

VERTICAL Reforestation

Reactivating Geneva's Squares. Nature, Memory, and Participation.

ROOTS OF TRANSFORMATION



Historic continuity
The contemporary city faces an ecological and social turning point. Geneva, shaped by centuries of negotiation between nature and walls, water and movement, now enters a new phase. Since the breaking of its fortifications, urban expansion has drawn nature inward, yet fragmentation persists.

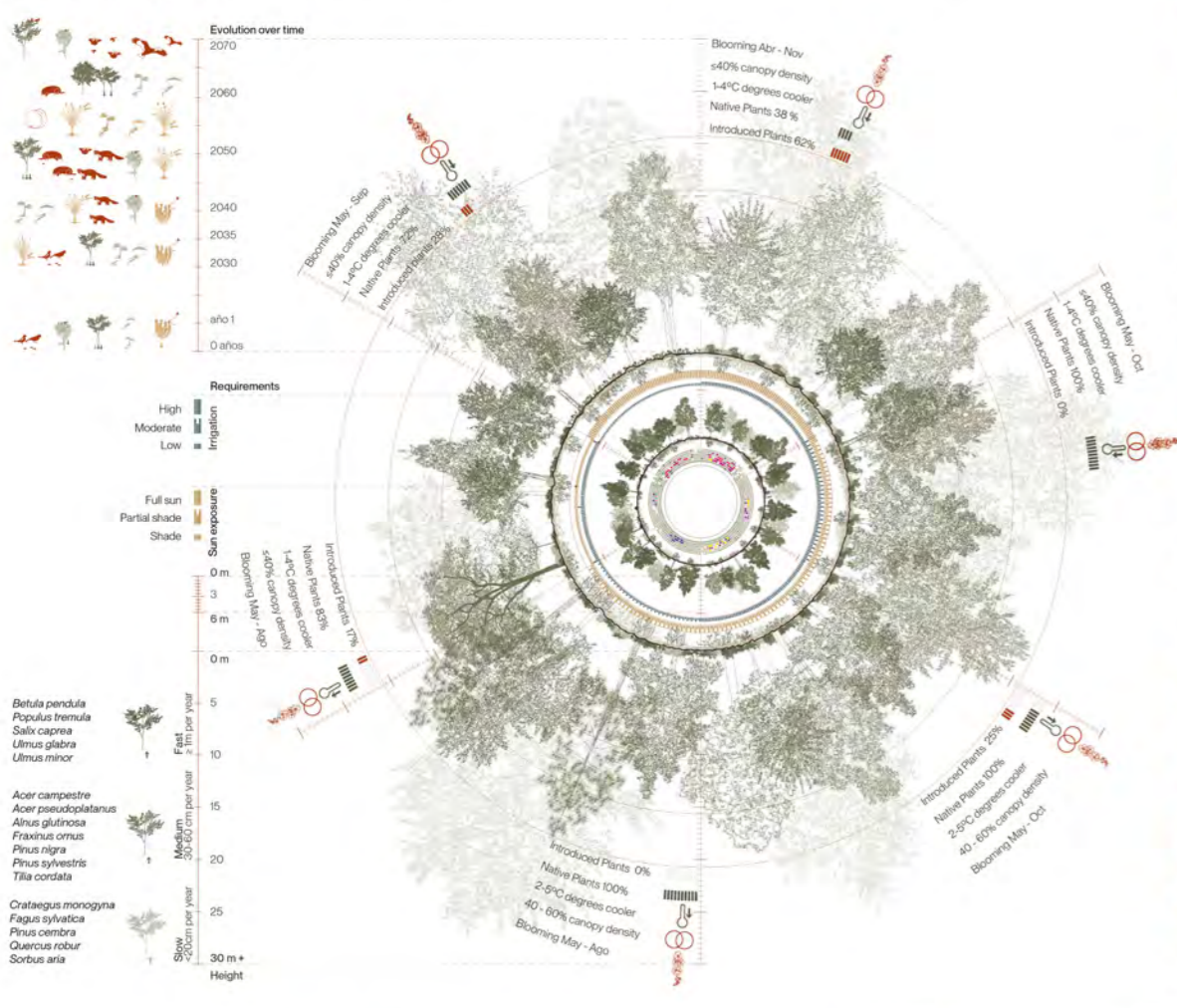


Plant behavior
The selection of medium and low stratum plant species was based on the creation of modules that support the preservation of native species, adding value to each site through their physical and sensory characteristics.



Ecological urgency
Today, the city finds itself at a crossroads. Facing the challenges of climate change, heat islands, and social fragmentation, it must redefine how it moves, breathes, and grows.

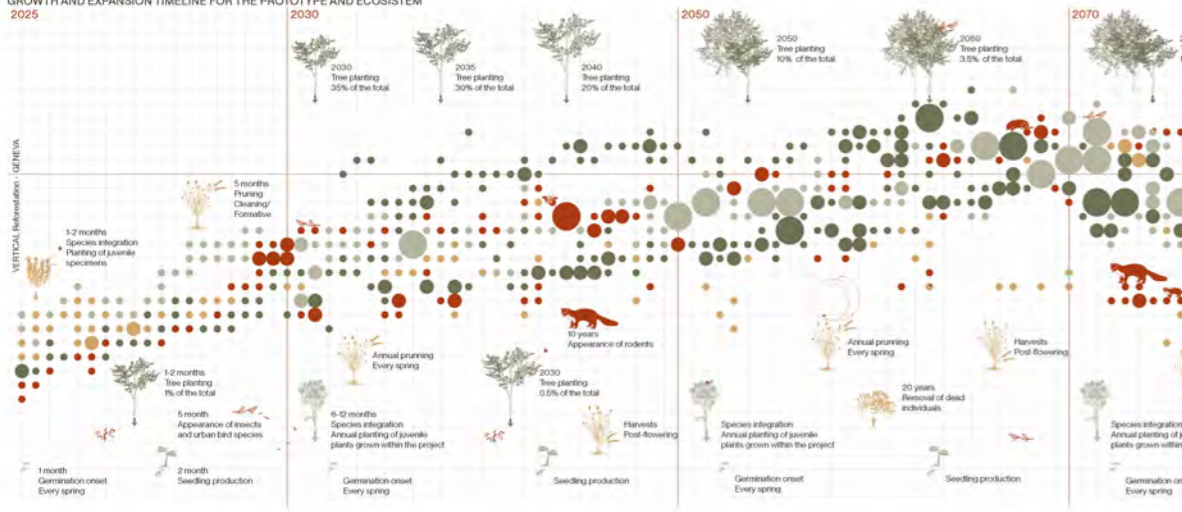
SELECTION OF POTENTIAL SPECIES FOR SHELTERS DURING HEAT PEAKS



Squares in Motion
Through layered cartography, we explore the intersections of urban morphology, mobility (both private and public), thermal intensity and ecological potential. Particular attention is given to how these squares relate to Geneva's natural systems, the rivers, lake, and public transport.

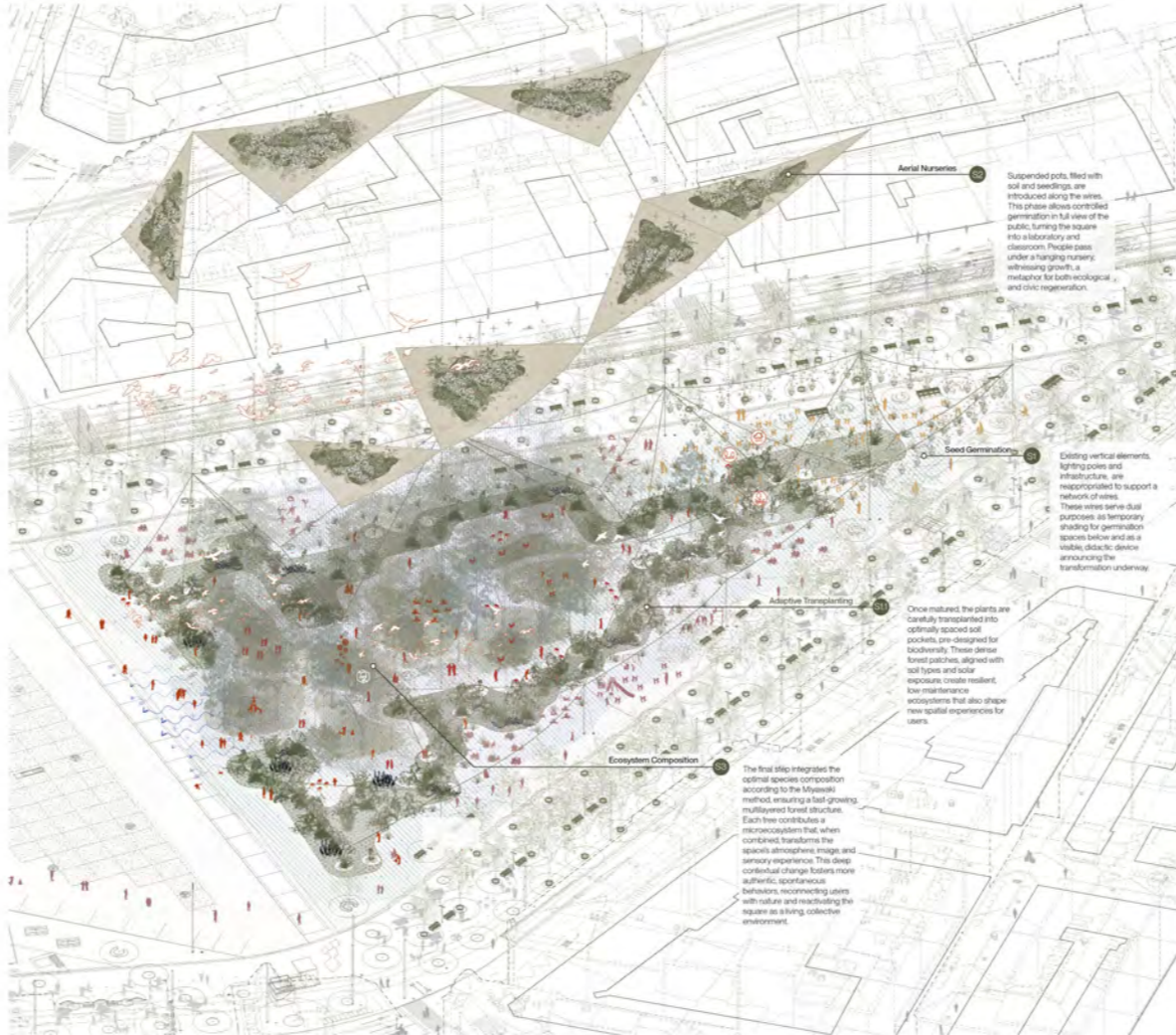
Reverse integration
Finally, we propose a reverse integration strategy. Instead of expanding green zones from the periphery, we initiate a re-naturing from within, coloring the city's hardest surfaces with micro-forests, transforming the city from a heat island into a living canopy.

GROWTH AND EXPANSION TIMELINE FOR THE PROTOTYPE AND ECOSYSTEM

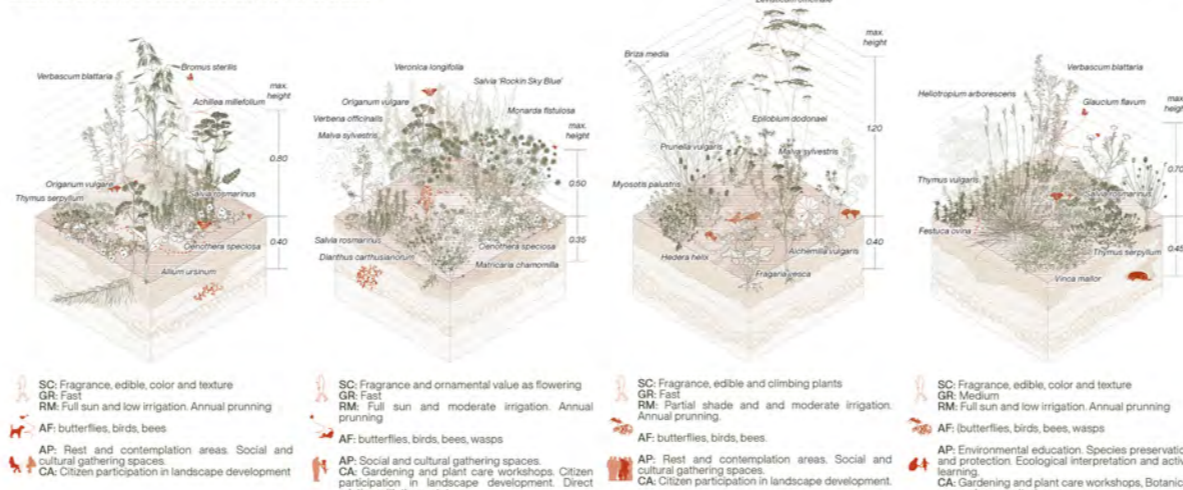


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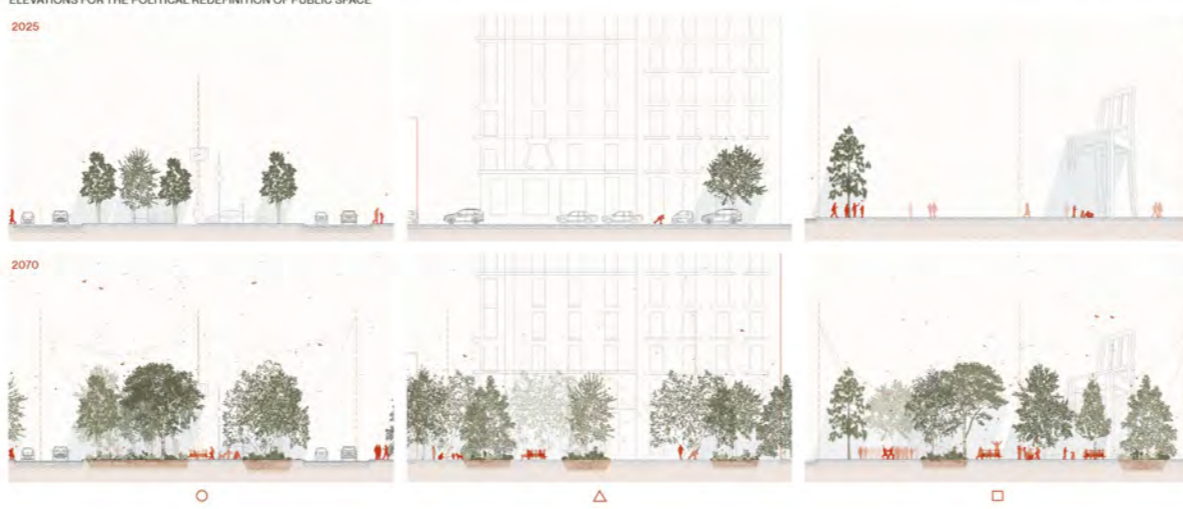
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SELECTION OF PLANT SPECIES FOR BIOLIMATIC MICROFORESTS



ELEVATIONS FOR THE POLITICAL REDEFINITION OF PUBLIC SPACE

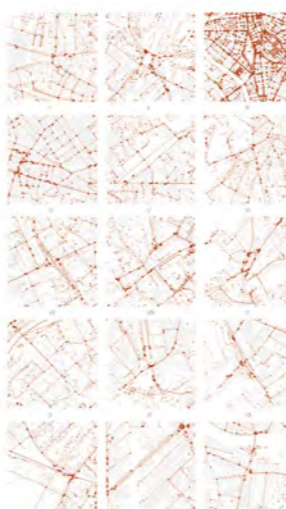


SQUARE AS SYSTEM



CASE OF STUDY
Plan Palais becomes a testing ground for ecological infrastructure. The intervention is not singular, but a constellation of elements working in stages, reflecting the Miyawaki method.

1. Seed germination (Stage 1): Wees suspended between existing poles form the base of shaded public space and support initial germination environments.
2. Aerial Nurseries (Stage 2): Hanging planters allow early growth, contributing to public visibility and education.
3. Ecosystem Composition (Stage 3): Once mature, plants are transplanted to the soil in species-optimized formations to create dense, autonomous micro-forests.



FIELD CONDITIONS
The city is understood not as a collection of isolated forms, but as a mutable field shaped by gradients, repetitions, and localized variations.

COLLECTIVE SOCIAL AND ECOLOGICAL SOLIDIFICATION



THREE TYPOLOGICAL CONDITIONS



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CULTIVATING PARTICIPATION



Pole Clamp - Anchorage to the existing urban structure
The pole clamp adapts to the variety of pole formats existing in the city serving as the anchoring point for the catenaries. The tensions must be balanced with opposite forces.



Ground anchorage - Stabilisation of the system
The guy-wire transfers the forces of the new hanging structure to the ground, where it is anchored with a rod embedded in the soil.



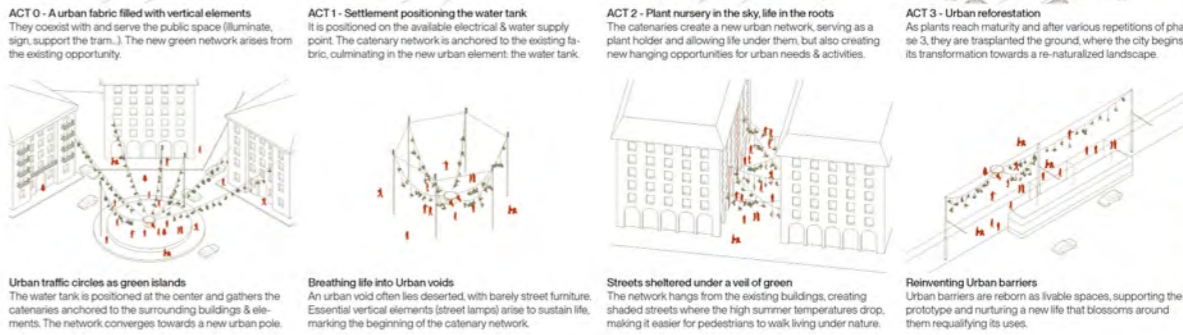
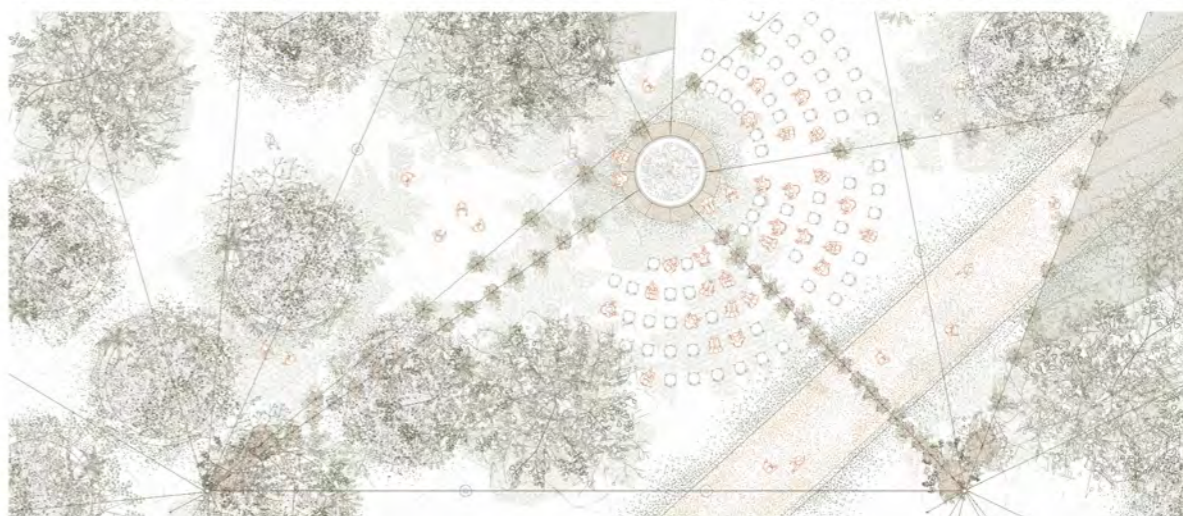
Pulley - Distribution of force loads
Located at the top of the beginning of the catenary, it equilibrates the loads of the wire with a line resting on the ground, which 'supports' the weight of the hanging plants.



Hanging pot (non-rigid)
A middle-aged tree at the end of the pulley counteracts the total weight of the small plants hanging from the catenary. The tree completes the species module of its own catenary.



The urban Impulsum
The water tank supports the end of the catenaries and supplies the loads of the wire with a line resting on the ground to irrigate the plants in the pots through a drip system.



ACT 0 - A urban fabric filled with vertical elements
The water tank is positioned at the center and gathers the catenaries anchored to the surrounding buildings & elements. The network converges towards a new urban pole.

ACT 1 - Settlement positioning the water tank
It is positioned on the available electrical & water supply sign support (the tram). The new green network arises from the existing opportunity.

ACT 2 - Plant nursery in the sky, life in the roots
The catenaries create a new urban network, serving as a plant holder and allowing the ground, where the city begins its transformation towards a re-naturalized landscape.

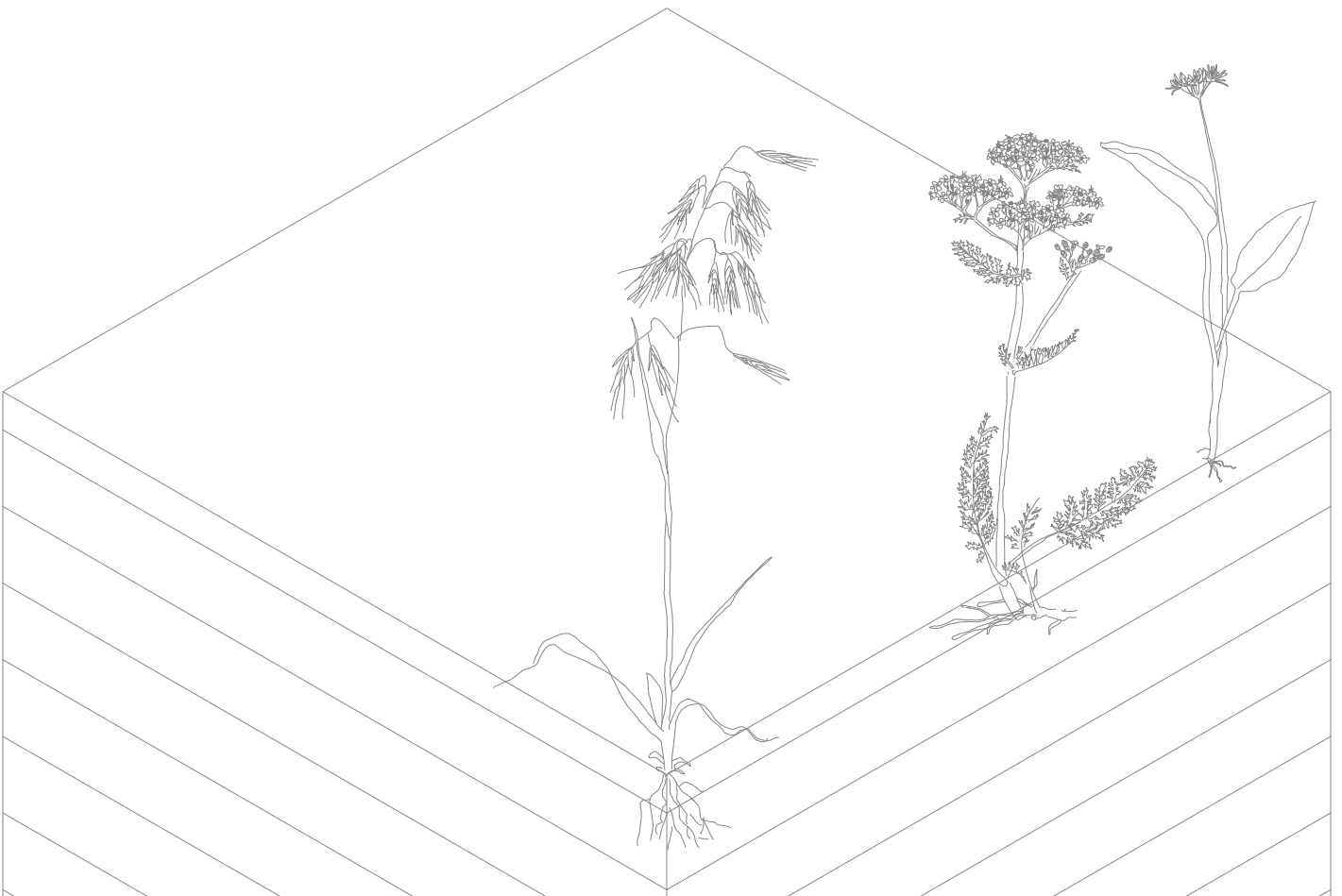
ACT 3 - Urban reforestation
As plants reach maturity and after various repetitions of phase 3, they are transplanted to the ground, where they begin their transformation towards a re-naturalized landscape.

Urban traffic circles as green islands
The water tank is positioned at the center and gathers the catenaries anchored to the surrounding buildings & elements. The network converges towards a new urban pole.

Reinventing Urban barriers
Urban barriers are reborn as visible spaces, supporting the prototype and nurturing a new life that blossoms around them requalifying its uses.

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REACTIVATING GENEVA'S SQUARES. NATURE, MEMORY, AND PARTICIPATION





The future of Geneva is seeded in its past.

For centuries, the city grew behind protective walls, shaped by defensive constraints and topographical limits. When those fortifications were dismantled, the city expanded outward, gradually absorbing the surrounding landscape. Yet this expansion fragmented Geneva's deep relationship with its natural heritage. As streets, infrastructure, and impervious surfaces multiplied, vegetation retreated and urban heat intensified. Today, Geneva is at a crucial turning point. Pressured by the climate emergency, the rise of urban heat islands, and increasing social and spatial disconnection, it must rethink its public spaces, mobility systems, and ecological foundations. This proposal positions reforestation, rooted in the Miyawaki method, as both a strategy and a system. The project unfolds across three scales: the city and its historic evolution, the typology of its squares, and the experience of its citizens.

We begin at the metropolitan level, where the city's morphology reveals a fragmented network of public squares, often isolated and divorced from natural systems. Using layered cartography, we analyze their spatial and thermal relationships to Geneva's rivers, lake, and historic forest edges. These spaces, once central to civic life, now float as underutilized nodes amid heat-retaining hardscapes.

A vegetation calendar aligned with the Miyawaki method proposes native species for year-round planting, ecological resilience, and rapid growth. This calendar integrates with Geneva's climate adaptation strategies for 2030 and 2070, positioning reforestation not as decoration but as urban infrastructure. We invert the traditional model of green expansion from the periphery and propose a re-naturing from within, initiating dense ecological micro-forests in the city's core.

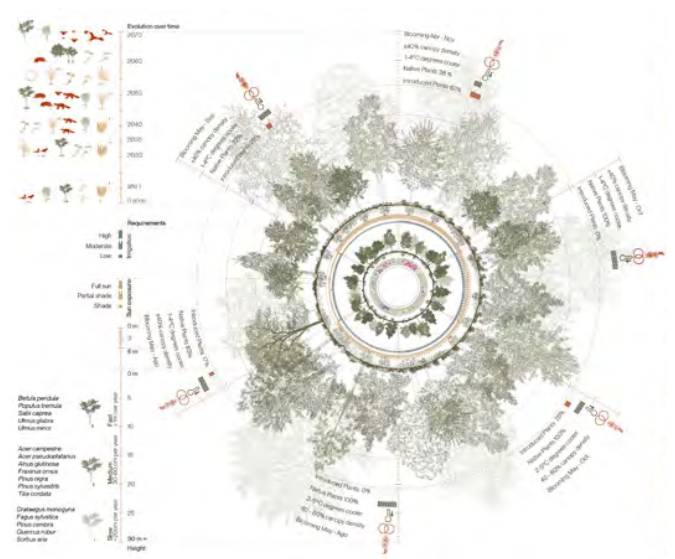
GROWTH AND EXPANSION TIMELINE FOR THE PROTOTYPE AND ECOSYSTEM





Selection of species for shelters during heat picks

The integration and organization of the proposed tree planting was structured into six grouping modules, defined by the characteristics of each species according to aesthetic criteria, such as chromatic harmony throughout the year, flowering, color tones, and the shape and texture of the foliage, and essential technical aspects for their development, including irrigation needs, sunlight requirements, maintenance demands, functionality (productive or ecological), environmental compatibility, and their status in Geneva (considering native species and their territorial representation). The broad biodiversity of species is essential for the city's reforestation, contributing a variety of characteristics that help redefine the meaning of public space and coexistence with the living organisms that accompany urban vegetation. This selection makes it possible to incorporate the temporal variable "Evolution over time," which considers the relationship between vertical stratification and projected human activities throughout the life cycle of each species, generating aesthetic, technical, and architectural program diversity within a single site.

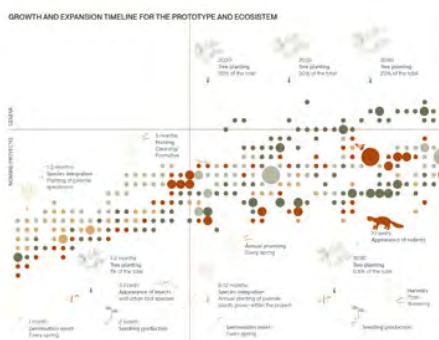


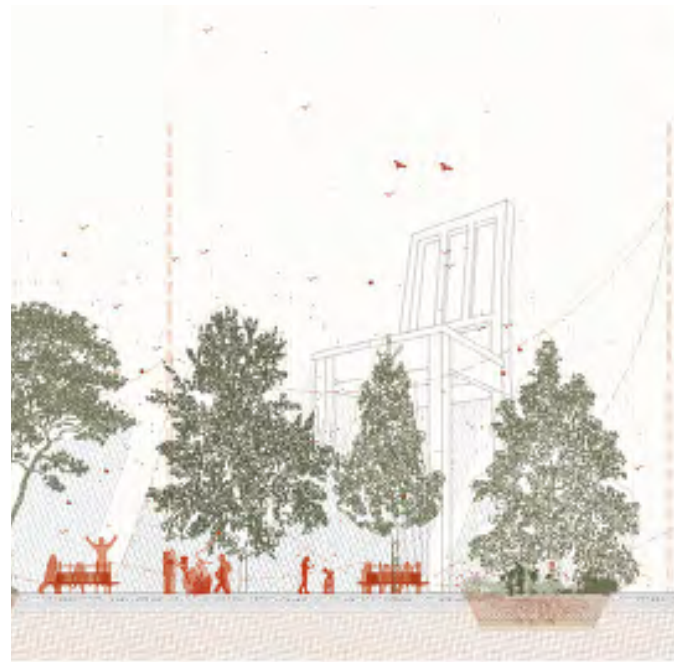
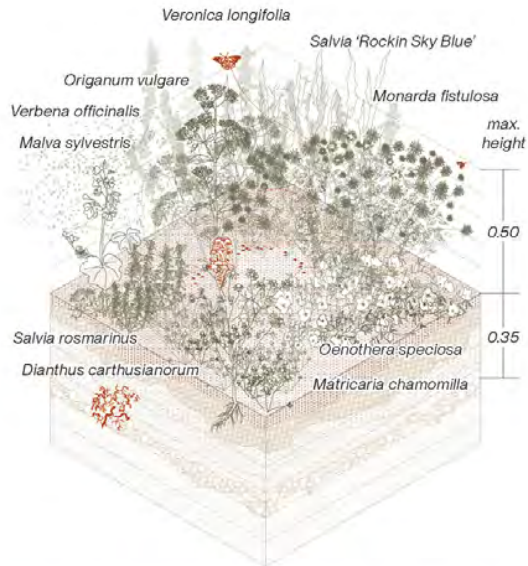
At the scale of the square, reforestation becomes actionable. A prototype is developed and tested at Plan Palais, not as a static landscape element but as a dynamic and participatory process.

The intervention unfolds in three ecological and spatial stages:

In **Stage 1**, existing vertical elements such as light poles are repurposed to carry wires that define shaded areas for seed germination. This structure marks a visible shift in the space, creating new shaded microclimates and didactic installations. In **Stage 2**, aerial pots are suspended along the wires, forming a visible nursery above the square. Passersby observe the plants' development, creating an open-air classroom and signaling the transition in progress.

In **Stage 3**, matured plants are transplanted into soil pockets below, forming multi-layered forest islands optimally distributed for sunlight, soil, and biodiversity. This sequence transforms sterile hardscapes into shaded, biologically rich public environments.





Bioclimatic microforest

Each module integrates the following variables: the type of substrate required (consisting of 5 cm of mulch, 20% dry matter, 30% mature compost, 40% enriched soil, 10% woody material, and a 20 cm drainage layer); the main physical characteristics of the species (ornamental value based on foliage, flowering, or form, and height: low, medium, or tall); key sensory traits (such as fragrance, tactile texture, and attraction for fauna like butterflies, birds, or bees); growth rate (fast: under one year, medium: between one and two years, or slow: more than two years); required maintenance level (low, moderate, or high, depending on irrigation, pruning, and pest control needs).

The growth of the project is structured along four axes: vegetation, tree planting, maintenance, and fauna:

Vegetation: By summer 2025, the project will initially include juvenile plants sourced from Geneva nurseries. Simultaneously, seeds from the selected species will be prepared to begin germination.

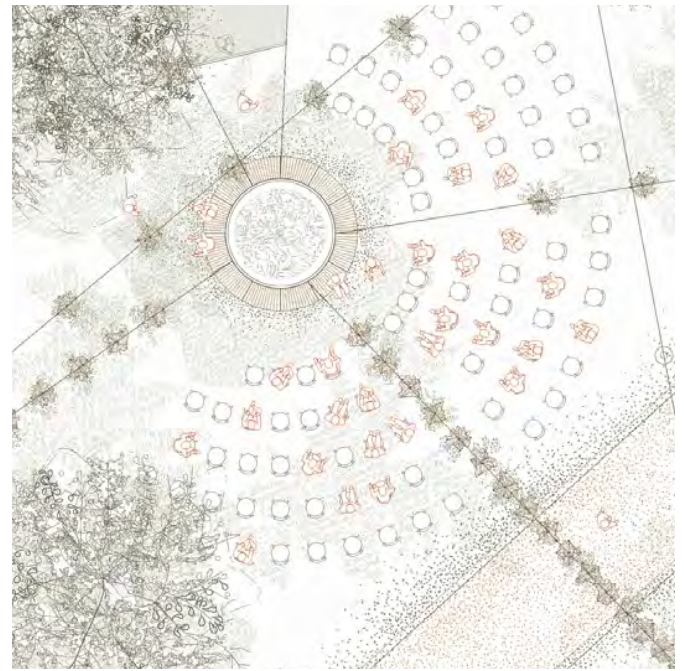
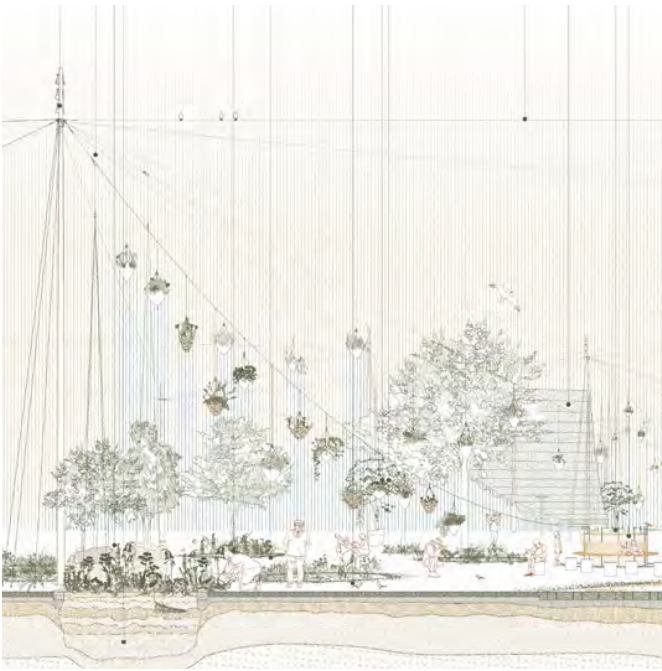
These will eventually become young individuals ready for future planting phases. This will be a cyclical process: each spring will involve seed preparation and transplanting of young plants. ready for future planting phases.

Tree Planting: To expand shaded areas in Geneva, tree planting is a key component. Selected species are native with broad canopies, enabling wider coverage with fewer individuals. The Stratégie d'arborisation cantonale (2024 version) establishes key years and planting percentages for both the project and the wider city to meet the goal of planting 150,000 trees by 2070.

Maintenance: Once the prototype is implemented, a comprehensive maintenance plan must be put in place. This will be crucial for preserving green areas and enabling the healthy development of the proposed activities. cycles.

Fauna: Long-term outcome of introducing native plant species, which will improve soil quality and create habitats for various animal species.





The transformation is visible, tactile, and communal.

Finally, we zoom into the human scale — where reforestation becomes experience. The prototype is porous and lived-in. It invites sitting, gardening, learning, and gathering. A spatial choreography emerges as people circulate, pause, observe, and co-create. Movement and use patterns change over time, transforming passive squares into evolving civic landscapes. Participatory events, such as planting days, seasonal festivals, and school workshops, cultivate stewardship. **Citizens are not spectators but agents of change.**

The prototype begins with an observation of the existing hanging systems in Geneva, used for signage, lighting, and the tramway, and proposes a similar concept for the project. It follows the principles of lightness and aims to create a new urban network that does not disrupt daily life but enhances it, like a veil gently laid over the metropolis.

A technical sequence reveals how each stage of the Miyawaki method is integrated into the urban fabric. Importantly, this strategy is not imposed, it grows in phases that are visible, shared, and owned by the community. This builds a sense of collective stewardship rather than passive occupation. A ground-level movement and activity map shows how people circulate, pause, and inhabit the square over time. Spaces once traversed in haste become arenas of contemplation and encounter, adaptable to events, education, and daily use.

This project imagines the square of 2070 not only as a hub of resilient mobility, but as a climate shelter, a civic nursery, and a collective garden. Through architecture and landscape, it reclaims the public square as a spatial and ecological commons. Through forestation, it renders climate action visible, rooted, and shared.

