

Transforming contemporary public urban spaces with planting design. Shifting from monocultural planting blocks to naturalistic plant communities

Alessio Russo

School of Architecture and Built Environment, Queensland University of Technology, Brisbane (AU)
alessio.russo@qut.edu.au

Abstract

The field of landscape architecture is currently undergoing a notable transformation in planting design styles, driven by the imperative to create resilient and sustainable landscapes capable of adapting to climate change. New approaches to planting design have become a fundamental element in the regeneration of urban spaces, as evidenced by prominent projects such as the High Line in New York and the Lurie Garden in Chicago. To investigate this phenomenon, this paper conducts a review of the literature, aiming to analyse the historical evolution of planting styles. Furthermore, it presents a series of case studies from the United Kingdom, the Netherlands, and Russia, highlighting the positive impact of designed plant communities on urban landscapes. Drawing upon the findings from the literature review and case studies, this paper concludes by discussing future directions and current issues in planting design.

Il campo dell'architettura del paesaggio sta attualmente subendo una notevole trasformazione negli stili di progettazione, guidato dall'imperativo di creare paesaggi resilienti e sostenibili in grado di adattarsi ai cambiamenti climatici. Nuovi approcci alla progettazione delle piante sono diventati elemento fondamentale nella rigenerazione degli spazi urbani, come testimoniano progetti di spicco quali la High Line a New York e il Lurie Garden a Chicago. Per indagare questo fenomeno, il presente articolo conduce una revisione della letteratura, con l'obiettivo di analizzare l'evoluzione storica degli stili di impianto. Inoltre, presenta una serie di casi di studio provenienti dal Regno Unito, dai Paesi Bassi e dalla Russia, evidenziando l'impatto positivo delle comunità vegetali progettate sui paesaggi urbani. Basandosi sui risultati della revisione della letteratura e dei casi di studio, l'articolo si chiude discutendo le direzioni future e le questioni attuali nella progettazione delle piantagioni.

Keywords

Landscape architecture, Designed plant communities, Naturalistic planting, Resilient landscapes, Urban regeneration.

Architettura del paesaggio, Comunità vegetali progettate, Piantumazione naturalistica, Paesaggi resilienti, Rigenerazione urbana.

In recent years, planting design has experienced a profound transformation, driven by climate change, biodiversity loss, and the growing scarcity of irreplaceable inputs like water and fertilisers. The need to minimise harmful outputs like pesticides and waste plastic, and the demand for resilient and sustainable landscapes are also significant factors driving this change (Kingsbury, Takacs, 2022). This metamorphosis is evident in the burgeoning adoption of practices like xeriscaping, which emphasises the utilisation of low-water plants (Walker, 1991). At a municipal level, a global shift is underway in urban green space management, with cities embracing 'No Mow' policies to encourage natural growth and promote biodiversity, a concept often referred to as 're-wilding' (Masood, Russo, 2023).

These trends align with the European Green Deal, the European Biodiversity Strategy, and the outcomes of Biodiversity COP15, all of which underscore the importance of reintegrating nature into our lives, particularly in urban environments. This reintegration is further bolstered by tree planting campaigns, as several nations and cities across the globe have made deliberate pledges to provide high-quality green infrastructure and increase tree cover (Russo, Chan, Cirella, 2021). A notable example is the National Recovery and Resilience Plan (NRRP) in Italy, which has allocated financial resources for the planting of approximately 6.6

million trees to create urban and peri-urban forests in 14 metropolitan cities (Pardi et al., 2023).

In light of these developments, ecological planting design and land management strategies offer sustainable solutions to address the pressing climate and biodiversity crises (West, Hong, 2020). Several countries are actively exploring diverse approaches and developing innovative, evidence-based solutions that promote sustainability. For instance, planting designers in Germany have effectively incorporated spontaneous vegetation, or wild plants that self-sow from neighbouring areas, into public horticulture projects, epitomised by the Gleisdreieck and Südgelände parks in Berlin (West, Hong, 2020).

This shift away from traditional monocultural planting blocks in urban landscapes (fig. 1) towards naturalistic styles of planting reflects a global trend. As Hodgson (2016) explains, this approach embraces the concept of designing plant communities that mimic the aesthetic and ecological qualities of wild and semi-wild landscapes.

Modern ecological science is seamlessly integrated into the design process through naturalistic planting techniques, optimising plant selections for sustainability while meeting the practical and aesthetic requirements of urban public areas (Hitchmough, 2008). An ecological landscape design approach incorporates the fundamental horticultural principle of "right 111



Fig. 1 - Monocultural planting block with marigold (*Tagetes*) in Dubai Streetscape. This type of planting design, while aesthetically pleasing, lacks the diversity and resilience found in naturalistic styles of planting (photo: Alessio Russo, 2015).

plant, right place” and extends it through an ecological lens (Beck, 2013, p. 7). Specifically, the attempt is to understand whether the plants thrive naturally and the reasons behind their specific habitat preferences. When designing landscapes using an ecological approach, careful consideration is given to biogeographical principles and the environmental conditions that support their growth.

In recent years, several books have been published that present new approaches to plant community design (Dunnett, Hitchmough, 2004; Hitchmough, 2017; Dunnett, 2019; Kingsbury, Takacs, 2022). Thomas Rainer and Claudia West’s book *Planting in a Post-Wild World* which offers advice on designing plant communities that display resilience in the fa-

ce of climate change, has become well-known in the United States (Rainer, West, 2015). However, only a limited number of peer-reviewed papers have discussed these approaches (Hitchmough, 2008). Consequently, there is a research gap in understanding the evolution of contemporary planting styles and their specific impact on urban spaces. Landscape architects often heavily rely on traditional monocultural planting blocks and possess a limited planting palette. Therefore, it is imperative to comprehend these emerging trends in landscape design, as they have the potential to enhance biodiversity within cities. This paper aims to address this gap by conducting a literature review that analyses historical trends and contemporary design movements in planting desi-

gn. Additionally, the paper provides an analysis of case studies (in the United Kingdom, the Netherlands, and Russia) that I have personally visited in recent years. These case studies serve as successful examples of urban regeneration through the implementation of designed plant communities. This research seeks to illustrate the positive effects of the new wild aesthetic and its transformative impact on public urban spaces.

Evolution of planting design: a short historical overview

Planting design styles have experienced significant evolution over time, influenced by cultural aspects, emerging trends, new discoveries, and environmental considerations.

Throughout the millennia, we have witnessed the transformation of various styles. In ancient times, planting styles were often characterised by formal, symmetrical designs. The earliest gardens in the Western world exemplified a formal aspect driven by practical reasons, particularly the need for efficient irrigation (Hobhouse, 2004). These gardens featured distinct characteristics, including outer perimeters, inner flower beds, and canals arranged in parallel at right angles.

Similarly, the Muslim gardens of Islam exhibited a comparable pattern, incorporating elements such as water features, fruit trees, and flowers. However, these vegetation elements primarily served aesthetic and aromatic purposes, playing a secondary role in garden design (Hobhouse, 2004). The formality style has evolved over time and has been observed as a prominent characteristic in various periods of garden design, including Roman gardens, medieval ecclesiastical gardens, Renaissance gardens, and Baroque gardens (Turner, 2005).

The effect of travel books on the Far East during the late 17th and early 18th centuries can be linked to the development of an informal garden style, which is characterised by the purposeful use of wavy lines ra-

ther than rigid, straight ones (Sellers, 2003). The eighteenth century saw a shift in English taste away from uniformity and towards an artificial naturalism that was once more inspired by the Garden of Eden (Lennox-Boyd, Perry, Thomas, 2003). In particular, it seems that Alexander Pope's writing had an impact on the landscape gardening Romantic movement, which was reflected in the works of William Kent, Lancelot 'Capability' Brown, and Humphry Repton. Lancelot 'Capability' Brown and his disciples were well-known for creating landscape gardens that expressed the essence of the picturesque (Fay, 2023). The picturesque arose in the 18th century as an aesthetic category, as characterised by artist and author William Gilpin (1724-1804), referring to a distinct sort of beauty that is pleasing in a picture (Fay, 2023). John Claudius Loudon (1783-1843) was a proponent of distinctive garden design styles and is credited with inventing a unique approach to planting design known as the 'gardenesque' (Turner, 1982). In 1832, Loudon introduced the term 'gardenesque' to describe this new style and anticipated its widespread adoption in the field of rural art (Turner, 1982).

The gardenesque style emphasised the use of flower gardens and specimen plants, allowing gardeners to showcase their expertise more effectively than the traditional Brownian landscape park style (Leathlean, 1995). Loudon believed that the gardenesque style was well-suited for suburban gardens and could be adapted more readily than the picturesque style (Leathlean, 1995). His vision involved the arrangement of perfectly-grown individual specimens in an orderly manner, often with a symmetrical axis, prioritising groupings rather than picturesque outlines (Turner, 1982; Leathlean, 1995).

In colonial countries, the Picturesque and Gardenesque styles, as described by Ignatieva and Stewart (2009), were widely used, resulting in the creation of comparable landscapes in both public and private parks and gardens. These landscapes were characterised by lawns as the main element and were further



Fig. 2-3 - The new planting scheme at The Barbican Beech Gardens. Figure 2 shows the vegetation in early summer, and Figure 3 displays it in spring (photos: Alessio Russo, 2023, 2022).



enhanced by the addition of flowerbeds, groups of trees and shrubs, and groves

The idea of planting diverse communities of different species, originating from the observations of 19th-century plant explorers (Hitchmough, 2017), laid the groundwork for a paradigm shift in gardening and landscaping practices. Their recognition of the unique assemblages of plants across different regions shaped contemporary approaches to urban horticulture.

William Robinson (1838-1935), an influential Irish garden writer, is celebrated as a leading figure in the naturalistic movement (Heatherington, Sargeant, 2005). His notable achievements include the introduction of the herbaceous border and his fervent support for the wild garden while challenging the conventional Victorian formal garden and bedding-out practices (Massingham, 1978). Robinson's understanding of plants' natural growth patterns led him to advocate for grouping plants with similar needs (Heatherington, Sargeant, 2005). About three decades after William Robinson's initial contributions, the German garden architect Willy Lange emerged as another promoter of nature gardens (Wolschke-Bulmahn, 1992).

Although William Robinson and Willy Lange sought to present themselves as pioneers in the natural gardening movement, they were not the first to embrace this approach (Wolschke-Bulmahn, 1992).

Robinson criticised the monotonous and stereotypical "bastard Italian garden" and emphasised the importance of designing gardens that harmonised with their surroundings (Wolschke-Bulmahn, 1992, p. 201). Lange created the idea of "biological aesthetics" in garden design after being heavily influenced by the scientific developments of his day, particularly the works of Humboldt, Darwin, Haeckel, Ostwald, and others (Groening, Wolschke-Bulmahn, 1992, p. 120). Lange was motivated by the advancement of science's understanding of nature and aimed to harmonise aesthetics with the dominant scientific paradigm

(Groening, Wolschke-Bulmahn, 1992).

Lange's approach to landscape design centred around the concept of plant physiognomy, emphasising the artistic representation of indigenous plant species (i.e., by grouping plants based on their appearance rather than taxonomic relationships) (Groening, Wolschke-Bulmahn, 1992). Before the outbreak of the Second World War, the landscape design scene in Britain was significantly influenced by the writings of William Robinson as well as the prominent contributions of Gertrude Jekyll (1843-1932) (Woudstra, 2004). Jekyll's approach to landscape design encompassed a strong focus on both horticulture and artistic principles, rather than prioritising ecological considerations (Woudstra, 2004). Although she worked within the formal design layout prevalent during the Edwardian era, Jekyll distinguished herself by advocating for the extensive use of perennials and pioneering their incorporation into less rigid and more naturalistic planting schemes (Heatherington, Sargeant, 2005).

In the Netherlands, there was a change in the discourse around garden design throughout the 1920s, moving away from romantic and artistic ideals towards a more scientifically based approach (Woudstra, 2004). A.J. van Laren, the curator of the Amsterdam Hortus Botanicus, played a key role in introducing the concept of phytogeographical planting. In 1907, he critiqued the use of the term "nature style" and proposed alternatives like "landscape-like" and "free-form layout" (Woudstra, 2004, p. 52)

After the Second World War, ecological planting faced a decline in some contexts due to its association with nationalist ideologies, but the United States and Germany maintained a strong research foundation for ecological restoration (Woudstra, 2004). The Netherlands, Sweden, and Great Britain adopted a more liberal approach to ecology and innovative planting methods (Woudstra, 2004). Following the 1960s debate in the Netherlands about naturalistic planting in parks and on ground no longer used



Fig. 4-5 - Biodiverse planting and corten benches at Glassfields in Bristol (photos: Alessio Russo, 2023).

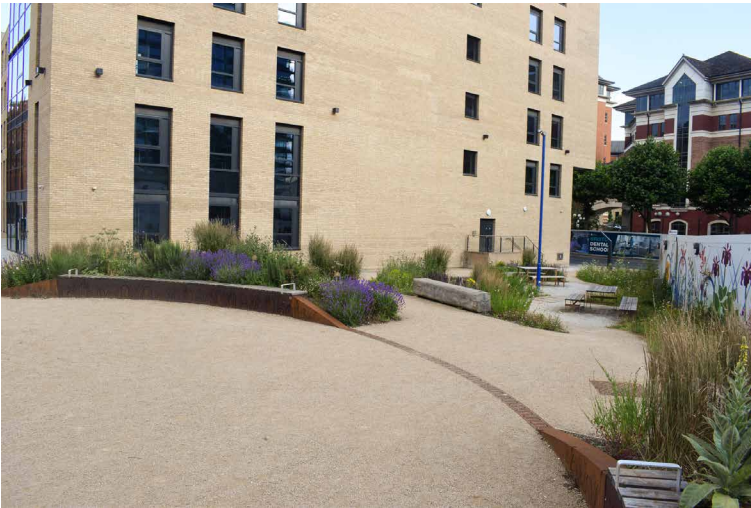


Fig. 6 - Glassfields Park is an urban wildlife sanctuary with ornamental planting and native wildflower meadows (photo: Alessio Russo, 2023).

for agriculture, new theories about letting vegetation grow and evolve emerged (Woudstra, 2004; Luscombe, Scott, 2020). In his vision of what are now known as 'biophilic cities', Louis Le Roy foresaw the prospect of nature invading residential areas (Woudstra, 2004; Luscombe, Scott, 2020).

In Germany, Richard Hansen developed his theory of planting design called the model of garden habitats (Körner, Bellin-Harder, Huxmann, 2016). Influenced by his work with Tüxen during the war, Hansen emphasised site conditions and vegetation adapted to those conditions, using this knowledge in his work with perennial plants (Körner, Bellin-Harder, Huxmann, 2016). Hansen's theory differed from Tüxen in that he considered gardens as cultural and designed spaces, not solely focused on natural plant associations. Hansen aimed to use plants that fit their ecological niche, allowing them to 'live and survive' with minimal maintenance. He believed that natural dynamics should be experienced in a mature garden, which he considered the optimal stage of vegetation development. Hansen criticised the ecological form of the Nature Garden movement, which promoted natural recolonisation of soil, arguing that it led to unsightly grass and herb vegetation (Körner, Bellin-Harder, Huxmann, 2016).

In Italy, prominent figures in the field of twentieth-century planting design include Pietro Porcinai and Maria Teresa Parpagliolo (Dumpelmann, 2002). Porcinai's travels in Germany exposed him to German landscape architecture principles, particularly those related to ecology and phytosociology (Stryker, 2008). During the XII International Horticulture Congress in 1938, Porcinai met influential figures, including Seifert, Hermann Mattern, and Otto Valentien. He also attended design classes at the Dahlem-Berlin Institute, further enriching his understanding of landscape architecture and design principles (Stryker, 2008). Porcinai's later work in Italy merged his practical experiences in Germany with the theoretical underpinnings he had adopted, re-

sulting in a unique synthesis of horticultural expertise and a comprehensive understanding of ecological principles and phytosociology. This synthesis is further highlighted by his 1950 publication in the *Rivista dell'Ortoflorofrutticoltura Italiana*, where he emphasised the importance of phytosociology in the art of garden design. Porcinai's harmonious blend of knowledge and experience drew him to Karl Foerster's creative perennial hybrids, as well as the pioneering ecological theories and support for native species championed by Lange and Seifert (Stryker, 2008).

Contemporary planting design movements and approaches

The New Perennial movement, also known as the 'Dutch Wave', is a style of naturalistic plant-driven design that takes inspiration from nature and emphasises perennial plants. It originated in Holland and Germany in the 1970s and 1980s, led by influential figures like Mien Ruys, Karl Foerster, and Henk Gerritsen (Karras, 2023). However, it gained widespread recognition thanks to Dutch garden designer Piet Oudolf, who brought this style to the global stage (Karras, 2023). The movement has gained popularity in recent years, particularly due to Oudolf's notable projects such as the High Line in New York City and Lurie Gardens in Chicago (Melchior, 2020). The terms 'naturalistic planting design' and 'new perennial planting' are frequently used interchangeably, suggesting a shared understanding among practitioners (Dunnett, 2019). However, it is important to note that contemporary naturalism is a broad concept encompassing various approaches and methodologies. In his book titled *Naturalistic Planting Design*, Professor Dunnett (2019) delineates three distinct 'strands' within contemporary naturalism: modernistic, technocratic, and impressionistic.

The modernistic strand, exemplified by Piet Oudolf's work, primarily relies on plant mixes and associations, with plant form serving as the primary criterion for selection. The arrangement of plants is cha-



Fig. 7 - Planting scheme at Orlysquare in Amsterdam (photo: Alessio Russo, 2019).

racterised by the use of drifts and intricate interconnections, creating a visually compelling composition (Dunnett, 2019). Piet Oudolf's planting style, developed in the 1970s, has its roots in Northern Europe (Kingsbury, 2014). Drawing inspiration from German nurseryman Karl Foerster and the English tradition of using masses of perennials in borders. Together with his wife Anja, he established a nursery to supply plants for his design business, as well as cater to private gardeners and other designers (Kingsbury, 2014). Oudolf's style has evolved but maintains some core concepts. He prioritises plants with good structure and longevity over vibrant colours, believing that a plant's value lies not only in its flowering phase but also in its appearance throughout the growing season, including its seed stage (Kingsbury, 2014).

118 Piet Oudolf's approach to garden design has evol-

ved to incorporate dynamic living processes. In the past, Oudolf, like other naturalistic designers, arranged plants in discrete blocks, which appeared intermingled from a distance but were static and oversimplified up close (Oudolf, Darke, 2017). In 2004, Oudolf experimented with a matrix-based design in Chicago's Lurie Garden, which was well-received for its dynamism (Oudolf, Darke, 2017). When invited to join the High Line design team, Oudolf decided to adapt matrix design on a larger scale. The result is a series of gardens that appear spontaneous and dynamic because they are designed to evolve over time (Oudolf, Darke, 2017). The gardens combine locally adapted, long-lived plants in layered associations, drawing inspiration from wild communities without replicating them exactly. This approach embraces naturalisation and allows the plantings to change gra-



Fig. 8 - Planting scheme at Orlysquare in Amsterdam (photo: Alessio Russo, 2019).

dually as different species respond to shifting conditions, such as changing levels of shade from trees or new buildings (Oudolf, Darke, 2017).

The technocratic approach can be understood as the incorporation of scientific ecological principles with the horticultural practice of cultivating plants in designed and managed environments, referred to as ecological horticulture (Dunnett, 2019). Technocratic naturalism emphasises rigorous scientific measurement, extensive record-keeping, experimental trials, and the classification of plants into various ecological categories to inform design decisions. A central principle of this approach is the prioritisation of ecological compatibility as the primary factor driving plant selection. Moreover, it involves using 'reference' natural or semi-natural plant communities as the foundation for designing analogous commu-

nities (Dunnett, 2019). Technocratic naturalism is closely linked to the German tradition of contemporary naturalistic planting design (Dunnett, 2019). In Germany, this approach developed through the contributions of Professor Cassian Schmidt and his research conducted at Hermannshof (Schmidt, Schmitz, Guzzon, 2021). Professor Schmidt drew inspiration from plant-geographical design and the methodology outlined in Richard Hansen's influential publication, *Perennials and their habitats in gardens and green spaces*. Building upon these foundations, Schmidt devised a plant sociology approach that places a heightened emphasis on the dynamic nature of plant communities, coexistence among species, and the occurrence of random fluctuations, diverging from Hansen's approach (Schmidt, Schmitz, Guzzon, 2021).

In the United Kingdom, Professors James Hitchmough and Nigel Dunnett from Sheffield University spearheaded the 'Sheffield School Approach', which falls within the technocratic category (Dunnett, Hitchmough, 2004; Hitchmough, 2008; Dunnett, 2019). This approach focuses on establishing sown, naturalistic urban plantings using a combination of native and non-native species. The desired outcome is a naturalistic aesthetic characterised by random distribution patterns achieved through on-site seed sowing. This approach differs from intentional and clustered plantings commonly observed in American projects, exemplified by the work of Piet Oudolf and Oehme and Van Sweden (Alizadeh, Hitchmough, 2019; Dunnett, 2019).

The literature highlights the existence of divergent perspectives regarding plant selection in urban environments. The *Native Plant Movement*, in contrast to the approach adopted by James Hitchmough and Nigel Dunnett, offers an alternative viewpoint. While the *Native Plant Movement* strongly emphasises the preference for indigenous plant species, Hitchmough and Dunnett also acknowledge the potential benefits of incorporating non-native plants into naturalistic urban plantings.

The emergence of the *Native Plant Movement* can be seen as a response to the Nativist trends observed in Conservation Biology, which has led to a bias among environmentalists against alien species (Peretti, 1998). This movement places particular emphasis on utilising indigenous plant species, which are native to specific geographic regions, in urban landscape projects (Peretti, 1998).

Lastly, impressionistic naturalism encompasses an artistic approach that explores plant combinations and associations, guided by an understanding of colour relationships (Dunnett, 2019). Prominent designers such as Dan Pearson, Sarah Price, and Tom Stuart-Smith practice this approach, utilising a contemporary ecological sensibility (Dunnett, 2019).

Revitalising contemporary urban landscapes: examining the influence of planting design through case studies in the UK, the Netherlands, and Russia

In this section, various contemporary projects involving planting design in public urban spaces were analysed through the method of case studies and site visits. The selected projects in three countries - the UK (London and Bristol), the Netherlands (Amsterdam), and Russia (Moscow) - were examined for the positive impact of designed plant communities on the regeneration of these areas.

The first case study, The Barbican Beech Gardens, is an influential project located in London, UK. The Barbican is a distinguished arts and conference complex that includes residential units. Constructed in the 1970s, it has gained recognition for its iconic Brutalist architecture and its innovative concept of a self-contained 'urban village' which intelligently separates residential and public spaces (Dunnett, 2019).

Initially, the Barbican Beech Gardens featured a traditional planting scheme characterised by the presence of large trees, shrubs, lawns, and seasonal bedding. These elements were watered using drinkable water. However, a transformative design by Professor Dunnett has brought about a shift towards a more sustainable and naturalistic approach, deviating from the traditional monocultural blocks with meticulously trimmed lawns. The previous roof gardens demanded extensive maintenance and irrigation. However, in 2015, after the roofs were re-waterproofed, Professor Nigel Dunnett introduced new plantings based on his design (Dunnett, 2019).

The new planting scheme at The Barbican Beech Gardens focuses on three main 'Designed Plant Communities' suitable for different microclimates on the site, based on sun exposure. These communities include steppe plantings for full sun areas, shrub steppe plantings that combine perennials, grasses, and low-density shrubs for multi-layered plantings, and light woodland plantings for part-shade areas whe-

re trees can grow. The aim is to create continuous waves of colour throughout the year, with specific plant species repeated across the entire site to maximise impact. The design incorporates layers of plants, with naturalistic swathes of perennials and grasses framed by multi-stemmed trees and shrubs, providing a three-dimensional framework (figg. 2-3) (Dunnett, 2019). The integration of the naturalistic planting approach harmonises effectively with the distinctive Brutalist architecture (Dunnett, 2019).

Glassfields¹ in Bristol is a project by B|D Landscape Architects, commissioned by RLAM for the development of a meanwhile park. Located in close proximity to Temple Meads railway station, the park was designed to be in place for at least three years and aimed to reintroduce nature to the brownfield site. The planting scheme includes native wildflower meadows, ornamental planting, tree planting, and wildlife stations (figg. 4-6). Visitors are guided by wayfinding features and pathways to a central event space that was inspired by glassblowing and bottle making. The park serves as an urban wildlife sanctuary, providing numerous ecosystem services and enhancing the wellbeing of visitors.

Orlysquare in Amsterdam², developed by the City of Amsterdam and the Department of Environmental Planning and Sustainability, transformed a former parking space into a green and sustainable public square. The design is inspired by the native flora and fauna of the Brettenzone, featuring plants like June berries, hawthorn, and purple moor grass. The planting design includes wildflower meadows with small trees, botanical roses, grasses, perennials, and bulbs, with 60% of the herbaceous plants being ornamental grasses (figg. 7-8). The square's landscape also serves a functional purpose by making it rain-proof, utilising a special construction of moisturising underground panels. This allows the plants to grow in just 30cm of soil. The square attracts people and animals while providing a visually appealing and fragrant landscape.

Zaryadye Park³, located in Moscow, Russia, stands as a testament to the innovative concept of Wild Urbanism, seamlessly blending elements of nature and man-made structures to create a distinctive and contrasting experience within the city's landscape. This exceptional project serves not only as a symbol of urban regeneration but also as a prime example of recycling in the field of landscape architecture.

Situated within the renowned Boulevard Ring, Zaryadye Park holds the distinction of being the first park constructed in this area. It serves as a cultural attraction and a vital link within Moscow's pedestrian zones, facilitating dialogue and exploration of Russia's rich history, natural heritage, scientific advancements, artistic expressions, and the prospects of both Moscow and the entire nation.

In 2013, an international competition was held to solicit landscape and architectural design concepts for the Zaryadye park zone, aiming to create a state-of-the-art park on the site of the obsolete Rossiya Hotel. The winning proposal was submitted by an international consortium that included architects from the prestigious New York firm Diller Scofidio + Renfro and landscape architects from Hargreaves Associates.

The park's layout captures the essence of wild urbanism through a harmonic blending of various plant communities and architectural types. It encompasses four distinct landscape zones: forest (including mixed, coniferous, coastal, and birch grove areas), steppe, meadow, and northern landscapes. Each zone boasts a unique soil composition and hosts a botanical collection sourced from various regions of Russia. Zaryadye Park features an impressive array of flora, comprising 760 trees, 7,000 shrubs, 860,000 perennials, and 150,000 annual plants (figg. 9-10).

Among the park's botanical treasures are several rare and exceptional species, including dwarf pines, dwarf birches, spear grass, arctic raspberry, and various willows. Furthermore, the park's botanical collection encompasses plants listed in the Moscow Red

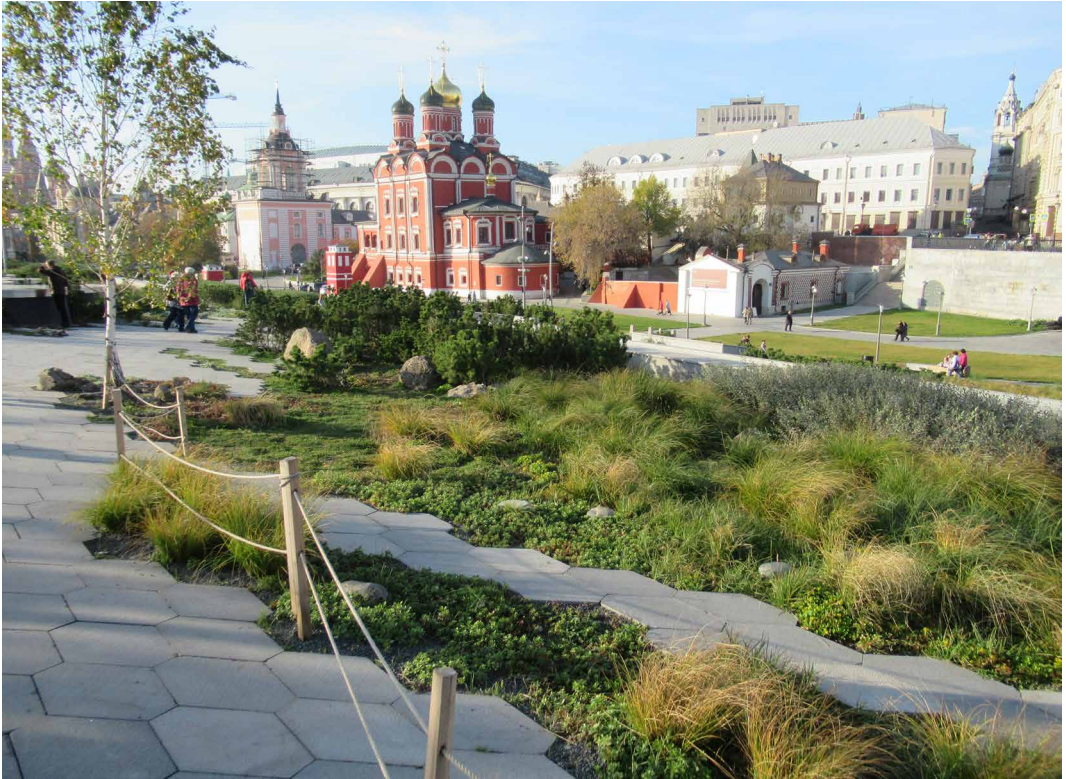


Fig. 9 - Diverse plant communities thriving at Zaryadye Park in Moscow, Russia (photo: Alessio Russo, 2018).

List, such as thyme, Solomon's seal, lily of the valley, amethyst sea holly, globeflower, and maiden pink.

Discussion and conclusions

The integration of ecological principles into city design and planning is not merely a passing trend or aesthetic preference; it is an urgent imperative for creating resilient, sustainable, and liveable urban environments (Russo, Cirella, 2020). This paper presents several case studies that exemplify new planting schemes implemented with an ecological approach, emphasising their positive influence on urban regeneration and placemaking.

Traditional urban landscapes have often prioritised aesthetics and functionality over ecological considerations, resulting in sterile, monocultural spaces that fail to nurture biodiversity or provide ecosystem services. In contrast, ecological planting schemes em-

brace a holistic approach, incorporating a deep understanding of ecological principles to create dynamic, biodiverse landscapes that enhance both the aesthetic and functional aspects of urban spaces.

The literature presents conflicting opinions on the use of native species, with some advocating for their central role in ecological landscape design. However, the topic is still being debated, and its definition is ambiguous (Berthon, Thomas, Bekessy, 2021). The case studies discussed in this paper also highlight the use of native species. For example, Zaryadye Park in Moscow utilised not only local species from the Moscow region but also plants from various regions of Russia. This particular case illustrates the ambiguity surrounding the concept of 'nativeness' in the context of urban planting (Berthon, Thomas, Bekessy, 2021).

In urban greening initiatives, it is necessary to define



Fig. 10 - Diverse plant communities thriving at Zaryadye Park in Moscow, Russia (photo: Alessio Russo, 2018).

native species or native plant communities more precisely. It is important to clarify whether “native” means species that are indigenous to a country or a particular area, and whether native planting plans need to carefully follow provenance.

While native plants are more likely to increase biodiversity in urban green spaces (Berthon, Thomas, Bekessy, 2021), they may be more vulnerable to climate change. The case studies presented in this paper not only provide evidence-based design principles for incorporating ecological planting systems into urban regeneration projects but also represent examples of biodiversity-positive design in cities. These schemes enhance the visual appeal of urban spaces and provide valuable habitat for a variety of wildlife, contributing to urban biodiversity conservation. Additionally, the regeneration of urban environments through designed plant communities has the

potential to conserve endemic species in urban areas. Apart from their aesthetic and ecological benefits, innovative planting systems can also offer economic advantages by reducing maintenance costs and water requirements. However, despite these potential benefits, the widespread adoption of ecological planting design, particularly in urban areas, remains limited (Tian, 2022). This constraint is evident in the most common planting methods in the United States, such as monocultural block planting for stormwater management and habitat creation, which often fail to achieve the desired levels of biodiversity and ecosystem function (West, Hong, 2020).

While the case studies presented in this paper primarily focus on European contexts, future research should broaden its scope to encompass a diverse range of geographical locations. In conclusion, it is important to understand people’s perceptions and de-

mands surrounding these new planting systems, notably the concept of 'Wild aesthetics' in various parts of the world. Acceptance and use of urban meadow vegetation, for example, are determined by how people perceive and respond to such spaces (Southon et al., 2017). As a result, it is critical to involve the public in the design of urban meadows so that they are viewed as useful and appreciated spaces. Education and community outreach efforts can help to raise knowledge of the ecological benefits of urban meadows and debunk myths about their look and management. By creating a new aesthetic perception and using planting systems inspired by ecological crite-

ria, we can increase biodiversity while simultaneously improving human well-being. These efforts will not only make our cities more beautiful and liveable but also help to address the pressing challenges of climate change and biodiversity loss.

Note

¹The project description was sourced from the official website of BJD Landscape Architects, who were involved in all phases of the project from 2020 to 2022.

²The description of Orlysquare was synthesised from information published online in Landezine in 2023.

³Information about Zaryadye Park is derived from the official website of the park (Zaryadye Park, 2022).

References

- Alizadeh B., Hitchmough J. 2019, *A review of urban landscape adaptation to the challenge of climate change*, «International Journal of Climate Change Strategies and Management», vol. 11, n. 2, pp. 178-194.
- BJD Landscape Architects 2023, *Glassfields, Bristol*, <<https://bdlandarch.com/glassfields-bristol/>> (06/2023).
- Beck T. 2013, *Principles of Ecological Landscape Design*, Island Press/Center for Resource Economics, Washington, DC.
- Berthon K., Thomas F., Bekessy S. 2021, *The role of "nativeness" in urban greening to support animal biodiversity*, «Landscape and Urban Planning», vol. 205, p. 103959.
- Dumpelmann S. 2002, *Maria Teresa Pargagliolo Shephard (1903-74): Her Development as a Landscape Architect between Tradition and Modernism*, «Garden History», vol. 30, n.1, p. 49.
- Dunnett N. 2019, *Naturalistic Planting Design: The Essential Guide*, Filbert Press, Great Britain.
- Dunnett N., Hitchmough J. (eds.) 2004, *The Dynamic Landscape: Design, Ecology and Management of Naturalistic Urban Planting*, Taylor & Francis, London.
- Fay, J. 2023, *What is the picturesque?* <<https://www.nationaltrust.org.uk/discover/history/gardens-landscapes/what-is-the-picturesque>> (06/2023).
- Groening G., Wolschke-Bulmahn, J. 1992, *Some Notes on the Mania for Native Plants in Germany*, «Landscape Journal», vol. 11, n. 2, pp. 116-126.
- Heatherington C., Sargeant J. 2005, *A New Naturalism*, Packard Publishing, Chichester, UK.
- Hitchmough J. 2017, *Sowing Beauty: Designing Flowering Meadows from Seed*, Timber Press, Portland, Oregon.
- Hitchmough J. D. 2008, *New Approaches to Ecologically Based, Designed Urban Plant Communities in Britain: Do These Have Any Relevance in the United States?*, «Cities and the Environment (CATE)», vol. 1, n. 2, p. 10.
- Hobhouse P. 2004, *Plants in Garden History: An Illustrated History of Plants and Their Influences on Garden Style*, Pavilion Books, London.
- Hodgson I. 2016, *New Wild Garden: Natural-style Planting and Practicalities*, Frances Lincoln, Islington.
- Ignatieva M. E., Stewart G. H. 2009, Homogeneity of urban biotopes and similarity of landscape design language in former colonial cities, in McDonnell M. J., Hahs A. K., Breuste J. H. (eds.) *Ecology of Cities and Towns*, Cambridge University Press, pp. 399-421.
- Karras C. 2023, *How To Create A Dream-Like, Naturalistic Garden With The 'New Perennial Movement'*, *The Design Files*, <<https://thedesigntfiles.net/2023/06/gardens-explainer-new-perennial-movement>> (06/2023).

- Kingsbury N. 2014, *Gardening with Perennials: Lessons from Chicago's Lurie Garden*, University of Chicago Press, Chicago.
- Kingsbury N., Takacs C. 2022, *Wild: The Naturalistic Garden*, Phaidon, London.
- Körner S., Bellin-Harder F., Huxmann N. 2016, *Richard Hansen and modern planting design*, «Journal of Landscape Architecture», vol. 11, n.1, pp. 18–29.
- Landezine 2023, *Orlysquare Amsterdam by City of Amsterdam + Department of Environmental Planning and Sustainability*. <[https://landezine-award.com/orlysquare-amsterdam/#:~:text=The Orlysquare%2C also called%3A Orlyplein,the doorstep of the station](https://landezine-award.com/orlysquare-amsterdam/#:~:text=The%20Orlysquare%2C%20also%20called%3A%20Orlyplein,the%20doorstep%20of%20the%20station)> (06/2023).
- Leathlean H. 1995, *From Gardenesque to Home Landscape: The Garden Journalism of Henry Noel Humphreys*, «Garden History», vol. 23 n.2, p. 175.
- Lennox-Boyd A., Perry C., Thomas G. S. 2003, *Traditional English Gardens: Published in Association with the National Trust*, Seven Dials, London.
- Luscombe G., Scott R. 2020, Creative Conservation, in Douglas I. et al. (eds.) *The Routledge Handbook of Urban Ecology*. Routledge, New York, pp. 694–710.
- Masood N., Russo A. 2023, *Community Perception of Brownfield Regeneration through Urban Rewilding*, «Sustainability», vol. 15, n.4, p. 3842.
- Massingham B. 1978, *William Robinson: A Portrait*, «Garden History», vol. 6, n1, pp. 61–85.
- Melchior C. 2020, *Learning the Language of Contemporary Planting Design, Land8*. <<https://land8.com/learning-the-language-of-contemporary-planting-design/>> (06/2023).
- Oudolf P., Darke R. 2017, *Gardens of the High Line: Elevating the Nature of Modern Landscapes*, Timber Press, Portland, Oregon.
- Pardi R. et al. 2023, *Forest nurseries and the National Recovery and Resilience Plan: the case of Sicily and Apulia (Italy)*, «Italian Botanist», vol. 15, pp. 49–63.
- Peretti J. H. 1998, *Nativism and nature: Rethinking biological invasion*, «Environmental Values», vol. 7, n. 2, pp. 183–192.
- Rainer T., West C. 2015, *Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes*. Timber Press, Portland, Oregon.
- Russo A., Chan W. T., Cirella G. T. 2021, *Estimating Air Pollution Removal and Monetary Value for Urban Green Infrastructure Strategies Using Web-Based Applications*, «Land», vol. 10, n.8, p. 788.
- Russo A., Cirella G. T. 2020, *Urban Sustainability: Integrating Ecology in City Design and Planning*, in Cirella G. T. (ed.) *Sustainable Human--Nature Relations: Environmental Scholarship, Economic Evaluation, Urban Strategies*, Springer Singapore, Singapore, pp. 187–204.
- Schmidt C., Schmitz A., Guzzon G. 2021, *Cassian Schmidt - An Interview From Gartenpraxis*, <<https://federaltwist.com/blog/cassian-schmidt-an-interview-from-gartenpraxis>> (06/2023).
- Sellers V. B. 2003, *The Eighteenth Century: From Geometric to Informal Gardens, Heilbrunn Timeline of Art History. New York: The Metropolitan Museum of Art*, <http://www.metmuseum.org/toah/hd/gard_3/hd_gard_3.htm> (06/2023).
- Southon G. E. et al. 2017, *Biodiverse perennial meadows have aesthetic value and increase residents' perceptions of site quality in urban green-space*, «Landscape and Urban Planning», vol. 158, pp. 105–118.
- Stryker K. S. 2008, *Pietro Porcinai and the modern Italian garden*, «Studies in the History of Gardens & Designed Landscapes», vol. 28, n. 2, pp. 252–269.
- Tian L. 2022, *Analysis of the Artistic Effect of Garden Plant Landscaping in Urban Greening*, «Computational Intelligence and Neuroscience», vol. 2022, pp. 1–8.
- Turner T. 2005 *Garden History: Philosophy and Design 2000 BC – 2000 AD*, Routledge, London, UK.
- Turner T. H. D. 1982, *Loudon's stylistic development*, «Journal of Garden History», vol. 2, n. 2, pp. 175–188.
- Walker T. D. 1991, *Planting Design*, Wiley, New York.
- West C., Hong W. 2020, *The Next Green Revolution: Rebuilding Urban Abundance Through Plant Community-Based Design*, «Landscape Architecture», pp. 8–24.
- Wolschke-Bulmahn J. 1992, *The "Wild Garden" and the "Nature Garden"—aspects of the garden ideology of William Robinson and Willy Lange*, «The Journal of Garden History», vol. 12, n. 3, pp. 183–206.
- Woudstra J. 2004, *The changing nature of ecology: A history of ecological planting (1800–1980)*, in Dunnett N., Hitchmough, J. (eds.) *The Dynamic Landscape: Design, Ecology and Management of Naturalistic Urban Planting*, Taylor & Francis, London, pp. 33–80.
- Zaryadye Park 2022, *Zaryadye Park – the new symbol of Moscow*. <<https://test.zaryadyepark.ru/en/smi/welcome-to-zaryadye/>> (06/2023).