TABULA SILVA. REPRESENTATION AND PROJECT FOR THE FLEMISH FOREST-METROPOLIS

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In this article, we discuss the tentative notion of *Tabula Silva*: an approach to rethink the urbanized territory of Flanders that champions the forest as a settlement principle able to integrate nature and man-made artifacts. To begin with, the term *Tabula* invites us to look at the territory as a wholly available ground to be mapped and designed: a field where the existing logic of ownership titles, uses, functional occupation and resource extraction are intended as cultural grooves to be questioned and potentially reassembled. *Silva*, on the other hand, stands for the centrality of forest environment for new models of ecological and social welfare to be tested. This terminology and the connected approach are a personal position and forming attitude in our work to the study and design of the contemporary territory. It develops at the intersection between urban theories and debates on the diffuse city as they have progressed since the 1990s, on the one hand, and the urge for innovative urban design attitudes triggered by recent Flemish afforestation policies, on the other.

In the context of the regional forest program launched by the Flemish Government, *Meer bos voor Vlaanderen*, we were recently entrusted with the assignment to represent 12 types of forest environments (*Verbeelden van bostypes*, 2022) that the local authorities plan to realise in the coming future. The elaboration of this graphic material is intended to support the dialogue between the different stakeholders involved in the program, such as designers, citizens and public administrations, and to stimulate the conception and realization of new forests on the ground. The array of perspective environments we were asked to represent inevitably triggers a reflection on the future of prototypical urban and sub-urban conditions of the Flemish territory. It raises questions regarding the capacity of existing often-criticized features to enable sustainable living practices, the suitability of tree species to thrive in an environment deeply colonized by men and the institutions and modes of management that could realize and care for new forests.

In the article, we first approach the context, challenges and ambitions of the program *Meer bos voor Vlaanderen*. We then situate the policy within the key steps of recent theory and research in urbanism discourse, moving away from the idea of Nebular City (1995) towards the framework of Forest Urbanism (2019). Finally, we discuss our ongoing work on the graphic representation of the forest identified by the program as the starting point to concretely define the components of a Tabula Silva as an operational guide for the realization of new forested landscapes.

THE PROGRAM 'MEER BOS VOOR VLAANDEREN' AND ITS CONTEXT

In May 2020, the Flemish Government launched a forest expansion program called *Meer bos voor Vlaanderen* [More forest in Flanders]. Through this new policy, the regional administration pursued a twofold goal: firstly, to reinforce and protect natural assets already present in the heavily urbanized landscape of Flanders; secondly, to create new wooded areas in response to the booming need for both social (welfare, production, reproduction) and ecological (environmental sustainability, climate adaptation, energy recovery, sustainable materials) services in the region. If completed, 4,000ha of new forested areas would be realised in the region by 2024, with a possible increase to 10,000ha by 2030.

In recent years, with the evolution of studies in urban forestry, the creation of wooded environments has gained a key position in political agendas, to enhance the living quality of human beings and the resiliency of the built environment to climate change. It is curious to notice that, while in the past centuries environmental and social welfare were mostly addressed from within the metropolis, inventing unprecedented infrastructures and urban collective environments for improving health and social relations, such as urban gardens, tree-lined avenues and metropolitan parks, since the second half of the 20th century this balance has increasingly been pursued at a larger territorial dimension. At this scale, the improvement of human conditions is confronted with broader systemic challenges of environmental reproduction and valorisation. The program *More forest in Flanders* follows on this path, embracing the larger territorial scale as an unavoidable challenge, yet questioning conventional urban planning formats and practices, such as abstract zoning laws and profit-oriented masterplan techniques. To better understand its relevance and future potential, we must therefore assess the context addressed by the policy, Flanders, and how the program reacts to the layered and problematic urban configuration of this territory.

In contrast to Flanders, if one wanders through Wallonia, the southern federal region of Belgium, he will soon discover that forested areas occupy a relevant portion of the territory thanks to a well-established culture of protection and valorisation of this environment. As scholars explained: "[…] since the beginning of the second half of the 19th century, the forest is considered as an invaluable element of the national heritage that the public authorities have the duty to preserve, to restore and even to enlarge". If, on the contrary, we consider the natural territory of Flanders, the northern and wealthier region, it is not hard to notice that the forms of human development took here

a different path, resulting in extreme land subdivision and widespread real estate developments. Many of the forests present in Flanders, not unlike the rest of Europe, have been cut through the centuries to feed up the various modes of capital accumulation, to guarantee economic growth and the maximization of profits. The historical motivations for the destruction of these natural environments are multiple. In the first phase, until the 18th century, wooded areas were chopped to make space for agricultural fields, essential to sustain the mostly rural population in pre-industrialization time. Later, in the 19th century, forests were used to provide essential raw materials to support the rapid industrialization of the country. The largest forest patches we find in the region, like the pine forests in the Campine Plateau, are the result of large-scale afforestation programs initiated at the turn of the 19th and 20th centuries for the production of wood, to supply the booming construction and the coal industries. Ultimately, since the second half of the 20th century, forested zones have been under the threat of endlessly expanding urbanization for both residential and productive uses, especially on the urban fringes.

Digging deeper into the causes of forests reduction, we are confronted with the obduracy of a local culture grounded on extensive privatization, subdivision and financial speculation of the land; a process that has heavily impacted on the use and protection of wooded areas. Unlike what is often believed, the root of this tendency is not to be found in the massive wave of residential suburbanization that followed the 1948 De Taeye Act – the law supported by the Catholic party which granted state subsidies and funds for the post-War middle class to acquire land and build single-family homes in rural areas.

On the contrary, as the agriculture historian Eric Vanhaute contended, already since the mid-19th century Flemish landowners embraced the idea of making easy money and reproducing their social status through the fragmentation of cultivated parcels. Rather than promoting technological and social improvement, indeed, owners increased the rent price of cultivable land at the detriment of peasants' living conditions. The practices of privatization, parcelling and speculation continue to hamper foreseen reforms in planning practices nowadays. While creating that cacophonic and rich landscape which has long interested urban scholars for interweaving residential, productive and reproductive functions, the dispersed urbanization of the region is still largely derivative of a Modern culture in contrast with the current needs for social development and environment valorisation. Consequently, the endless process of urban expansion unfolds at the detriment of natural areas and forest specifically.

Confronted with the described long-standing forgetfulness of forest valorisation in favour of land fragmentation and development for private speculative interests, the *More forest in Flanders* plan marks, hypothetically and perhaps ideally, a radical alternative. The diversity of the approach envisioned by the policy can be summarized in four core principles.

1. The idea of 'multifunctional potentiality' of the landscape and a new cultural understanding of forests. As stated by Hubert Wiggering, Klaus Müller, Armin Werner and Katharina Helming: "[…] today the sustainable land transition starts from the identification that one type of landscape can perform multiple environmental, social and economic functions at the same time"[14]. The diversification of large mono-functional districts lacking welfare services, productive activities as well as ecologically relevant qualities (biodiversity, for example), which is a *trope* of the Flemish dispersed urbanization, is possible through a strategic reconceptualization of the role and use of wooded areas. It follows that forests are portrayed not simply as generic natural entities for relaxation, contemplation or leisure. Rather, they work both as a stimulating notion and a tangible hybrid (natural-social) environment where to test new interdependencies between land uses, socio-technical functions, management organization, welfare, and ecology[16]. It is not a coincidence that the policy mainly insists on the coupling of two aspects: on the one hand, ecological services provided by forests, notably fostering biological and animal diversity, lowering carbon impact, and mitigation of droughts and floods. On the other, social services, such as accommodating contemporary forms of reproduction, developing new environments for leisure, production and cultural development and exchange. This is, arguably, a relevant cultural step to demystify the forest as a purely natural environment, idyllic and opposed to the socially driven conflicts of the urban. As a new conceptual framework, the forest emerges not as the backyard of the city[18]. Rather, it drafts an alternative model of inhabitation which could alter, as a new layer, the existing palimpsest we find in territorial settlements principles[19].

2. Grasping and managing the complexity of the relation between means and actors that must cooperate for the realization of new forests is central to the program. Indeed, unlike the case of modern public spaces, such as urban parks of the past centuries, which were mainly in the hands of public institutions, the realization and upkeep of new forests can't be fully left to the responsibility of regional or municipal administrations: financial

limitations, together with the diffuse lack of personnel and even of knowledge, come in the way nowadays. Conversely, a multitude of actors, stakeholders and relations is nowadays necessary for the realization, maintenance and management of forests. In the current scenario, strongly derivative of the culture of the market economy, these subjects operate in a fragmented manner and follow their individual interests or duties. They shall on the contrary be recognized as co-authors and empowered as such in the transformation process[17]. The 2022 program pursues the idea of coalition and empowerment of certain pivotal actors, both public and private. Since 2020, under the umbrella of the Forest Alliance[15], the agencies related to the Flemish government have joined forces with local authorities, landowners, forest groups and nature-protection organizations. The Flemish Department of Environment plays the coordinating role in the process in pursuing models of structured cooperation, such as the involvement of associations and groups of citizens-volunteers for a distributed model of realization and management of forest.

3. To foster the expansion of the forested landscape, the policy advances a rather new juridical definition of forest and sets up related financial aids for both private and public subjects. The former aspect is perhaps one of the most debatable aspects of the operation. While in previous legislation, the definition of forest [*bos*] indicated a minimum lot size of 0.5he and a 20% crown cover, the new definition of forest associated to the subsidies of the program, indicates a canopy cover of at least 50%, within a minimum plot area between 0.1-0.01 he[20]. This procedural, rather than substantial definition of what a forest is may raise criticism. The risk is, for example, to identify every small patch of planted land with a forest, or to facilitate landscape fragmentation as opposed to ecological corridors[20]. However, contextualization is once again crucial. In Flemish suburban areas, where single-family homes with private gardens are the rule, and the land is fully privatized, the realization of large woods is unimaginable. Taking onboard the idea that a collaborative network of actors is unavoidable to meet the plan expectations, the procedural definition of forest is used to allocate economic support (tax deduction and subsidies) to households who decide to de-pave their properties and plant new trees in their backyard. Despite appearances, this definition is an elementary tool to pragmatically address the Flemish reality: one suggesting that a forest can also grow from the collaboration and the private advantages of individuals. Yet, for it to become a structural move, a clear image of what types of forests can be realized and what their advantages are, is unavoidable.

4. Drawing upon the financial and legal definition, *More forest in Flanders* ultimately proposes a qualitative and design-oriented roadmap for the realization of new forested environments. It does so by utilizing a marked typological approach: 12 different types of forests to be realized are identified and described according to their size, the context of implementation, tree and spatial qualities and, most importantly, the social and iconological qualities/services they are supposed to enhance or to provide. The typological approach is just one, perhaps a questionable one, amongst many others, to be used to preliminarily approach forest design. However, while the point of view of defining a quasi-programmatic way of each forest type is critical, for the forest is much more than the sum of the use opportunities it provides, it also allows a very specific approach to synthesise and communicate the policy. These forest typologies, if considered less as a conventional design brief and more as a 'meta-project' to be communicated for changing well-established cultural tenets, provide a stimulating intellectual tool to the practice of landscape urbanism.

TRACING A THEORETICAL AND DESIGN LINEAGE FOR THE MEER BOS PROGRAM. FROM THE NEBULAR CITY TO THE EMERGENCE OF FOREST URBANISM

The planning scenario envisioned in *More forest in Flanders* addresses a peculiar geographical and political context, yet it draws upon a relevant and broader intellectual one. At a closer inspection, the leading themes of the afforestation program can be read keeping in mind a thickening corpus of theoretical and design knowledge, and civic consciousness, which has built up a considerable tradition in the field of urbanism in the last decades. Indeed, while the recent environmental crisis has placed the increase of tree-covered areas on top of the agenda, architectural and urban reflections on the theme date back a long time. How have architecture and planning disciplines approached the theme of the forest and the relation with the man-made environment in the Flemish territory? We can identify three crucial directions in the past decades.

A first approach can be traced back to the book *After-Sprawl: research on the contemporary city*, where Xaveer De Geyter Architects and Lieven de Cauter suggested a landscape-oriented approach for questioning the contemporary urban patterns of European territories. Observing the settlement structure of Belgium, Holland, the Ruhr region (Germany), Switzerland and the Veneto region (Italy), the category of sprawl is recognized to be the dominant territorial condition of the late 20th century, where the

difference between urban and rural is no-longer evident, as both patterns are present simultaneously. This notion of "hybrid urbanity" helps to imagine the *after sprawl* future, which is presented in the book using some design scenarios. In these speculative proposals, the authors conceived the forest as a territorial counter-figure to overhaul the fragmentary, ownership-based and normative logic typical of 20th-century urbanism. More specifically, in the section devoted to the *Flemish diamond* (the urbanized area between the cities of Antwerp, Leuven, Ghent, and Brussels), forest and large-scale landscape forms emerge as a new provocative figure: the spatial and conceptual apparatus to define a project for the "after-City".

Diverging from an urban proposal operating through large-scale recognizable forms, the approach developed by Paola Vigano employs fine-grained landscape structures as the starting point for a project that integrates the socio-environmental values of contemporary society. Emerging from a long research presented over the last two decades, the notion of the *Horizontal Metropolis* is proposed to research and project "a specific spatial condition characterized by a horizontality of infrastructure, urbanity, relationships, and by closely interlinked, co-penetrating rural/urban realms, communication, transport and economic systems". In Vigano's perspective, nature constitutes the pre-condition of a project rather than a tool to counter the fragmentation of the contemporary city through super-imposition of landscape forms. Departing from qualities such as isotropy, porosity, and permeability, the territory is conceived as a continuous garden: where cities and landscapes are merged with a bio-political proposition. Within the framework of the *Horizontal Metropolis* research, Wim Wambecq discusses the forest as a field of action capable to mediate between individual needs and the collective. Wambecq proposes a transition toward urbanisms entangled with "hidden" natural capital. Through a cartographic comparison between the recent forest land cover of Flanders and the forested areas identified in the Ferraris map (1770-78), Wambecq identifies multiple unbuilt areas where, albeit older forests have by now disappeared, their form is yet visible in the parceling of the agricultural land. These figures, remnants of hidden or past forests, are identified as sites of resistance against the urbanization wave of the last century. They reveal the forest as a latent landscape of the dispersed city: a potential that can be activated and around which novel urbanisms could emerge.

In these works, we notice that the *sylva* is progressively embraced as the legitimate counter-figure to the city, acquiring

a fruitful autonomy from the more generic definition of "landscape." It is revealed as a domain of potential and exception and the subject for a cultural and methodological shift in urbanism. From these premises, the definition of Forest Urbanism has emerged. It calls for a cultural practice of urbanism "that relies on the forest as a structuring device across scales and dimensions," and where the forest builds up an agenda for re-opening the discourse and for re-defining the practices of the "urban"[8]. The hands-on application of the Forest Urbanism approach is further elaborated by Wambecq in his PhD dissertation, entitled *Forest Urbanism in the Dispersed Flemish Territory*[9]. Discussing seven forest cases in Flanders, Wambecq builds a critical understanding of the relationship between territory and forest which serves as a basis for exploring the intensification of the interfaces between wooded landscapes and Flemish urbanization. The work suggests a desirable cultural shift in the discipline of urbanism that can be realized by incorporating the theoretical and practical methods typical of forestry. These are, for instance, the logic and timing of forest planting, or management and seasonal cycles of trees, which become the funding principles for a territorial project. Wambecq's proposal moves away from the 'planning approach'. It is not a coincidence that he extensively uses the territorial section to study forest types concerning soil composition, hydro-geological qualities, presence of infrastructure and existing settlement patterns. By acknowledging that different forest types take on specific configurations depending on hydro-geological context, he builds up a potential taxonomy of responses to major ecological, social and urban transition agendas[10].

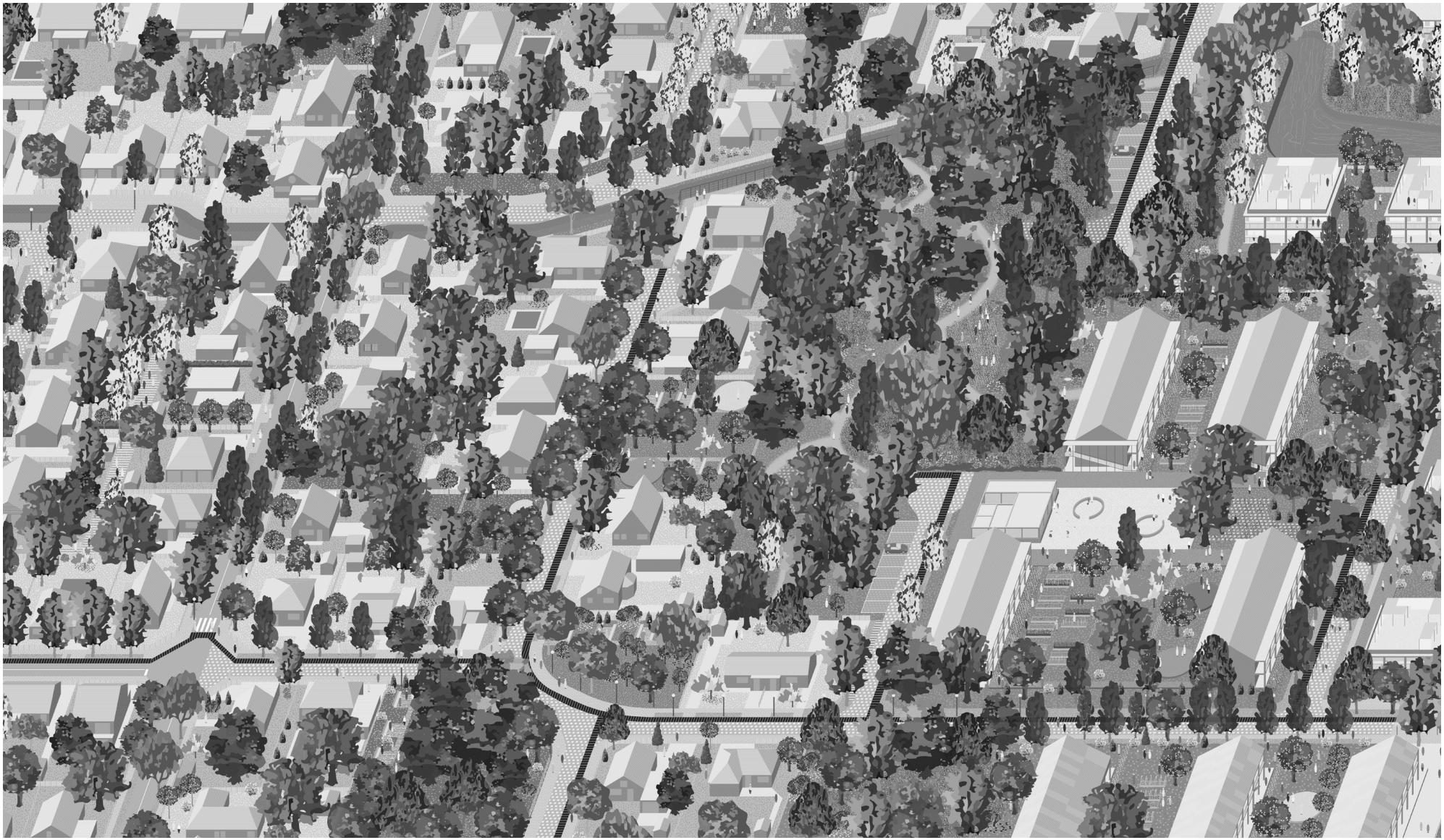
A brief summary of some of the most radical approaches to landscape and forest urbanism shows, at first glance, the cohabitation of different, even opposite, positions and methodologies on the topic. It can be noticed, nonetheless, a tendential shift from projects based on more conventional planning rationales – masterplan, forms – to a finer-grained integration of extra-disciplinary forms of knowledge in the design process. Where to situate a research approach in the context of the studies and propositions developed in recent years, while departing from the categories and qualities of the forest recognized by the Flemish afforestation policy? Arguably, our proposal operates at the intersection of these approaches. Indeed, the typologies described by the policy document suggest a marked spatial approach to speculate on the concrete characteristics of these forests. Yet, the request to show the social and environmental advantages of the forests also requires integration of new knowledge, such as botanical knowledge to relate tree species to different environmental conditions. Moreover, following the points highlighted above, other crucial yet often underestimated issues must be faced, such as timing, property, tenure, management and ecological conditions. Ultimately, the representation task discloses the possibility for reconnecting formal, procedural and more technical aspects: not a generic third way, but the test of how different approaches can foster cross-hybridization.

TOWARDS *TABULA SILVA*. REPRESENTING 12 FOREST TYPES AS A GRAPHIC ROADMAP

The concept of *Tabula Silva* is imagined as an operational apparatus, a proposal of hypothesis and tools for a subsequent urbanism of Flanders. On one hand, this approach sits in continuity with the discussed lineage of urban theories that have embraced the forest as a crucial territorial structure able to challenge modern strict separations such as urban and sub-urban, productive and reproductive, city and nature. On the other hand, it responds to the urge of a visual base for the policy, supporting a shared forest agenda between citizens, politicians, social and environmental actors. In this context, we developed a series of drawings whose scope is to render these abstract, often technocratic or legal perspectives, tangible and communicated. From each individual drawing and the narratives of the 5 spatial typologies, the *tabula silva* takes form as a meta-project: a reflection on the project before field implementation, and a roadmap for the promotion of the Flemish forest agenda. Four different types of artworks build up the core of the *Tabula Silva*:

Axonometry. We utilize an axonometric drawing at the scale of a meaningful territorial sample in order to portray the relationship between natural qualities, spatial context, social uses and environmental services of each forest typology. This drawing builds upon a low threshold representation of vegetation, building typologies, open space and human practices, translating the more technical questions into a narrative accessible by a broad audience. This representation aims to sharply communicate the environmental qualities of each forest type, focusing on spatial configurations and on their capacity to accommodate the specific programs, uses and environmental services of the brief. The axonometric drawings all describe forest areas of the same size to make them comparable in terms of scale, natural and programmatic density, tree size etc. After a careful reading of the tender document and of the previous researcher, we propose the axonometry to represent an area of 1 ha ca. The axonometric representation is a means to portray the spatiality of the urban forest and to easily communicate how the organization of tree and bush species, the qualities of the ter-

Axonometry. The image illustrates two possible scenarios for a residential forest-neighbourhood (Boswijk). On the left side of the image, we depict punctual afforestation strategies to transform existing suburban neighbourhoods characterised by single-family homes and private gardens. On the right side of the image, we propose a scenario for a newly built forest neighbourhood with collective services and denser dwelling typologies that are fully integrated within a newly planted wood.



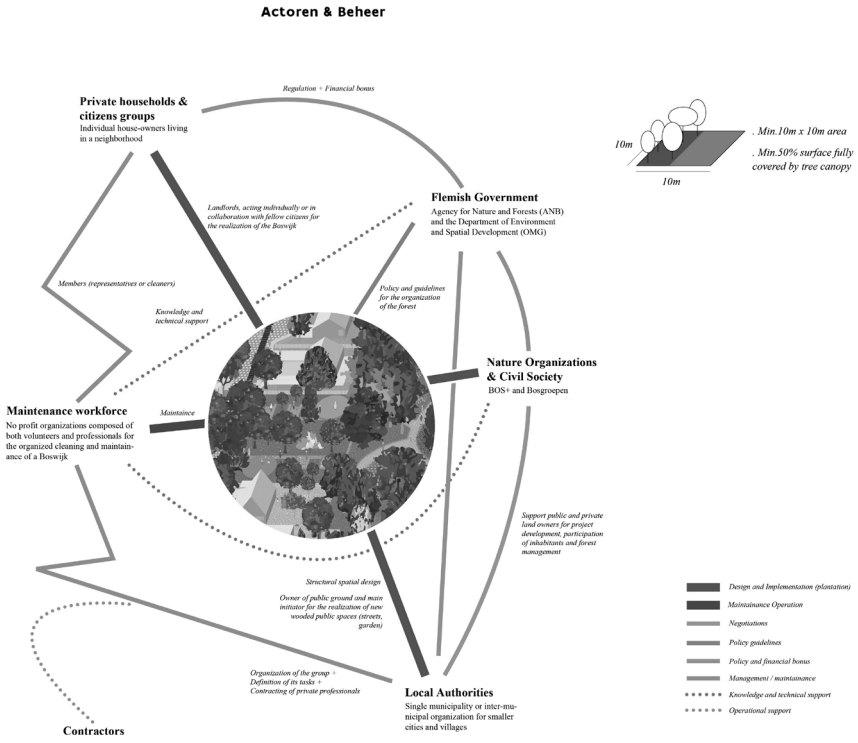
rain and the presence of social infrastructures could build up the socio/environmental quality of the *Tabula Silva.*

Tree Abacus. A detailed representation of the suitable tree species which are present in a specific forest type. The drawings come together to compose a graphic inventory of all the trees that is used to describe the various forest types proposed by the brief. This approach recognizes the tree as the fundamental element of a forest and, although the environment is always more than the mere sum of its individual parts, that the natural and physical characteristics of each arboreal species bear direct impact on the human and natural affordances of the sylva environment. The inventory is accompanied with a series of diagrams that add further information on each specific tree and facilitate the reader to compare the characteristics and seasonal variations of the different species such as flowering arches for pollinators. These diagrams expand on the information illustrated in the axonometry, showing the features proper to each single tree with a direct correlation to hydrogeological features of the territory and the potential social uses stimulated by fruiting period and the provision of shade.

Governance Scheme. Each forest type includes a series of diagrams that illustrate the gradients of management and maintenance practices of forest, such as facilities, infrastructure, under-bush, and clearings. It illustrates the actors involved in the development of each forest type and their role in the process, supporting the setting of bottom-up, open and participating projects. We show the potential modifications of the urban condition such as change in property and the transitions from private to shared and collective spaces. We also refer to the urban planning tools that enable specific transformations such as the transfer of development rights for un-built parcels, street contracts for cul-de-sacs, in addition to subsidies schemes for de-paving and plantation. In forest types which hold important functions at multiple scales such as management of seasonal flood risk and recreation, we show the structure of governance and the public accessibility at different scenarios.

Images. One of the main challenges posed by the brief is to develop graphic means for low-threshold communication of the main qualities and the added values of the 12 forest types. Diagrams and charts of any kind offer a greater accuracy on facts and are the main working tool of specialists or people with a sound knowledge background. However, they might be confusing, misleading or obscure for the non-specialist audience, such as institutions and administrations, but also local inhabitants and associations, referred to in the call. Therefore, to render the

Governance scheme. The forest is implemented on the ground thanks to a coalitions of different actors (individual and groups) including citizens, associations, local authorities and the Flemish government. The organization of management and maintenance tasks of the resulting landscape is performed, in the case of residential forest-neighbourhood, by citizens volunteers and community associations that operate at the local scale.



added spatial value of the 12 forest types, we produce a diorama-like image that boldly illustrates the most relevant actions and happenings in each of them. By directly showing new or yet-unimagined uses happening in the forest, or how new forest types intelligently answer to urgent ecological needs such as water retention or wood and food production, images are powerful means to trigger people's imagination. They underpin the imagination of how forests could look like and perform, and speculations on how their life could improve in the new environment.

Lastly, images are the main tool to portray time as a foundational aspect of spatial transitions and forest implementation in the territory. Different steps of transformation are portrayed for the archetypical spaces of the tabula, while presenting the growing silva as a field of action. Projects where human communities become engaged in shaping a bio-political territory.

Image of forest implementation stages. The images show three stages of de-sealing and afforestation strategies conceived for a cul-de-sac road in a residential neighbourhood. The issue of time is an unavoidable aspect to represent and communicate the different stages of an afforestation strategy, making public actors and the local community aware of how the forest will be implemented and ultimately evolve.

The 12 forest types described in the assignment of the Flemish government, Department of Spatial Planning and Environment, are: Water buffer forest; Natural forest; Exercise forest; Play forest; Burial forest; Wood production forest; Food forest; Residential forest; Urban edge forest; Industrial estate forest; Neighborhood forest. The preliminary selection of these, reflected the objective of the afforestation program to enhance specific cultural, supporting, regulating and provisioning ecosystem services in the region. The types are not conceived as a mere 'functional' or performative addition to the landscape. Rather they are part of a broader cultural project, proposing a forest backbone of social and collective welfare in the territory.
During the elaboration of the assignment, the 12 individual types were collected into 5 more rich spatial typologies. Each typology is intended as a collection of fortest strategies to intervene in specific spatial conditions in Flanders.
Neighborhood Forest (Boswijk) addresses the transformation of existing neighborhoods built with single family dwelling and illustrate future scenarios for developing denser dwelling typologies while providing more open and green space; Health Care Forest (Zorgbos) illustrates the afforestation of existing healthcare facilities but also defines visual scenarios for new models of "aging-in-place" in the context of sub-urban and rural villages.
Water Buffer forest (Waterbufferos) illustrates the potential of new forest for flood management in river valleys, water retention in landscapes, but also for improving quality and accessibility of public sources of drinking water; Urban Edge Forest tackles the transformation of the XX century urban belts around cities, presenting the transformation of drosscapes and fringes into forest providing cultural and environmental welfare; Productive Forest illustrates potential intersections between the regional afforestation program, productive spaces, labor and the circular economy.

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