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Published online: 17 May 2023.

Augmenting socioecological dynamics in urban leftover spaces: Landscape architectural design as a foundation

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Abstract

Leftover spaces are urban interstices that are open to spontaneous socio-ecological appropriation, complementary to defined and managed urban open spaces. The design intervention of leftover spaces poses a paradox: while repurposing leftover spaces to make them accessible, usable and meaningful, design simultaneously runs a risk of closing off opportunities for appropriation. This paper examines the role of landscape architecture design in transforming leftover spaces. Four analytical lenses: the morphological, material, ecological and social lenses, were developed to examine the Dalston Curve Garden. Two essential design lessons for engaging the interstitial condition of leftover spaces were concluded: to design with multiple site qualities and to nurture local stewardship. The study further highlights the role of spatio-physical design as 'founding': to establish the beginning of a place-bound transformation without fixing the endpoint and to allow a profound connection between people and place to emerge.

leftover space / urban interstices / socioecological dynamics / stewardship / design intervention

Introduction

In neglected parts of the city, undefined, unregistered spaces might be found: empty backyards, overgrown plots or abandoned train tracks. These leftover spaces are hidden within the urban fabric, often overgrown by ruderal vegetation, and incidentally visited by citizens or wild animals. In their neglect, the traces of management fade away and an ambiguity about the space's usage, image and meaning emerges. They are spaces of indeterminacy that harbour spontaneous and unexpected practices and events, offering freedom of use and meaningfulness that cannot be found in the city's mainstream spaces. Appreciating and reapproaching leftover spaces would allow us to challenge today's urban system and move towards a city that is more inclusive for its heterogeneous groups of inhabitants, both human and nonhuman.

These spaces are usually short-lived, and often disappear when new functions are projected onto them. At best, they are transformed into formalized open spaces, designed to fit the needs of society. However, when new definitions are superimposed on a site, the quality of indeterminacy that is inherent to leftover spaces is erased. This happened, for example, to the Highline Park in New York, where the design reclaimed the abandoned industrial viaduct and transformed it into an urban park that soon became a landmark of Manhattan. Along with celebrating the successful revitalization of this derelict structure, the design also resulted in the removal of previous ruderal ecology and changed the site into a tourist destination. The unique experience of an abandoned railway viaduct in the middle of Manhattan, provided by the derelict industrial structure and the rawness of nature, was lost during the design transformation. The Highline Park illustrates the paradox that the design of leftover spaces presents: while enhancing the potential of leftover spaces, bringing benefits to the surrounding neighbourhood, the design projects a set of definitions onto the

Figure 1 a-d A leftover space along Jaarweg, Delft (NL). Although 'un-designed', the spontaneous play of neighbourhood children and the natural succession of wild grass lend the site different profiles throughout the year.

site that erase its indeterminacy. How can design engage with the interstitial condition of leftover spaces, enhancing the site's latent potentials without obliterating the intrinsic quality of indeterminacy?

In this paper the case of Dalston Curve Garden functions as an entrance to discuss design lessons for engaging with the interstitial condition of leftover spaces. Examining the site before and after the design transformation allows us to understand how qualities of the leftover space can be embraced and transformed by spatial design.

Recent literature on leftover spaces highlights their ambiguity. However, often this is viewed from a singular social or ecological perspective. If we want to understand ambiguity and indeterminacy, however, we need to look from different angles. Therefore, we developed an analytical methodology for leftover spaces based on different lenses, a framework that supports the reading of cases in a consistent and comparable manner. In this case we will use the following four lenses: a morphological, a material, a social and an ecological lens. Such a lens-based analysis prevents the reading of the case from only a single perspective, and in turn highlights how design interplays with multiple lenses, revealing how spatial-compositional design can facilitate socioecological practices that bring open-endedness to the transformation of the site.

The interstitial condition of leftover spaces

Following existing research by Ignasi de Solà-Morales, Andrea Mubi Brighenti, Luc Lévesque and others, we consider leftover spaces as both in-between spaces and as temporal intervals. De Solà-Morales describes leftover spaces as being 'outside the city's effective circuits and productive structures'.[1] He introduced the notion of the *terrain vague*, valued for its ambiguity, which opens people's perception of the city through breaking with the familiar acceptance of everyday urban images. Brighenti highlights the temporal dimension to approach leftover spaces and makes a plea for examining the interstice from the perspective of territorial transformation: 'An enriched observation of the processes of territorial production, stabilization and transformation is required.'[2] Approaching leftover spaces as spatio-temporal interstices is explicitly addressed by Luc Lévesque, persuading designers to embrace these spaces' vague and fluid identities and consider them as 'a specific period in the evolutionary process of the city', hosting 'cultural, moral and economic conflictions'.[3]

Leftover spaces harbour diversity and 'contribute to ecological and social resilience and vibrancy'.[4] The interstitial condition means that leftover spaces allow for multiple socioecological processes that are rarely accommodated in institutionally controlled and regulated urban open spaces. Leftover spaces are open for informal human uses; they can be used as a short-cut, a hangout for social groups that do not feel at ease elsewhere, or an adventurous playing area (Fig. 1a–d).[5] Moreover, the lack of maintenance allows spontaneous ecological processes to evolve, which turns the site into a reservoir for wildlife that is not welcome in regular public green spaces.[6] Thus, these spaces also become spaces of coexistence where people 'encounter people like themselves and others who are extremely different', where expected or unanticipated activities might also take place.[7] They can also become spaces of coexistence with nonhuman ecologies, realizing a cosmopolitics 'without recourse to old binaries of nature and society'.[8] The interstitial condi-

tion makes leftover spaces counterparts of the mainstream, planned, controlled and maintained urban spaces, revealing an enchanted world shaped by human and nonhuman agencies alike; they act as an incubator for alternative practices, processes and meaning that might enrich and guide future urban transformations.[9] Devoid of rationality and logic, leftover spaces 'make room in the city for more magic, fantasy, mixed feelings, and personal interpretations'.[10] In this way, leftover spaces sustain the city with a diversity cultivated by the unplanned and the unexpected.

Enabling open-ended site transformation with design

Acknowledging the interstitial condition of leftover spaces, the design of these spaces poses a paradox. The very nature of design—'to plan and make (something) for a specific use or purpose'[11]—poses a challenge to the quality of indeterminacy of leftover spaces. The design intervention cannot be separated from its results, which limit the open-ended nature of leftover spaces. Nevertheless, design can provide necessities that allow leftover spaces to accommodate more diverse socioecological appropriations. For instance, design interventions can enhance the ecological conditions of leftover spaces.[12] They can make people aware of the hidden qualities of these sites, and of their possibilities for use. Other interventions may bear witness to human intentionality and care in urban wild areas such as 'paths, benches, or mowing parts of vegetation' provide references of familiarity, thus increasing public acceptance of the unfamiliar, as Ingo Kowarik suggests.[13] How can landscape architecture engage the interstitial condition of leftover spaces without losing these spaces' essential quality of indeterminacy?

Four lenses

A multiple-lens approach decomposes the design by exclusively filtering it from specific reading angles. The paradox of design introduced above implies that we must be aware of the designer's interpretation of a given site, which is inevitably influenced by the designer's own subjectivity, as pointed out by Lévesque: '[It is] a process of selection, characterization and valorization of a specific territorial condition.'[14] Therefore, we experiment with multiple lenses to analyse how design reads and intervenes in the given site conditions. By juxtaposing different analytical viewpoints, we can arrive at a broader understanding of how design selects, filters and acts upon the qualities of existing leftover spaces. To demonstrate this approach, we analyse the case using four lenses: morphological, material, social and ecological, respectively.

Many studies about landscape architectural or urban case study analysis propose an analytical framework that combines several spatio-physical elements. Urban designer Matthew Carmona proposes six contemporary urban design dimensions: morphology, spatial form and geometrical form, as well as social, environmental and perceptual elements such as perception, society, visual and function.[15] Architect Tom Avermaete and landscape architects Ellen Braae and Svava Riesto advise a framework based on different epistemes: praxeology, phenomenology, semiotics and ecology.[16] A third source worth mentioning here is the formal layers approach, developed in the Chair of Landscape Architecture at Delft University of Technology, based on the morphological-formal study of European gardens, dissecting compositions

into basic, spatial, programmatic and image-form layers.[17] These methods offer useful insights into how spatio-physical aspects of design interact with the socioecological processes of the site, and with people's sensory experiences and interpretation of the material world. These formed the basis for the four lenses we applied in our analysis: it contains both spatio-physical aspects such as a morphological and a material lens, and socioecological processes such as the ecological and social lenses.

The morphological lens considers the physical form of the urban built environment as the foundation to examine the system and characteristics of a city. By investigating the transformation of a leftover space's morphology, the designer can relate the current formal character of the site with its historical transformations.[18] Through a morphological lens we can look into the current geometrical and spatial form of the site and understand how these characteristics relate to past territorial transformations.

The material lens reveals how people experience the material world, including sensory experiences and the interpretation of meaning and narratives. Through a material lens we can interpret the characteristics of the material world and sensory perceptions aroused by our embodied experience of the site. Leftover spaces, with their ruderal vegetation and wasted objects, offer people an unusual material world where their meanings and socially constructed values are blurred.[19] Under these decontextualized conditions, people are driven to see the things in their surroundings in a fresh way and to approach the material world through personal interpretations and sensory experiences.[20]

Through the ecological lens we examine the ecological site conditions and natural processes, how flora and fauna have adapted to the site, the specificities of leftover spaces as ecological habitats, and the role of maintenance. Most urban green spaces are maintained to satisfy functional or aesthetic requirements and reject the presence of wildness.[21] When formal management systems are temporarily withdrawn from the space, wild species are left to inhabit, grow and breed without human interference. The presence of wildness enriches the study of urban ecology.[22] The space of interstitial wildness also reveals the hybridity of urban nature and the entangled relationship between human and nature.[23] Also, it raises an awareness in humans to make the urban environment more inclusive for the inhabitation of wild flora and fauna, which is another important dimension in the sustainability of the city.[24]

The social lens puts the emphasis on human, sociocultural practices, on how the activities and usage of the space are facilitated or invited by the site characteristics, and how different stakeholders and social groups are involved or appropriate the site. The appearance of leftover spaces presents people with an absence of authorities and regulations, thereby encouraging them to informally occupy these spaces.[25] The animated scenes of diverse social practices in leftover spaces put in focus the issues that arise in rigidly defined urban public spaces, reminding us that urban public spaces designed with specific functions and programmes are hardly open to different users and activities.[26] The social practices in leftover spaces manifest the 'lived spaces' as proposed in the sociological studies of French sociologist Henri Lefebvre, which reflects how people use the space according to the actual conditions of a space, in their desired manner, rather than following the programme defined by the designer or by urban authorities.[27]

The study of Dalston Curve Garden

To develop an understanding of what design can do in each single lens, how these aspects interact and what the effects of the design interventions are, we analyse Dalston Curve Garden using multiple sources: imagery and written reports, but also embodied experience and dialogues with its users, managers and designers during site visits. This provides an *in-situ* understanding of the design, the very essential requirement of landscape research, as argued by Elizabeth Meyer:

> Theoretical work should be contingent, particular, and situated . . . Landscape theory must rely on the specific, not the general [and should be] based on observation, on what is known through experience, on the immediate and the sensory—what is known by all the senses, not only the eye.[28]

A literature study of the urban context and social background, and the design study *Open Space in Dalston* that germinated the idea of the Dalston Curve Garden, provided the necessary background information for the site visit, which took place in April 2018 (the garden was built in 2010). Eight years after its opening, the garden had incrementally gained popularity in the neighbourhood, and the physical traces gave ample evidence of the social and ecological processes that were generated by the original design. Also, in 2018, the success of the garden had raised heated discussions about the ongoing urban regeneration programme: the local residents were more and more concerned about commercial development in the neighbourhood and the potential threat to the quality of the public space.[29]

During the visit, onsite observations were conducted on different occasions, covering the situation on workdays as well as the weekend, and in the morning, afternoon and early evening. Interviews were conducted with the garden's manager, Brian Cumming, and the designer Neil Davidson from the landscape architecture office J&L Gibbons. The discussion with the manager and the designer provided us with new insights about the design: we realized that the dynamic social processes in the garden were not only because of the facilitation of the spatial design, but also because of the everyday management of the garden after it was built. Individual talks were held with the garden's visitors, to collect their opinions and uses of the garden, which revealed that the garden is not only a cherished place for local communities, but is also favoured by visitors from other districts of London. Historical maps were reviewed in the local Hackney Archives and the social events of the garden were retrieved from the garden's blog. These data were then processed and translated into the individual lenses using different drawing techniques. The information collected from the site visit not only feeds into the initial lens-based framework that analyses the effect of the design, but was also used to devise the analysis to look into the practices and processes after the design implementation. Later, the analysis shed light on the role of stewardship, as one of the findings of this study.

Dalston Curve Garden

Dalston Curve Garden opened in 2010 as a neighbourhood garden in the heart of Dalston, in the East London borough of Hackney. The garden is one of the pilot projects of the project Making Space in Dalston, curated by Muf architecture/art and J&L Gibbons landscape architecture in 2009. Partici-

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Figures 2 a, b Before the design and the current Dalston Eastern Curve Garden. Transforming the previously hidden abandoned railway land into a communal garden, the design preserves the green identity of the site, a secret world in Dalston's centre, with a lush image of nature.

patory sessions with local stakeholders and activist social groups provided manifold inputs for conceiving the final design of the site. The design transformed a small section of previously abandoned railway land into a green oasis, an animated public green space for the neighbourhood (Figs. 2a, b).

Making Space in Dalston

The design study Making Space in Dalston started out as a response to the ongoing radical urban regeneration of Dalston, triggered by the establishment of Queen Elizabeth Olympic Park in East London. The radical development was a cause of concern to active social group OPEN Dalston, a local forum campaigning for public awareness of the identity, local culture and heritage value of Dalston.[30] Historically, Dalston is a district that has seen much debate and protests over public and social issues and has a deep foundation of engaged community culture. In the mid-twentieth century, the area was known for the protest of 42 Group in the 1940s and 62 Group in

1962, in response to the conflicts between local Jewish and other minority populations and British fascist organizations. Nowadays, Dalston is still characterized by a highly diverse demography, including Black or Black British African (12 %) and Caribbean (10.3 %), as well as Turkish, Kurdish, Asian or Asian British, Indian and Bangladeshi.[31]

One of the noteworthy real estate projects in Dalston is Dalston Square: a residential housing complex located opposite Dalston Curve Garden. Dalston Square reflects the mainstream urban redevelopment propelled by large investments; the row of nine private residential blocks with their massive volumes and generic, minimalist modern style does little to respond to Dalston's local context. Muf architecture/art and J&L Gibbons were appointed to design the building and external public spaces of Dalston Square and, as a result, they were directly confronted with conflicts between groups of active residents and the real estate developers. Meeting these groups germinated the idea of the project Making Space in Dalston,[32] which

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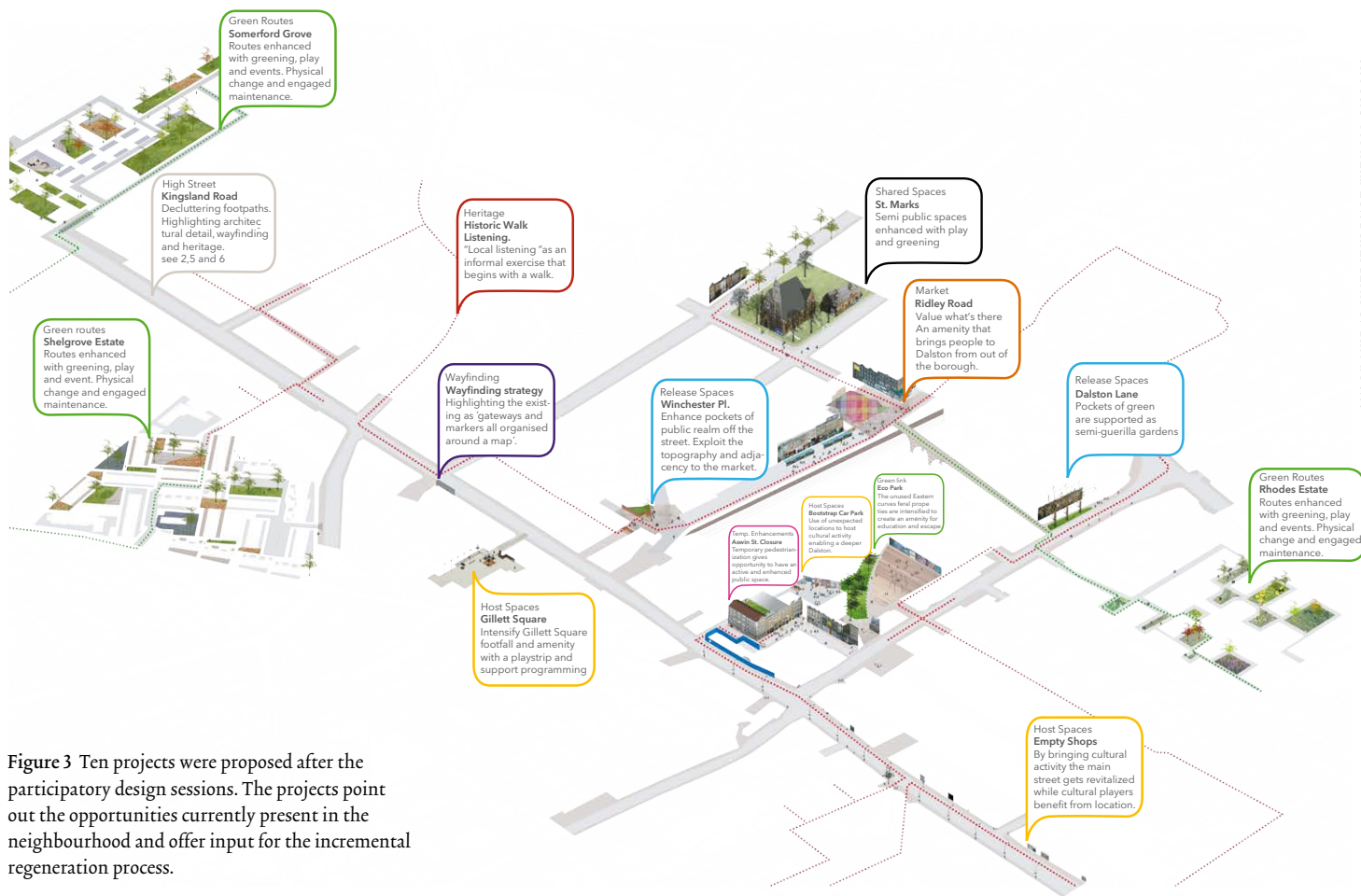
Figure 3 Ten projects were proposed after the participatory design sessions. The projects point out the opportunities currently present in the neighbourhood and offer input for the incremental regeneration process.
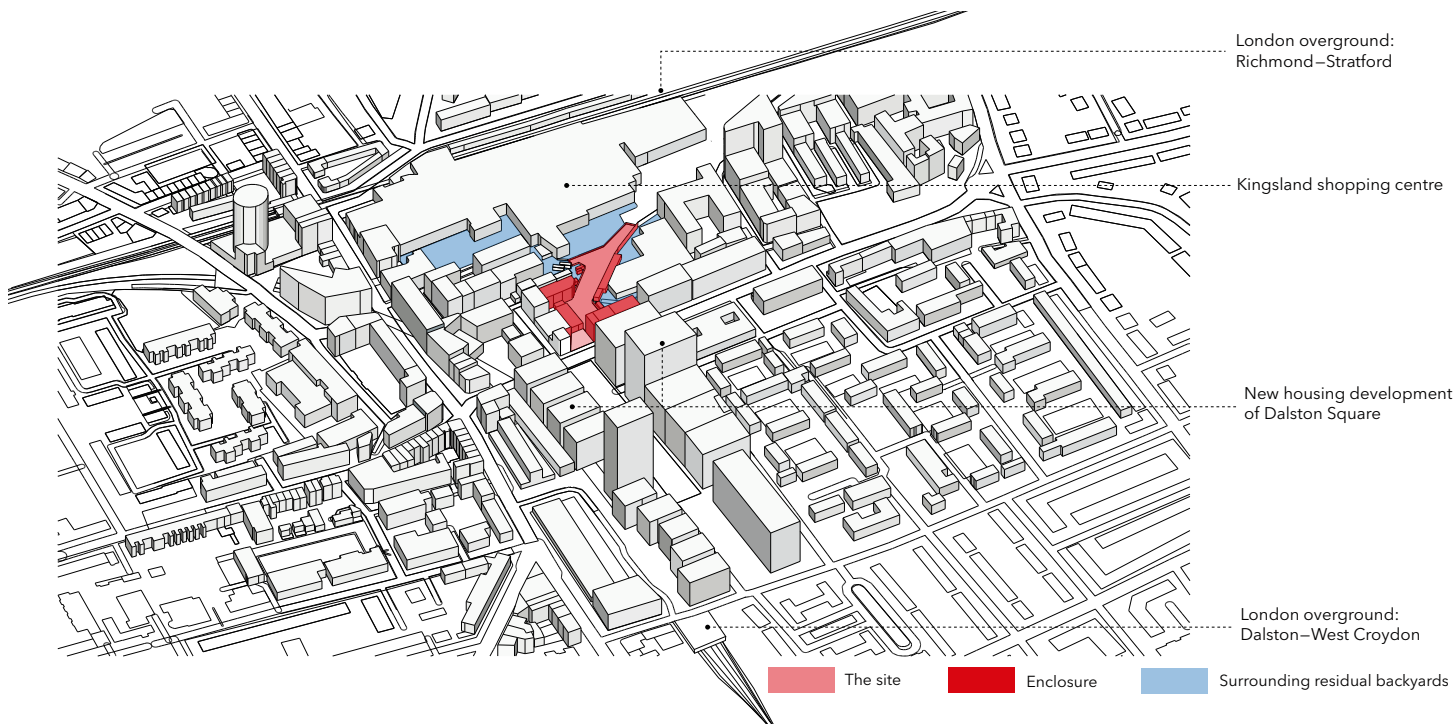

Figure 4 The garden's plot and surrounding urban context. The drawing illustrates the site of the garden in relation to the London overground railway, housing development Dalston Square and Kingsland shopping centre.

sought alternative, local approaches to regeneration that would complement the top-down urban plan by encouraging incremental changes, integrating local ideas and grounding the solution in the local context. The project consisted of three steps: 'Value what is there, nurture the possible, and define what is missing.' 'Value what is there' started by identifying the local qualities and characteristics in conversations with local communities, including the groups of active residents, cultural institutions and other owners of cultural, creative industries. 'Nurturing what is possible' focused on initiating cultural exchanges with the engagement of residents, facilitated by developing built projects, searching for possible funding, and building up collaborations and partnerships. To 'define what is missing', ten categories of intervention were drafted and pilot case studies identified. Dalston Curve Garden was one of the pilot projects for testing alternative design strategies for public spaces (Fig. 3).

Starting with opening up a leftover space to local residents, the design makes the garden a showcase that communicates the willingness of local residents as well as the benefits of green spaces for the community. In this way, the design safeguards the land from being occupied by commercial development. Since 2013, the garden has been threatened by the expansion of Kingsland Shopping Centre.[33] In 2020, Hackney Council launched the consultation report *Towards a Dalston Plan: Key Issues and Objectives Consultation*, as a preparation for the Dalston Plan.[34] The report clearly stated the value of Dalston Curve Garden and other green open spaces like it and the need for the new Kingsland Shopping Centre to cooperate with the garden in terms of sunlight and architectural quality (Fig. 4).

The morphological lens: A curving rail line

When observing the design through a morphological lens, it shows a geometric arrangement that primarily follows a curving axis derived from the existing geometry of the site, which was shaped by the previous North London railway line. The space is divided into three zones. The first is determined by the existing orthogonal urban fabric and contains a pavilion as a semi-indoor space. The second starts where the curve becomes a dominant character of the site. An arrangement of rectangular planting beds, free-standing birch trees and picnic tables is enclosed by linear planting beds with shrubs reaching approximately 1.5 m high. The slender tree trunks enhance the verticality of the space, while the canopies reinforce the human scale. The third zone starts where the linear geometry expands and connects to a wider rectangular space. The spatial definition of the third zone becomes vague, as Davidson explained. It intentionally leaves the space loosely defined so that spontaneous activities are allowed to take place. The linear geometry of the site is further magnified by modifying the ground surface: the space is elevated at the beginning and gradually descends towards the end, visually extending the depth of the space (Fig. 5).

This clear framework ensures the spatial quality of the garden while allowing diverse social demands to be easily incorporated into the spatial framework. The central walking path, the axis of the composition, was preserved throughout the garden's several stages of transformation after opening to the public. The planting beds and trees divide the sitting area into small parcels, which prevent the garden from becoming overcrowded by social activities.

The material lens: A domesticated urban oasis

From a material perspective the design combines the old and the new with a manifestation of sensory enjoyment. It introduces an image of both wilderness and an outdoor living room, and in this way the design mediates the complementary sensations of escape from daily life and dwelling in the garden. The homely image of a living room, achieved by such diverse material elements as old furniture, embroidery and checkerboard tablecloths, increases people's comfortableness when encountering the unfamiliarity of other people, practices and ecologies. The lush natural ambience of the mosaic of texture and the colours of the trees, shrubs and perennials provide a rich sensory experience, magnified by the designed entry route, which links to the design as understood from the morphological lens. The street connecting to the garden has a monotonous concrete-scape with frequent traffic and pedestrian noise. People enter the garden through a small doorway at the end of the entrance square. The tunnel-like entrance, which forms a transitional experience of light and shade, marks the moment of arriving in another space (Fig. 6).

The selection of vegetation shows equal concern for the ecological value, with a special focus on benefiting pollinators, as for seasonal scenes and aesthetic effects. Native trees such as *Betula pendula* (silver birch) and *Alnus glutinosa* (common alder) occupy the open ground. Raised planting beds along the borders of the garden contain shrubs and climbers, such as *Quercus* (oak), *Carpinus betulus* (common hornbeam), *Prunus avium* (wild cherry), native *Crataegus* (hawthorn) and *Vitis vinifera* (wine grape). Smaller rectangular raised beds in the centre of the garden and movable pots and containers are planted with annual or perennial herbaceous plants, herbs, bulbs and vegetables. Additionally, a small nursery cabinet and a greenhouse were built for breeding plants.

The rich material world is edited by diverse social practices, as an expression of the place attachment of local residents. After eight years, the garden has become animated by used furniture brought by residents, old tin cans and a diversity of pots used as planting containers, and works of art created during workshops, reflecting different previous usages and owners and recalling various social events in the garden. In turn, this material world with a distinctive identity stimulates new visitors to explore the garden and appreciate it as a unique place.

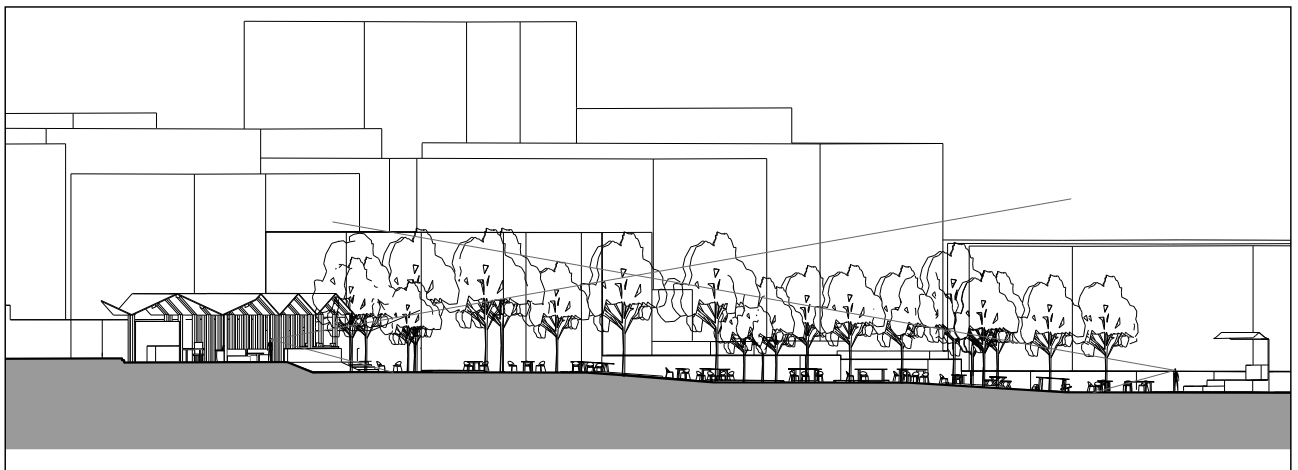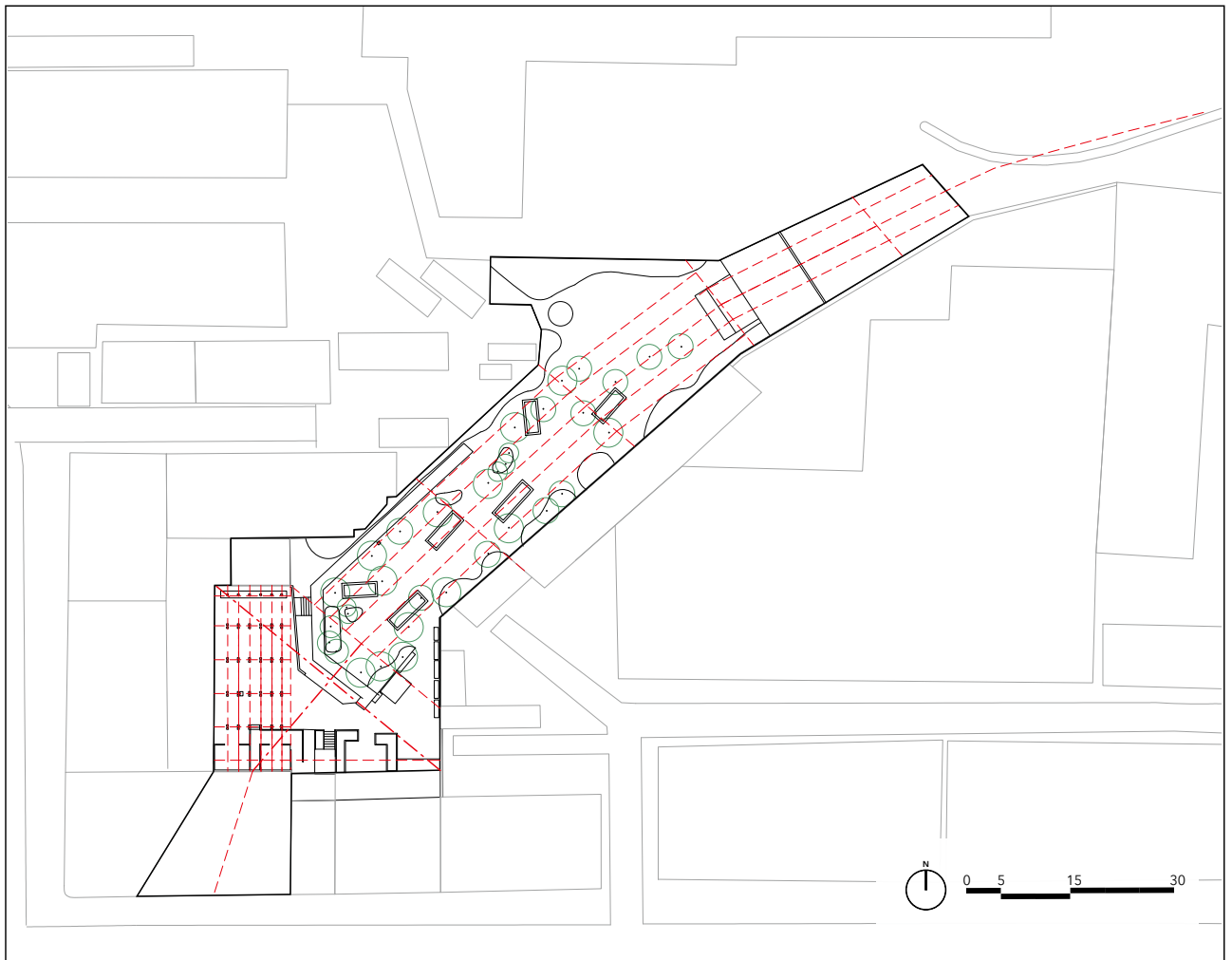**Figure 5** The design seen through the morphological lens.
The spatial design took the curving geometry of the existing site
as the essential element for the composition of the garden.
The pavilion was elevated to the same level of the outside urban
street, with the garden's ground descending to the end. The trees
are planted to enhance the enclosure of the site as well as the
descending effect of the ground.

Figure 6 The design seen through the material lens—the sequence of experience. On entering the garden from the outside urban street, it can be directly perceived as an urban oasis and outdoor living room. The rich material world of nature and social practices intrigues people as they move through the garden.

Figure 7 The design seen through the material lens—the border condition. A material juxtaposition of old and new can be observed along the garden's border, which exposes the transformation of this leftover space and reveals traces of everyday life in the surrounding neighbourhood.

An unexpected effect of the design is found in the material juxtaposition of old and new at the border of the garden. Because of the limited budget, the design's focus was mainly on the middle area of the garden, and the construction of the borders was reduced to the minimum, leaving the original border exposed. Some parts have new bamboo fences and planting, presenting a more unified image, at other places the existing, fragmented situation of the original border is visible. This imperfection in the design intervention raises an interesting contradiction (Fig. 7). Compared with designs that radically refurbish leftover spaces into publicly accepted formal spaces, the sober and minimal material change here allows for a hybrid and layered experience of both a familiar living room and an unfamiliar leftover space.

The ecological lens: Reconciling the ruderal and the horticultural

Through an ecological lens we can consider the transformation into a garden as a radical change to the ecosystem. The design transformed the garden into a horticultural space, although an attempt was made to incorporate the ecological value as much as possible (Fig. 8). Before it became a garden, the site was a hidden residual space filled with abundant ruderal vegetation. Davidson described the process of remediation: most of the ground-cover vegetation was removed and the top layer of contaminated soil was replaced by clean soil. Some of the existing species, such as the *Buddleia davidii* (butterfly bush) and a mature *Acer campestre* (field maple), were preserved.

The garden is maintained by gardener Emma Rey and a group of volunteers, in weekly gardening sessions. They regularly adjust the planting scheme, according to the seasons and in response to the performance of certain species in the previous years. Although in many ways the ecological process of the garden is different from public urban green space, the garden is artificially maintained and probably driven for the most part by aesthetic values and the need to satisfy the human narrative about urban biodiversity—the focus on bees and butterflies, for instance. But at the same time, it shows a process of constant care, of frequent adaptation based on observing the developing of the ecosystem. The ecological value of gardens is not about how ecology would evolve without humans, but about how humans can be actors in ecological processes: about care and cultiva-tion, and human responsibility. This engagement resonates the concept of the gardener introduced earlier in this paper: the gardener as a figure who continually examines the site's changing conditions and makes necessary adjustments accordingly, as described by Raxworthy: 'A subject or a mind to appreciate it and so assures a participant synchronous with its passing.'[35]

The social lens: Lived open space

Dalston Curve Garden provides a balance between defined and undefined, or unanticipated, uses and practices (Fig. 9). As reported by the manager, Brian Cumming, the garden is mostly used as an outdoor cafe for sitting, spending time individually or meeting friends. In addition, numerous community activities are organized in the garden year round. These activities—different in nature and requiring different spatial settings—are well-incorporated in the diverse and temporarily different spatial environment that the design provides. The pavilion at the garden's entrance provides a physical shelter for indoor activities. The middle section—more linear and narrower—provides an outdoor sitting area where tables and chairs are dispersed among the tree trunks. The wider end of garden is left open, which allows the space to host different social events. An existing voluminous *Buddleja davidii* was trimmed back to create an arch, which creates an interesting, adventurous space beneath it. An informal stage was later added here. In the afternoon, neighbourhood children use the space as a playground, while during the rest of the day this space is used by individual visitors who prefer to retreat from the crowds. We observed that the more sociable visitors, sitting together and chatting, do not hinder the stay of the more individualist visitors, who find a comfortable location at the back of the garden. The trees provide a natural boundary, so the people who seek quietness are not bothered by the chatting of other groups.

An important factor to the inclusiveness and diverse social practices taking place in the garden is its everyday management. After the design was implemented, Marie Murray and Brian Cumming, who were deeply involved in the design of the garden as representatives of the OPEN Dalston group, took over as daily managers of the garden. During the interview, Cumming explained that an important part of their work is to stay in regular contact with local cultural organizations and artists who organize cultural programmes in the garden such as music sessions and creative work-

Figure 8 The design seen through the ecological lens. The design transformed the previous wildness into a place of horticulture. More diverse forms of planting were introduced, provided with different growing conditions.

Pots & containers

Planting beds – herbaceous

Planting beds – herbaceous & shrubs

Nurseries

Trees

Figure 9 The design seen through the social lens. A pavilion with indoor activities is situated in the entrance area and the outdoor sitting is located in the middle open ground. The end of the garden is provided with a loosely defined area, which can be used for outdoor playing and cultural events.

Entrance square

Circulation – hard surface

Circulation – soft surface

Toilet

Compost

Green house, office

Storage

Bar

Show

Playing

Sitting semi-indoor

Sitting – outdoor

Gardening

shops. They also harmonize the visitors of the garden, making sure that nobody is excluded. Homeless people, for example, are allowed to beg in the garden, but they can only beg once, and they are provided with excess food from the cafe. While not excluding anybody, the managers also ensure that anti-social behaviour is curtailed to avoid disturbing other visitors. On the one hand this social inclusive management is owed to the regulations of Hackney Council, which stresses social inclusiveness as the precondition of the land lease. On the other it is thanks to the dedication of Murray and Cumming, who make decisions in the garden's every-day operation. Their work goes beyond the remit of regulation, they mediate between the prescribed guidelines of the local government and actual local desires and practices. They cater for everyday uses and the creative energies innate in this neighbourhood, which is composed of people of different ethnicities and from diverse cultural traditions. The way Murray and Cumming manage the social structure of the garden mirrors the garden's ecological process, which again foregrounds the role of the gardener.

The close bond between the garden and its managers evolved naturally as a result of their engagement in the design process. The designer involved them in the early stages and kept in constant contact with them during the design development process. Because of this, they perceive the garden as their own. The designer explained the design ideas behind the garden, so they understand how different design components work together. The design process motivated a commitment of its gardener(s) that led to the long-term open-endedness in the garden's transformation.

The garden is a 'lived space', as described by Lefebvre: the space that is inhabited by lived practices, which is produced with the tactics developed in everyday life and exhibits its inhabitants' own capacities of transformation.[36] The image of the garden is not defined by the designers, but constructed by its use in everyday life, while it is the design that makes it possible for these social practices to be accommodated in the garden.

Discussion: Balancing multiple lenses and stewardship

After revealing what the design does and how it directs or allows future transformations, it becomes obvious that the open-endedness of the garden—its inclusiveness of different social groups and cultural practices, its ecological processes and its evolving material world—is deeply related to the fact that the design simultaneously addressed the multiple qualities of the site. As such, the analysis of the four individual lenses also reveals their interconnectedness.

The transformation of the site's morphology prepared the garden for its future social and ecological processes, and its evolving materiality is an expression of these processes. Viewed through a social lens, the design made the excluded urban void accessible to the public again, as a carrier for a social network that facilitates local engagement. Because local people are connected to the garden by events happening in their everyday life, the material world of the garden presents a distinct character and a strong identity. Similarly, the garden provides new habitats for vegetations that are selected for the community garden and these habitats are well cared for because of the knowledge of the gardener and the engagement of volunteers. Compared with untouched leftover spaces with a slowly evolving

ecosystem, the garden exhibits more variety of species and balances their relationships. Although the garden's ecological process is not truly open-ended, we can imagine that, because of the affection and care of the gardener and volunteers, once new flora and fauna are presented in the site they probably will not be excluded as weeds, but will be accommodated in the garden. The designer Davidson explained that the ecological quality was considered at the beginning of the design process, but because of the focus on the complex social issues, this dormant ecological value was not fully taken into account when it was built, nor has it been after ten years of management and transformation. If the garden can be taken more seriously as a place for wild flora and fauna in the city, it would perhaps become a more interesting place that reveals the existence of nonhuman agencies to the visitors of the garden.

This study highlights the merit of working with multiple lenses when designing urban leftover spaces in specific, and urban open spaces in general, where multiple human and non-human agencies can be allowed, and more importantly be invited, to play a role in the site transformation. Based on a careful reading of the site, deciding on what should be taken away and what needs to be introduced in order to allow new social uses and ecological processes and to enhance the sensory perceptions of nature, the design enables continuity between past and future, and between the surrounding neighbourhood and the internal world of the garden.

Whereas we used a morphological, a material, an ecological and a social lens to understand and interpret the design of Dalston Curve Garden, other lenses could be brought into play as well. The genealogy and development of the Dalston Curve Garden has been greatly influenced by the political dynamics at several scales. Analysing the garden through a political lens would give additional insights to understanding the conditions of the starting point of the design, as well as explaining later dynamic social practices.

Our analysis further sheds light on the relationship between the design in morphological and material lenses, and the role of stewardship in the social and ecological lens. In this way, the design combines the form-making nature of the design with the open-ended transformation afterwards, which resonates the role of the gardener exposed in Julian Raxworthy's study: 'The gardener mediates between the purposefulness of design and the spontaneity of natural processes.'[37] The central notions in the practice of the gardener are 'tendency' and 'feedback': tendency describes a design mindset that considers that the design is heading in a particular direction without defining fixed outcomes, where 'the end is in sight but not clearly focused.'[38] Feedback means to constantly check the development of the process and be open to adapting to unexpected situations, as 'a continuing, real-time involvement in a process', where the output of a period of process is examined and used as further input to adjust the process.[39] The metaphor of the gardener is reflected in the practice of Murray and Cumming, as well as the actual gardening provided by the gardener and volunteers. Their practices respond to both expected and unforeseen changes in uses, conditions, desires and requirements, and mediate between the purposefulness of design and the spontaneity of socioecological processes taking place in the site's everyday transformation.

Conclusion:
Design and stewardship as a foundation for open-endedness

Leftover spaces represent a unique interstitial condition in the urban context, providing openings for spontaneous socioecological processes. When acknowledging this, design can strengthen the openness and inclusiveness of leftover spaces, as the case study of Dalston Curve Garden shows.

The open-endedness of Dalston Curve Garden relies on two factors: on the one hand, strong spatial qualities that provide basic accommodation, enriched aesthetics and sensory experiences, as well as a general spatial framework that enables spaces to be open for different emerging socioecological appropriations. On the other, the everyday management of Murray and Cumming makes sure that the garden's operation responds to the daily dynamics without losing the essential ideas of design intervention. Here the architectural design offers a foundation for new socioecological practices that articulates the implicit meanings existing in each open space, and further allows them to be perceived as a specific place, which people will not only use, but where they will also engage with their own creativity and imagination. As a foundation, the design does not intend to provide a fixed outcome of the site transformation, but supports preferred processes without erasing other possibilities. This reveals two design lessons for engaging leftover spaces: to design with multiple lenses and to promote stewardship for everyday site transformation.

The first lesson is to design with multiple lenses. The discussion on the interplay of the four lenses shows that the design interprets existing site qualities from different angles. By doing so, the design prepares the site for hosting new uses, as a foundation for a dynamic transformation where ongoing socioecological processes are joined in the site's becoming. Design as founding requires the exploitation of existing site qualities using multiple lenses, bridging and mediating between the social and ecological potentials, the aesthetic experience of the site, and the sense of place. It further requires that the spatial-compositional design offers a defined framework and reserves room for unplanned, unexpected human and nonhuman practices.

The second, complementary, component is to make stewardship part of the design. It cultivates open-endedness by taking care of everyday emergences and responding to these changes. When balancing multiple lenses, stewardship and gardening can be seen as expressions of the same attitude, grounded in an understanding of the morphology and materiality of the site and a sense of affection and care for the place. Stewardship guarantees that site operation meets urban planning visions while allowing local needs and desires to play out, sustaining dynamic, spontaneous, socioecological processes to take place in tandem with the site transformation. To foster stewardship requires the early engagement of interested stakeholders in the design process, and making a meaningful place that raises a sense of affection and care.

To engage with the interstitial condition of leftover spaces, the designer needs to make room for both the site-specific qualities and the ongoing site transformation after the design. When used to augment socioecological dynamics, design can open up interstices as niches for both humans and nonhumans, cultivating diversity for tomorrow's city.

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BIOGRAPHICAL NOTES

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