define a restorative garden project belong to different disciplines: landscape architecture, medical sciences, environmental psychology, and landscape ecology. The result of their interaction is a prosthetic environment, in which nature is a partner in the treatment process, with ecological, landscape, and cultural values (capable of providing ecosystem services). Design criteria for public restorative gardens, which could enhance the quality of elderly life, can be summarized in three essential items (Table 1):

- Prosthetic environment: the garden has to compensate for cognitive deficits and it positively influences the functional status and behavior of the older people. It has to permit the optimal functions of the individual by offering support when needed, but it also has to guarantee independence, challenge, and learning [31]. This contributes to increase the compatibility factor of ART.
- Regenerative place: helps to renew or revitalize psychological and physical resources, enhances resilience, nurtures life. Linked to the concept of restorative places, which can recover the capacity to fend off distraction and coercion [32], it reduces suffering, enhances effectiveness, and improves focus and the ability to concentrate. This contributes to increase the fascination and extent factors of ART
- Ecosystem value: evaluation of the benefits that the space, water, minerals, biota, and all other factors that make up natural ecosystems provide to support native life forms. Ecological values can accrue to both humans and nonhumans alike [33]. This contributes to increase the being away factor of ART

**Table 1.** Design criteria.

Items	Design criteria
Prosthetic environment	physical and experiential accessibility (safe paving, comfortable walkways, round-trip walks, anthropometric measures) [34,35]
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	inclusiveness [36]
	consistency with local landscapes, sense of place [37] familiarity [34]
	coherence: legibility by landmark, connectivity, movement [38]
	legibility of layout: spatial behavior by clarity of physical and social space [39]
	graded difficulties related to users' physical and psychological limits [40]
	autonomy: design features for safe and independent functions [40]

	<p>orientation: good signage, visibility, landmarks, markers, interesting elements along the pathway [37]</p> <p>absence of obstacles or protruding objects along the way, low-reflectivity surface [40]</p> <p>opportunities to make choices: place for privacy and settings to gather together, free furniture and different types of seating [34–37]</p> <p>regulation of microclimate for year-round use [37]</p> <p>attractiveness: view from the entry, destination point [34,35]</p> <p>visibility: absence of visual barriers, mounded or sloped beds [37]</p> <p>security: garden boundaries: provide enclosure without creating a sense of being fenced in [37]</p> <p>human scale (physical and temporal) [37–41]</p>
Regenerative place	<p>fascination: complexity of landscape [36], varied habitats [42], interest in all-season richness in biodiversity [42], lush vegetation [34]</p> <p>coherence, legibility, mystery [36]</p> <p>attractive destination, hidden views to draw people into and through the space [37]</p> <p>opportunity to experience privacy and collective activities [34]</p> <p>sense of “being away”: quiet, mitigation of nuisance elements [21]</p> <p>cultural/historical references: features that evoke memories, plants with symbolic or cultural significance [37]</p> <p>inclusiveness: play area to engage visiting grandchildren [37]</p> <p>sensory stimulating and engagement: selection of plants to encourage interaction without overstimulation [21–37]</p> <p>accessibility to more wild areas [43]</p> <p>opportunity for wandering: through the landscape without time, destination, agenda, or future purpose [44]</p> <p>attracting wildlife, opportunity to observe wildlife [34], feeding wildlife [45], bird feeder [37]</p> <p>healthy food production/offer [34], wild food picking up [46]</p> <p>water to touch and to watch and other white noise that serves the restorative process [34–37]</p> <p>panoramic views [37], views to the horizon or to “borrowed” landscape [34]</p> <p>unambiguously positive art [34], preference of realistic or representational art depicting nature [21]</p>
Ecosystem value	<p>environmental sustainable design [37]</p> <p>multifunctionality [47]</p> <p>connections with local ecological network [35–48]</p> <p>use of nature-based solution for water management, microclimate control, etc. [49]</p> <p>design based on natural models for sustainable maintenance and soil regeneration/management [50]</p> <p>appropriate maintenance (assure patients that they, too, will be cared for designer) [37];</p>

### 2.3. Co-Design Process

A general overview of the positive effects of co-design processes [51] identifies three main categories of benefits that favorably affect the design project itself, the final users, and the organizations involved. From this perspective, some benefits can be experienced immediately during the process, like obtaining better knowledge about people’s needs or fostering creativity; other benefits become evident once the process is over, resulting in a higher quality service and better relations (both public and between private actors). Consistent with such an approach, co-design literature emphasizes the positive effects on individuals mainly in terms of empowerment, without distinguishing between different types of well-being [52]. A fruitful integration of this aspect is indeed offered by psychological literature, defining well-being as a multidimensional concept including hedonic (pleasure achievement) and eudaimonic (meaningful self-realization) aspects [53]. From this point of view, if we equate co-design processes with the broader category of participatory practices, we find strong support for their positive effects on well-being. Stutzer and Frey [54] demonstrated that increasing the experiences of direct decision-making results in higher hedonic

well-being: people feel greater happiness thanks to the process itself, measured independently from the outcomes obtained. Other researches, more focused on eudaimonic components of well-being, show how active participation in one's environment can increase a sense of agency [55], self-determination, and self-efficacy [56].

According to this general approach, a co-design process adequately involving final users can be considered psychologically sustainable in that it promotes the well-being of people engaged. If this holds true for the general population, it is particularly relevant for sensitive populations, as is the case of the elders. According to the WHO [4], the direct participation is one of the most effective strategies to develop adequate policies for ageing cities. Hence, it is strongly recommended to encourage the direct involvement of the elderly and of stakeholders whose quality of life is affected (e.g., non-profit organizations, private actors, local, and other public institutions) in the decision process. Co-design processes offer several advantages for the community as a whole [57]. In the first place, the elders are perceived not only as end-users, but also as active citizens. They feel recognized as peers in the process, having the chance to express their own points of view. This increases their own self-esteem and at the same time improves their perception in the community, favoring new contacts among groups of different ages. In the second place, policymakers can benefit from the direct knowledge of the elders about the local neighborhood and their own needs, designing consistent policies and services. They can also obtain a broader consensus when implementing strategies by meeting the needs of local population.

Literature suggests that new strategies are needed to effectively involve users in the co-design process, in order to meet their actual needs and to favor cross-generational proposals [58]. This applies to all citizens in general, and specifically to the elderly, requiring to develop strategies and instruments matching their skills. In addition to such concerns about the process, the importance of translating the effects that neighborhood has in promoting active forms of aging into guidelines for decision-makers is becoming more and more evident [59]. Living in areas with green spaces for pedestrians exerts a positive impact on the elderly, yet the potential positive effect of natural spaces must be actualized by favoring citizens' use. Such results can be achieved by adequately facilitating the access to green areas from a physical point of view [60] and by proposing activities and timetables that match users' needs. Succeeding in this would increase the exposure to green areas, facilitating the maintenance and creation of community relationships [61].

This study is conducted as a pilot study with an interdisciplinary cooperation between researchers specializing in environmental psychology and landscape design. The goals of the research are to combine general design criteria with co-design, working to design a sustainable restorative garden for elder people (goal 1) and apply the proposed methodology to design a small green open space (3000 m<sup>2</sup>) (goal 2), which may be used to evaluate cognitive and social benefits affecting the elderly when using it.

### 3. Materials and Methods

To collect information about users' needs we adopted a qualitative methodology, designing a semi-structured schedule for three focus groups. Participants were recruited through a snowball sampling. General contents of the focus groups regarding the neighborhood were analyzed with text-grounded codes, specific contents regarding the garden were analyzed using the ART four properties. This is part of site planning, an integral part of the land-use planning process that defines the layout of an area before the detailed design, in relation to economic, social, and environmental needs. Site planning is about working out the detail of what should happen in a space, how it should happen, and how much it will cost to implement and manage the project [62].

The site planning process can be outlined as follows:

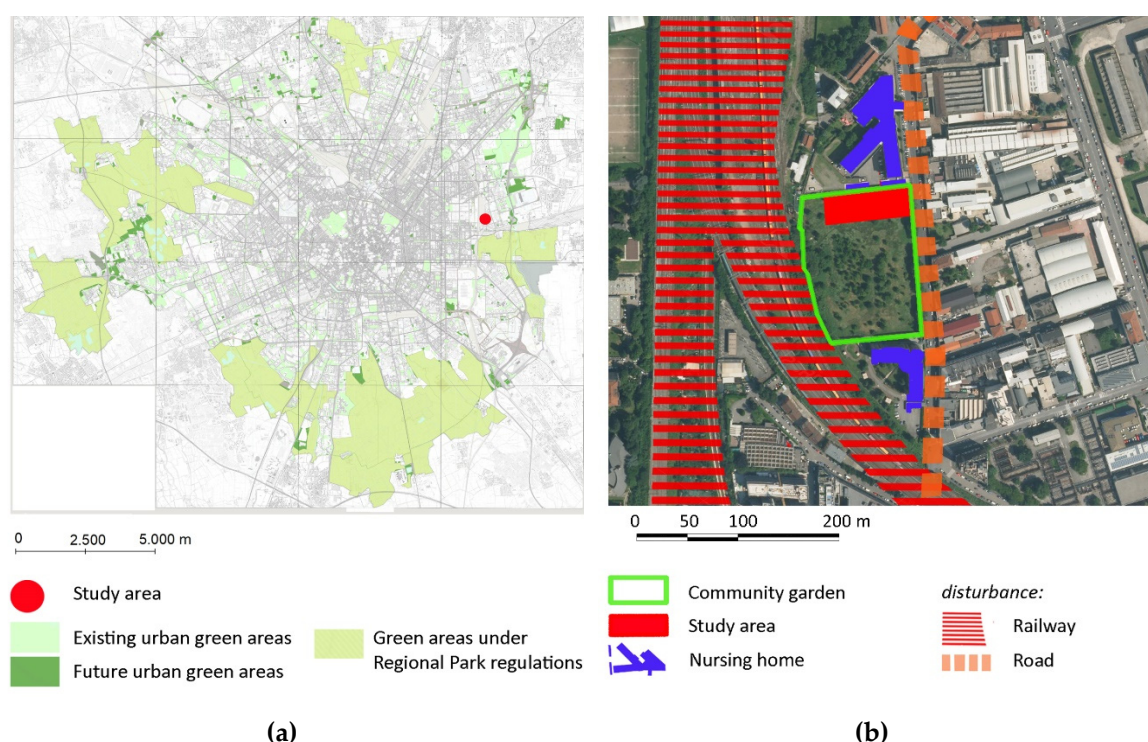
- a) Assessment of the physical characteristics of the site and its surroundings;
- b) Analysis of the users and their requirements through focus groups;
- c) Proposing a project site plan that balances users' needs and environment conservation and enhancement.

The general design criteria need to match existing resources assessment and user need assessment. In the garden design phase the site planning methodology [62,63] is used to conserve the natural environment and to meet people's needs, and focus groups are used to involve older adults and other stakeholders in design process.

Following Lynch's statement every site includes how it can be used [64], the starting point of a project is a careful site analysis for fitting the purpose, and also for understanding its own right as a living community of plants and animals. Soil, water system, plants, exposures and shading, topography, views, and noise sources need to be analyzed and mapped by a direct survey. User requests need to be collected to enable their preferred activities to take place. To do this, we started with a deep site analysis and a detailed user needs collection to define a sustainable plan, taking into account user needs together with the environment improvement.

### 3.1. Study Area

The study area is a green space inside the Municipality of Milan, a metropolitan city in northern Italy, capital of Lombardy, the second most populous city in Italy after Rome. It is included in the Community Garden (GG) named "San Faustino" in the northeast suburban area of the municipality in the Ortica district, which in the past was a real industrial hub. Isolated from the rest of the city by railway lines, the district has preserved its traditions and its history: first rural and then a working-class neighborhood, with a great artistic ferment. (Figure 1). The CG is a 20,000 m<sup>2</sup> residual area. It is delimited to the north and south by the lots of two big nursing homes; the western border extends for its entire length along the railway, separating it from the more central districts; to the east it is limited by a medium-traffic road and disused buildings.



**Figure 1.** The study area: (a) the map shows the system of existing and planned green areas of the Municipality of Milan, (b) the aerial photo shows the study area inside community garden and its surroundings.

The original agricultural use of the area was lost due to urban sprawl during the 1980s, so it became an abandoned marginal space in the suburban area of the city. In 2017, to restore this space, the municipality assigned parcels of the garden to nonprofit organizations. There are currently six associations, half of them involve in their activities residents of the two nursing homes adjoining the garden. The area has a scientific interest because of its location in a suburban area subjected to



continuous urbanization, its condition as a CG that conveys interests of different neighborhood associations and its proximity to two nursing homes for the elderly.

There are no significant public green spaces nearby. This factor makes the CG an even more precious reality for the neighborhood. The CG consists of a large lawn area with a greater concentration of trees in the central part, including mulberry and cherry trees, partly spontaneous, such as *Acer negundo* and *Ailanthus altissima*, invasive alien species [65] that significantly modify the natural environment and reduce the biodiversity of the area. The vegetation composition is mostly arboreal while the shrub component is missing. The CG is divided into several parcels, managed by the various associations (vegetable gardens, spaces managed by retired people, garden for strays, area for the promotion of urban ecology projects with hives, etc.). There are no internal boundaries defined by fencing or hedges and a landscape continuity and coherence between the parcels is maintained: this allows a functional and visual fluidity of the place.

Inside the CG, the study area develops longitudinally along the east–west axis, at the northern end of the CG; it is a large flat lawn area of 3000 m<sup>2</sup> with a small number of trees grouped at the western side end, very far from the entrance. It is therefore very sunny and difficult to use in hot seasons.

The two elements of greatest disturbance (especially noise) are the railway on the west, which is, however, almost totally shielded by spontaneous vegetation, and the road on the east, clearly visible from inside the garden.

The nursing home facilities to the north side are very impactful although, in part, spaced from the garden. The view to the south is open and pleasant, with ornamental vegetable gardens rich in flowers and some trees in the background.

### 3.2. User Needs Assessment

In order to develop the co-design process, the research team adopted a multidisciplinary perspective integrating psychology and landscape design. In such a perspective both disciplines inform each other, as psychology offers theoretical and methodological tools to explore people's needs [66], whereas landscape design enables the representation of possible planning solutions and the preliminary definition of critical issues to be addressed in specific environments [67]. The methodology chosen for the co-design process was the focus group, and it suited the heuristic needs of the project. It allowed an in-depth exploration of the topic, letting unexpected issues emerge that could better inform the design phase [68]. It was effectively integrated with data presenting potential solutions for the CG. It emphasized the active role of the participants in the co-design, creating a positive participatory setting adaptable to the competences of the heterogeneous population involved in the process [69].

#### 3.2.1. Focus Group Materials

A materials toolkit was designed for the focus groups. The main tool was a semi-structured schedule (tool 1) developed by the research team in order to explore three main issues: features of the Ortica district, features of the CG, features of the study area. The discussion aimed to build a shared perceptual map of the three areas, starting from the broader district and then narrowing the attention on the specific portion of the CG study area. Other materials were included in the toolkit to improve the quality of the discussion. In line with the principles of an experiential approach applied to urban design [70,71], four context photographs taken from the center of the study area in its current condition and printed in large size (A0) (tool 2) were placed around the table where participants sat, to evoke the visual context in which the project was inserted and to offer proper stimuli. Moreover, two maps of the district (A0 size) (tool 3) and of the CG (A1 size) (tool 4) were placed on the table to provide a spatial reference for the discussion. In addition to this, a set of postcards representing landmarks of the district (tool 5) and of the CG (tool 6), designed relying on former analysis of the areas led by the research team, were placed on the maps in order to stimulate the debate. Finally, a set of postcards was prepared representing evocative images (tool 7) consistent with the design criteria, including physical components (e.g., comfortable walkways, various types of seating) and



potential activities for different users (e.g., elders and/or children playing in the grass, elders reading on a bench, elders smelling flowers).

### 3.2.2. Focus Group Participants and Procedures

Three focus groups were held with potential users of the CG. The first focus group involved six participants (five females and one male, age range 65–71 years), living in the Ortica district or in the closest surroundings. The second focus group involved 10 participants (six females and four males, age range 65–82 years), members of associations active in the Ortica district. Initial contacts were made with elders attending the CG through the representative appointed by local administration for managing the CG, who is partner in the current research project. Through a snowball sampling technique, we invited via email 14 district residents (acceptance rate 43%) and 10 association members (acceptance rate 100%). Participants in the first focus group didn't know each other, except for a couple of spouses. In the second focus group each participant was member of more than one association but they all shared membership in a single association already active in the CG. The third focus group involved seven participants (five females and two males, age range 70–84 years), hosted in the nursing homes next to the CG. Their recruitment was supported by the personnel of one nursing home adjacent to the CG, who selected a sample of seven hosts (acceptance rate 100%) with cognitive functions allowing a fruitful participation in the discussion. Hence the participants knew each other, and the group included two relational facilitators. All three focus groups included Italian participants who were longtime residents of Milan or surrounding municipalities. Characteristics of participants were consistent with the related populations, except for the focus group with district residents that was unbalanced for gender; none of the issues raised during the debate suggested a specific influence of this aspect. Participants signed a consent form before starting the activity. After a brief presentation of the project, the focus group made a shared mapping of the Ortica district: participants described their relation with the area using the map (tool 3), while the facilitator placed the landmarks (tool 5) on the map during the debate, emphasizing mentioned activities, places, and negative/positive features with colored notes. Hosts of the nursing homes were not included in this first part because of their insufficient knowledge of the district. The second part of the focus group started uncovering the context photographs (tool 2) and, placing the map of the CG (tool 4) on the table, proceeded with a shared mapping as in the previous part with specific landmarks (tool 6). The third part of the focus group explored the expected experience in the study area, examining the relation of participants with the natural elements.

At the end of this stage participants were invited to select three evocative images (tool 7) that best represented their desired experience there, explaining the choices made. Each focus group included a facilitator and a co-facilitator, both part of the team that designed the tools. While the facilitator led the discussion, the co-facilitator took written notes of the main issues debated, including interactions among participants. The entire discussion was audio-recorded.

### 3.2.3. Focus Group Analysis

The analysis was run on the written notes, including colored posts placed on the maps and the comments referring to the postcards. Audio recordings supported the analysis process in retrieving the complete context for the notes and exact quotations. Researchers identified the main issues through a preliminary data overview, subsequently applying two different criteria for coding the contents. There was no pre-determined grid defined for data collected for the CG and its surroundings. Hence, we developed an explorative investigation, assigning text-grounded codes to the contents. The resulting taxonomy led us to create a conceptual map of the most relevant issues raised by participants. On the contrary, a pre-determined grid was applied to data collected for the study area; such a grid was based on the four properties of restorative settings according to ART (being away, compatibility, extent, fascination) [9]. Expectations about the area and desired experiences of living in nature were coded according to these four categories. The same coding criteria were applied to all focus groups by the two same researchers, and the final coding was validated within the research team.

## 4. Results

In this section, we first analyze inputs by focus group activities to obtain specific information about the needs of local elderly and committed stakeholders and, subsequently, we apply these elderly garden design criteria tailored to an Italian context to realize a garden able to improve benefits for future older users.

### 4.1. Focus Group Results

For the purposes of the current study only the results regarding the last two areas investigated are presented, namely the CG and the study area. The relation of the CG with the surrounding district was taken into account during the analysis but is not included.

#### 4.1.1. The Community Garden

**The familiarity of the three groups with the CG was partially heterogenous.** The association members and the nursing homes hosts had a full knowledge of the area, as they attend it on a regular basis and carry out prolonged activities there, even if in different places. Inhabitants of Ortica district on average were not as acquainted with it as the former groups, since half of participants never entered the area. Yet, the debate took place effectively in all focus groups, revolving around four main issues.

**Flora.** The presence of cherry trees and of a big elm was perceived as positive, both by the nursing homes hosts and the members of the associations. Nursing homes hosts also mentioned the big elm planted in the area they usually join during structured activities. The small tree-covered area in the center of the garden was mentioned by the members of the associations as an important element for their imagery and as a space dedicated to beauty and escape from the city. As they say, “it is the background that gives you the idea of not being in the city. The wood must be kept like this, otherwise the pheasants would leave!” The inhabitants of the Ortica district did not identify salient flora elements in their imagery of the garden.

**Fauna.** As for the fauna of the garden, all the participants mentioned the pheasants as a characterizing element. It was a positive and symbolic element of the natural and wild aspect of the garden: “There are pheasants in the middle of the city, it’s beautiful! It’s amazing!” Members of the associations also emphasized the presence of mice and bees; the former were perceived as a potential threat to both gardeners and study area, whereas the latter were positively mentioned and were not associated with potential problems.

**Human artifacts.** The presence of vegetable gardens was generally positively perceived by all the groups. Yet, the members of the local associations expressed the fear of further expansion of the area dedicated to horticulture to the detriment of the naturalness and beauty of the garden: “Vegetable gardens are a real and lively reality, lately they have expanded in a disharmonious way: we want to protect the beauty of the garden.” Both groups of local associations and the neighborhood inhabitants mentioned the artificial pond as critical issue: created during a project supporting biodiversity, it was not properly working. Local association groups also referred to the hives as a potentially positive but ineffectively implemented project: “They brought the queen bee but they didn’t properly build the top bars. The bees die and you don’t know why.” Finally, the only arbor in the garden was a relevant artifact for both nursing homes hosts (even if they never used it) and local associations who were involved in its construction with natural materials.

**General issues.** A general mobility issue concerning people with walking difficulties or wheelchair users was raised by both nursing homes hosts and local associations. It was seen as a relevant obstacle for reaching, accessing, and exploring the CG area. Members of local associations also looked for greater visual isolation, which would allow to hide the street and the adjacent geriatric pole.

#### 4.1.2. The Study Area

The main results obtained from the focus group about the study area regarded the content description of the four factors of ART, described in the following paragraphs. In addition, a quantitative overview of the analysis is summarized in Table 2, showing the total results and the specific distribution of the ART factors within the debate of each focus group.

Compatibility appeared globally as the most mentioned ART factor across the interviewed groups, hence it was the experiential dimension that was most elaborated upon when discussing the study area. Nature emerged as a place to carry out actions and activities compatible with their own desires and ways of being. This place was described as flexible, in order to be adapted to heterogeneous potential users. As a result the study area was prefigured with many different functions. (1) A place of exchange with others, responding to the need of experiencing social aggregation within an environment rich in beauty and harmony. In this regard intergenerational exchanges were explicitly mentioned, also with reference to meeting relatives or peers (it being an actual activity or simply desired): "...elderly with nature and grandchildren, the transmission of experiences, a sense of continuity. If there is beauty, this need to have relationships with others is interesting. Seeing children and teenagers gives you joy." (2) A place for events to satisfy the desire of participating in cultural (e.g., concerts, fitness courses, "a classic way of using gardens, listening to music in the green spaces, listening to a piano") or social (e.g., picnic) initiatives. This emphasized some specific physical needs of the target population (e.g., shadow, seating comfort). (3) A place for knowledge in itself, stimulating intellectual curiosity, thanks to the possibility of exploring and coming in contact with a variety of plants and animals to discover. (4) A physical place that allowed to enjoy the results of manual activity, thanks to the possibility of concretely acting on the environment, improving and transforming it. (5) An associative place, in particular for members of local associations who saw it as a place where their skills and energies are at the service of the community. Even if compatibility was on average the most mentioned factor, it was particularly present in the imagination of Ortica district inhabitants, who devoted 50% of their interventions to this aspect. It was the most debated issue also for association members, even if it was more balanced with others (35.71%). It is worth noting that for nursing homes hosts it was much less relevant (20.83%, the third most debated out of four factors); in this focus group participants referred to structured and planned activities they are offered in the garden that were likely to adequately respond their social and attitudinal needs.

**Table 2.** ART factors emerging from focus groups.

ART factors	Total	Focus 1 District inhabitants	Focus 2 Local associations	Focus 3 Nursing homes hosts
Being away	25.00%	7.14%	25.00%	45.83%
Compatibility	36.25%	50.00%	35.71%	20.83%
Extent	8.75%	14.29%	7.14%	4.17%
Fascination	30.00%	28.57%	32.14%	29.17%

Fascination was the second most cited factor, consistently represented across the three groups. In fact, it was the second factor in each focus group with the least variations in the percentages. Such stability was not only quantitative, as the contents proposed by each group were very much alike. The multisensory experience evoked by the interaction with natural elements was perceived as highly desirable. A constellation of elements was identified by the participants as the type of experience that is sought in nature, arousing a psycho-physical experience of pleasure, joy, and peace: being in contact with colored and scented flowers and fruits, with the vitality expressed by the presence of plants, animals and aquatic elements. Some interventions were more focused on animals: "they are an element that is missing in the city. To hear the song of the blackbird, the call of the pheasant, I would go there only for these two things. I love it. The family of pheasants that have given birth and the blackbird nest, the bunny, the nutria, the mice... there is amazement in the relationship with animals, nature can always amaze you. It is shocking, amazing that among four houses there are

pheasants.” Others were instead about plants: “here are the colors of autumn, they are wonderful. Trees, limes in autumn, soil moisture, the yellow carpet: it remained in my soul. It's the beauty, joy and peace, the explosion of colors and the peace of beauty, the poetry of nature”.

Being away was the third most cited factor on average, regarding the prefiguration of the study area as a space satisfying participants' desires to escape. Such a concept was expressed with different shades: (1) Space escape, because being in nature allows to live an experience in another place, away from the noise and confusion of the city or from the limited spaces within the perimeter of the nursing homes. (2) Temporal escape, because being in nature allows people to suspend time and remember sensations connected to their past. Natural elements allow to recall images and emotions belonging to carefree and cheerful moments from one's personal life story. (3) Psycho-physical escape, because being in nature for the elderly is a contemplation and relaxation experience, far from everyday worries, thoughts and stimuli. Being in nature is prefigured as an almost metaphysical and spiritual experience, connecting people to their intimate nature as human beings. Exploring this factor, solitude emerged as an important and transversal topic: if solitude, in fact, is generally an unpleasant state for the elderly, the experience of being alone in nature is instead an experience prefigured as desirable and meaningful. Being in nature in solitude in fact has two important features.

In the first place, it is an important prerequisite for living the escapist experiences previously described. In the second place, it allows to reinterpret the concept of solitude, from experience passively undergone to experience actively chosen, from being a synonym of isolation to a symbol of freedom. As one of the participants stated: “A position of reflection, stopping and reflecting. Even being alone for an hour wouldn't bother me.” Staying in nature to get away from everyday life was a relevant aspect recognized by several participants in terms of content, even if its quantity varied significantly across groups. It was the most important factor for nursing home hosts (45.83% of the total debate), due to the perceived contraction of their autonomy and physical skills compared to the past. For members of local associations, who did not share such limitations with nursing home hosts, this factor was in any case a relevant aspect (25%). District inhabitants instead barely recognized this factor, devoting residual attention to its features (7.14%).

Extent was of little importance among the issues raised by participants when imagining the renovation of the study area. Taking inspiration also from elements already set in the rest of the CG, the elderly generally envisaged orienting themselves among vegetable garden areas, spaces for relaxation, places for socializing: “An area where you can make a vegetable garden or even spontaneous fruit trees, manual garden activities, plant care.” Even if this factor, connected to the cohesion between the elements and the consequent desire to explore space, was the least cited in general (8.75%) and by two groups (local associations, 7.14%; nursing home hosts, 4.17%), in the other focus group it showed a different pattern. For district inhabitants it was more relevant than the being away factor (14.29% versus 7.14%), as they more often mentioned a series of elements and furniture that potentially characterized the study area.

#### 4.2. Design of the Area

The design process firstly developed a concept plan that defined the functional areas and their connections to ensure the efficient use of the space, and, secondly, a masterplan that specified works in their entirety.

##### 4.2.1. Concept Plan

The visions of the garden emerged from the focus groups can be summarized in two trends:

- (1) a multifunctional garden compatible with the needs and attitudes of the identified targets, consistent with compatibility factor of ART:
  - a) Place of aggregation and relational exchanges,
  - b) Place to do manual activities,
  - c) Place to find cultural initiatives;

(2) a garden able to create contact with nature, consistent with the being away, extent, and fascination factors of ART:

- d) Place of fascination and mystery,
- e) Place to live other kind of experiences from everyday life,
- f) Place of concentration and solitude.

These two visions required a particular identification and arrangement of the functional areas where one experiences community life, moments of privacy, and relationship with nature, in a connected and easy to read design.

The project tends to two different types of target: the elderly of the nursing homes—mostly non-self-sufficient—and elderly from associations and the neighborhood—self-sufficient and younger. At the same time, it is open to anyone who visits the CG, as children from schools or visiting their grandparents. This required making places and experiences accessible according to the different scales of ability and autonomy [34–40]. Every design element, linked to active or passive activities was made available to users with high levels of physical limitations, also to guarantee the elderly's autonomy and ease of orientation [40]. The ability to move independently is encouraged by visible paths, landmarks, clear visibility of the whole garden [37].

The area is wide and barren, so it was necessary to reduce it to a human scale through the design of micro-spaces, visually connected to each other and well-characterized to facilitate the understanding of the place (legibility) [36–39]. It also contributes to reduce the perception of loss and to maintain the sense of extent and of being away [36]. The project places the focal area (signed with the letter A in Figure 2) where the main activities are concentrated, mostly far from the road, near the big existing cherry tree and other groups of trees that create a niche for protection and a sense of embracement.

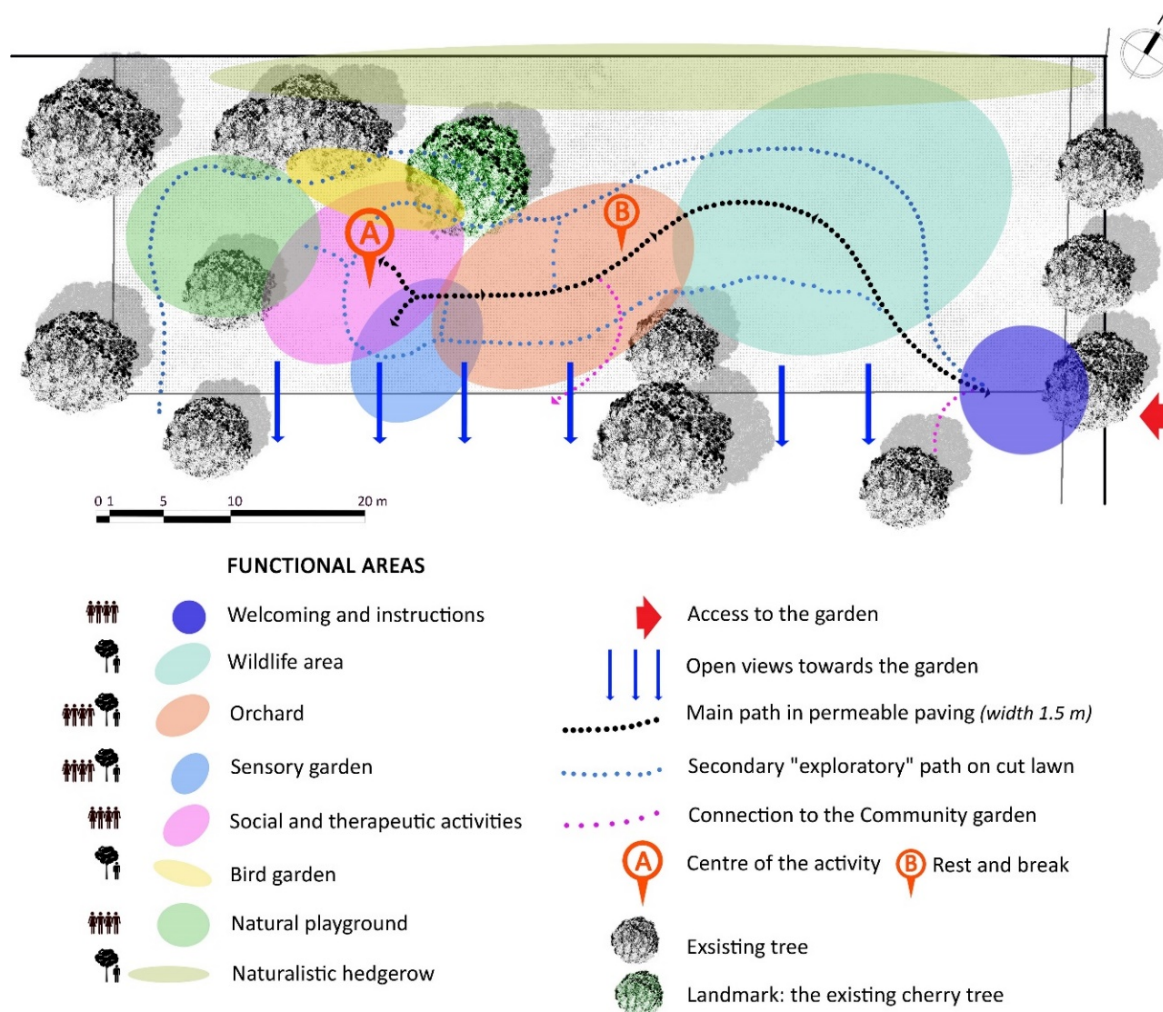


Figure 2. Concept plan.

The garden is crossed by two paths, a main one with permeable paving (1.5 m wide) and an "explorative" secondary one on mown grass. The paths allow guests to visit, explore, and experience the garden according to their physical abilities and moods. The main path directs guests towards the pergola (destination point) [41] where they can rest and do community activities [72,73]; halfway through this is located a rest area (signed with the letter B in Figure 2) for those who want to stop for a moment or have a moment of privacy. This path is connected with the main path of the CG. The elderly can use it to discover other parts of CG with a round walk [35]. The secondary route leads to more individual experiences (opportunity for wandering through the landscape without time, destination, or future purpose) [44] in more naturalistic areas, among flowery meadows, trees, and shrubs typical of the plain forest, wildlife hedges with edible fruits (fascination).

The project is characterized by a balanced alternation of equipped spaces and natural areas. The general aspect is of a country garden, in which the furnishings are made of natural materials and the vegetation is maintained in its natural shape, in coherence with the surrounding landscape and according also to the specific request that emerged during the focus groups. The garden provides areas with different functions where various activities are carried out (possibility of choosing between places and functions) [37].

From the definition of the core ideas, the concept plan progresses to the project plan that specifies the physical and construction components of the individual functional areas and vegetation types.

#### 4.2.2. Project Plan

To better understand the applied design criteria, the project is explained through the description of the key features of each functional area. The numbers refer to the map in Figure 3.

Entrance to the garden and welcome area: enhancement of this space with blooms as an invitation to enter and as a communication of what takes place inside using a wooden information board (identified by number 1 label in Figure 3). These solutions increase compatibility and fascination.

Wildlife path: flanked by two large areas of flowery lawn for pollinators and birds (number 2 in Figure 3) and on the boundaries, a Benje's hedge (number 13), which is the creation of a natural hedge through the use of pruning twigs [74]. Over time it will turn into a micro natural habitat to attract insects that feed on decaying woods. The Benje's hedge brings with it a positive symbolic message of vitality, respect, and care for nature, which deserves respect for its laws and rhythms. It can be reached from the secondary path and it is protected by newly planted trees and by the naturalistic perimeter hedge (attractive destination, hidden views to draw people into and through the space) [37]. These elements increase the fascination and extent factors of environment.

Orchard: catalyst of historical memories and symbol of prosperity and fertility. It is composed of pear, plum and fig trees with ornamental bulbous plants (number 3). It serves as an entrance to the small square with a wooden pergola.

Social and therapeutic activities: An L-shaped wooden pergola is placed to ensure shading during the sunniest days, and fragrant and ornamental climbing plants are planted for sensorial, emotional, and cognitive stimulation. The longitudinal axis with vines and climbing roses (number 7) is included in the small rose garden (number 6). A large paved area is left to facilitate circulation and to allow the elderly to rest and enjoy the warm sunlight. Around this little square there is the sensory garden, the bird garden, the natural playground, the orchard (legibility of layout, opportunity to make choices) [34–39]. These elements are supposed to increase compatibility and fascination.

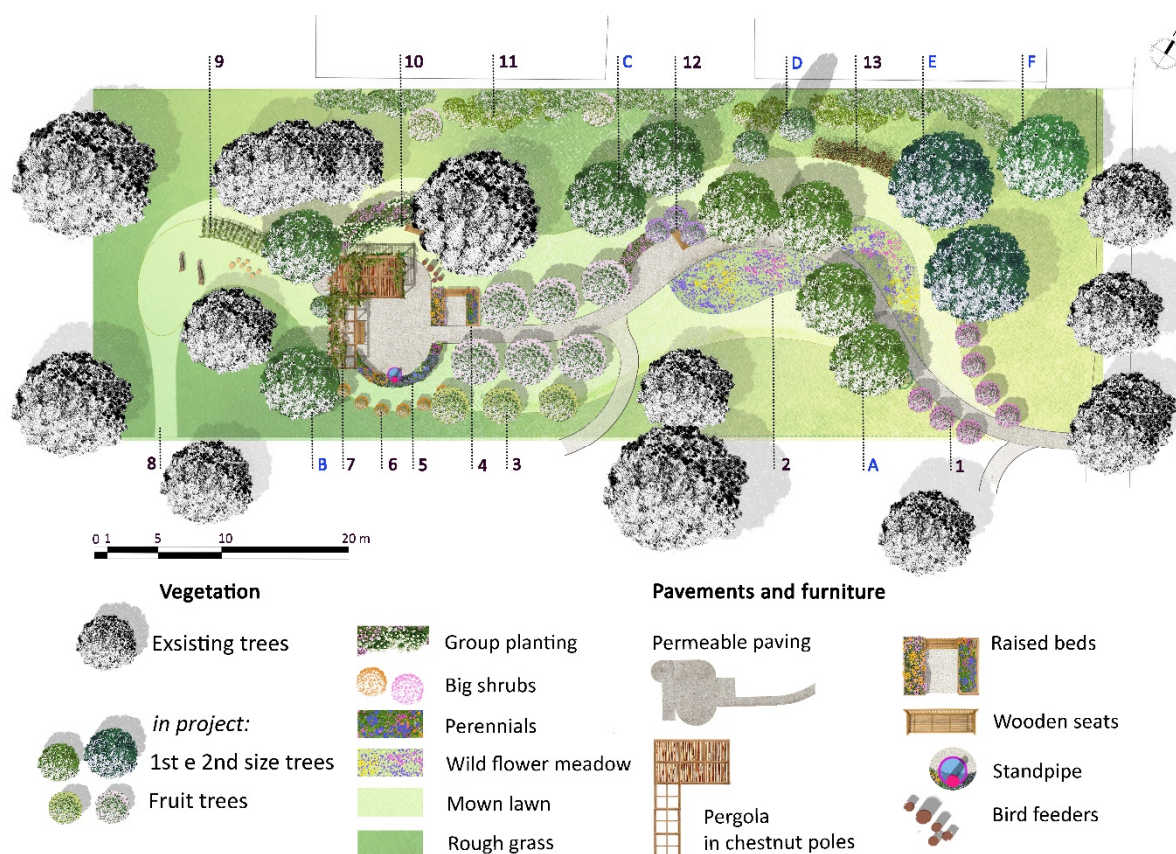
Sensory garden: although the whole garden is intended to stimulate sensorial aspects, two specific areas are designed for this function: a semicircle of aromatic and medicinal plants for manipulation (number 5) and two raised flower beds, one with edible flowers, the second one with a cutting garden (number 4). Sensorial vegetation is useful to improve fascination of the garden.

Bird garden: it consists in bird feeders and an ornamental hedge (number 10) composed of native berry-producing shrubs that are beneficial to birds. It facilitates the connection with animals: taking care of them in a relationship of coexistence and reciprocity.

Natural playground: dedicated to grandchildren to facilitate exchanges between generations. The area is furnished with toys and tools made of natural material (number 9).

Naturalistic hedgerow: for the visual mitigation of the northern boundary and the gate. It creates a gradual psychological separation from the nursing homes. Composed of small native trees and shrubs, it serves as habitat and food reserve for mammals, pollinators, and beneficial insects, and facilitates movement through the garden for animals (number 11). This natural barrier is supposed to increase the being away factor of ART.





**Figure 3.** Project plan (the numbers on the table refer to a functional areas described in the text, the capital letters specify the trees species: A: *Morus alba*; B: *Cercis siliquastrum*; C: *Diospyros kaki*; D: *Quercus robur* 'Fastigiata'; E: *Fraxinus excelsior* and F: *Acer platanoides*).

The project includes the planting of 22 trees, more than 350 shrubs (from ground cover to big shrubs or small trees), nearly 70 m<sup>2</sup> of herbaceous and bulbous plants, and 100 m<sup>2</sup> of flowery meadow (see Table 3). Vegetation was chosen basing on its features and functions (multifunctionality) [51]:

- representative of the Lombard territory, with iconic elements (recognizability of the landscape, stimulation of remote memory); of the rural and natural landscape of the irrigated plain and of the plain woods (plants with symbolic or cultural significance);
- strengthening of local biodiversity: native species give continuity to the local ecological network and contribute to the containment of the existing extremely aggressive exogenous species;
- visual mitigation and faunal function: hedges shield the view from vehicular traffic (E) and large buildings (nursing home) (N) and create a symbolic separation from chaotic indoor life; it is composed by mixed native shrubs and trees attractive for wildlife;
- low levels of maintenance: rustic species typical of the area or now-naturalized ornamentals, letting them grow in their natural shape;
- particularly fragrant plants with attractive blooms, to create a varied osmic and visual landscape for sensory, cognitive, and functional stimulation and for pollinators;
- scalar blooms, berries and foliage that are interesting in the different seasons, especially in spring and early autumn, when visits by the elderly are more frequent due to the mild and enjoyable weather.

Along the path and around the square, trees and shrubs follow a regular planting, to facilitate visual orientation [37] and to evoke formal and common landscape elements typical of the Lombardy rural areas. At the background level, trees and shrubs are distributed in a more natural pattern to evoke a natural landscape and to increase ecological function.

Table 3. Plant list.

Typology	Species
Trees	<i>Acer platanoides</i> , <i>Cercis siliquastrum</i> , <i>Fraxinus excelsior</i> , <i>Morus alba</i> , <i>Quercus robur</i> 'Fastigiata', <i>Diospyros kaki</i>
Fruit trees	<i>Ficus carica</i> , <i>Pyrus communis</i> , <i>Prunus domestica</i>
Shrub	Naturalistic hedge: <i>Cornus mas</i> , <i>Crataegus monogyna</i> , <i>Laurus nobilis</i> , <i>Ligustrum vulgare</i> , <i>Malus sylvestris</i> , <i>Rosa canina</i> , <i>Sambucus nigra</i> , <i>Mespilus germanica</i> , <i>Buddleja d. 'Nanho Purple'</i> Ornamental—faunistic hedges: <i>Callicarpa bodinieri</i> , <i>Hydrangea arborescens</i> 'Annabelle', <i>Ilex verticillata</i> , <i>Osmanthus fragran</i> , <i>Philadelphus 'Snowbelle'</i> , <i>Rosa rugosa</i> 'Alba', <i>Rosa Chippendale</i> ®, <i>Rosa Tequila</i> ®, <i>Spiraea j. 'Anthony Waterer'</i> , <i>Syringa meyeri</i> 'Palibin', <i>Syringa vulgaris</i> , <i>Viburnum bodnantense</i> Climbing shrubs: <i>Clematis montana</i> , <i>Lonicera caprifolium</i> , <i>Rosa 'Pierre de Ronsard'</i> , <i>Wisteria sinensis</i> , <i>Vitis vinifera</i>
Perennial bulbous	Raised flower beds: <i>Astrantia major</i> 'Buckland', <i>Allium 'Gladiator'</i> , <i>Calendula officinalis</i> , <i>Hemerocallis 'Stoke Poges'</i> , <i>Physalis alkekengi</i> , <i>Rheum rhabarbarum</i> , <i>Tropaeolum majus</i> , <i>Delphinium x ruysii</i> 'Pink Sensation', <i>Crocus</i> 'Emberglow', <i>Rosa 'Cubana'</i> , <i>Narciso jonquilla</i> 'Pueblo', <i>Lilium candidum</i> , <i>Paeonia lactiflora</i> , <i>Tulipa crispa</i> 'New Look', <i>Tulipa crispa</i> 'Carousel' Sensory, bird/butterfly garden: <i>Artemisia absinthium</i> , <i>Aloysia citrodora</i> , <i>Allium caesium</i> , <i>Achillea m. 'Walther Funcke'</i> , <i>Echinacea purpurea</i> 'Sundown', <i>Foeniculum vulgare</i> 'Purpureum', <i>Hyssopus officinalis</i> , <i>Lavanda angustifolia</i> 'Hidcote', <i>Melissa officinalis</i> , <i>Nepeta x fassenii</i> , <i>Rudbeckia 'Cheyenne Spirit'</i> , <i>Rosmarinum officinalis</i> , <i>Salvia nemorosa</i> 'Caradonna', <i>Salvia greggii</i> 'Peach', <i>Salvia officinalis</i> Orchard and bird feeder: <i>Eupatorium maculatum</i> 'Atropurpureum', <i>Sanguisorba officinalis</i> , <i>Narcissus canaliculatus</i> , <i>Tulipa 'Finola'</i> , <i>Iris barbata</i> , <i>Liatris spicata</i>

## 5. Discussion

The proposed methodology aims at conveying theoretical knowledge about restoration into landscape design practice with a participatory approach. The construct of restoration holds a positive role in providing useful insights for designing better urban environments, both regarding structural features of built environments [75] and the inclusion of natural elements in the design project [76,77]. In a similar fashion, reflections were developed on the contributions offered by biophilic design to psychological well-being [20], to the extent of developing proper assessment tools for informing a design or renovation process [15]. Such knowledge is well documented in literature, primarily through quantitative instruments that can effectively address the degree to which a given feature of the environment is met. We are instead interested in developing a qualitative methodology to explore the restorative potential through focus groups, which typically provide novel information about what those features mean for the target population [78]. The kind of data obtained this way can be interpreted at two levels. The first level of articulated data regards participants' explicit answers to issues proposed during the discussion (e.g., the general debate on flora, fauna, human artifacts, and general issues presented about the CG). The second level of attributional data is theory-driven and is not directly explored, but instead indirectly evoked and then categorized (e.g., the four ART categories presented about the designed garden). Such rich qualitative material, fruitful for informing the design phase, can be obtained in a relatively short amount of time.

Yet, the results of this study must be considered in light of some limitations. In the first place the snowball sampling method can produce non-representative samples for the target populations. In our case this holds true for the group of district residents, unbalanced for gender. Due to time and resources constraints it was not possible to replicate the activity. This is a general issue to be considered when applying such a methodology in concrete contexts, as focus groups are fast to carry out but require a considerable organizational effort. In the second place, no data are currently

available on seasonal or weather conditions. All focus groups took place in late spring during sunny days, and the simulation photographs were designed accordingly. A fruitful evolution of the methodology would imply to collect data about the same environment in different conditions. Finally, some considerations must be taken of the theoretical and methodological choices made for this exploratory study. In exploring the construct of restoration we relied on Kaplan's description of the four factors of ART [9]. Alternative conceptualizations were developed that are potentially conducive to similar results, whose applicability in specific cultural contexts must be considered. In this regard Pasini and Berto [79] developed the Perceived Restorativeness Scale, Italian version, that proposes a diverse combination of factors. Replication of our approach in other cultural and linguistic contexts should consider these aspects.

Focus group results outlined the specific characteristics and functions that the restorative garden should satisfy, according to the potential users involved in design process. The elderly have highlighted above all the need to have a regenerative place: they mentioned all the related design criteria summarized in Table 1 except for healthy food production, water touch, panoramic view, and art. Considering design criteria for a prosthetic environment, users mainly required accessibility (physical and experiential) and the opportunity to make choices. Garden ecosystem value was not recognized: the elderly mentioned vegetation and other natural elements only in relationship with people. It is up to the designer to choose sustainable design solutions, which will then also be useful for creating a regenerative environment.

Notwithstanding the limitations, the proposed methodology has two main strong points. In the first place, it allows to emphasize the experiential aspect of person–environment interaction. In fact, focusing exclusively on physical features of the environment and on activities carried out by people frequently leads the conversation around comfort issues. Those are relevant aspects to be considered but are often already well-known by practitioners in the field of planning and design. Including subjective experience, both in the stimuli for the discussion and in the analysis criteria, enriches the results by offering new contents to be integrated with comfort needs to the professional for the design phase. Such a reflection is valid in general as a psychological perspective; in this specific case we applied it through the ART factors. In the second place, it offers a novel perspective in comparing target populations. Comparing expectations of different clusters of potential users based on their experience instead of physical features can show emerging similarities, helping professionals in finding diverse design solutions responding to the same needs.

In general, such a methodology must not be conceived as an automatic tool providing final design solutions. It is instead an interdisciplinary approach to collect experiential data to be translated into physical features of the environment. Therefore, it helps the professional to focus on user perspectives in a more holistic way, leaving her the responsibility of finding the most suitable solutions for the specific context, e.g., by including ecosystem principles or discussing user expectations when they appear unrealistic or damaging. The next steps of the research will be developed once the requalification of the garden is completed. They will include (1) an investigation into the efficacy of the design process through the tools for Post Occupancy Evaluation, designed consistent with the methodology adopted in the co-design phase, in order to inform the research team about the relation of users with the garden, and (2) the use of the garden as a setting for the evaluation of the benefits deriving from exposure to nature in the elderly through tools tailored for the older adult population, i.e., the Connection to Nature Scale (CNS) [80], the Perceived Restorativeness Scale (PRS) [81], and the attentive matrices [82]. At the end of the entire procedure we expect the elderly population's sense of connection to nature will increase together with the appreciation for the new designed garden, as a cost-free way to gain respite from the ageing condition and stressful daily routine.

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