

winner

Forest urbanism in the dispersed Flemish territory

Author: Wim Wambecq

Supervisor: Prof. Bruno De Meulder

University: KU Leuven, Belgium

Jury members: Omer Vander Biest (KU Leuven)

Cecil Konijnendijk (U. British Columbia), Guido Geenen (KU Leuven)

Paola Viganò (EPFL Lausanne, IUAV Venice), Kelly Shannon (KU Leuven)

Research introduction

Flanders is one of the least forested regions of Europe with a forest cover of about thirteen percent or a total amount of 185.594ha, based on the most 'optimistic' measures¹. The forest evolved from a common and nobility ownership towards a predominantly private forest stock (over 70%) and is increasingly fragmented. The state of the forest over the last two decades, since the regionalization, is complex and full of contradictions. The 1990 forest decree protects all forests, regardless of size². In 1996 a "desired forest structure" was designed for Flanders based on the multiplicity of forest functions: ecology, leisure, buffering...³. The vision is clear and strategic. With the spatial structure plan of 1997, a forest compensation law was installed that actually aided deforestation, in which the strategic vision was reduced to a forest land-use increase of 10.000ha (50.000ha was asked for), without clarifying where and how this was to be realized. In addition, the quantitative and statistical discourse has overtaken the qualitative and strategic development of forest. Despite the quantitative focus, there is no consensus yet, 29 years after the forest decree and 22 years after the structure plan, about the measuring methodology, resulting in unclarity concerning the increase or decrease of the forest stock. Through the mechanism of the forest compensation (that de facto almost always is a financial retribution to a forest fund that remains till today ineffective) a net reduction of forest was registered⁴.

¹ Bos+. 2018. "Opinie I Komt Het Ooit Nog Goed Tussen Schauvliege En De Bosoppervlakte?." *Deel I*: February 19, 2018.

² Overheid, Vlaamse. 1990. *Bosdecreet*. Brussel: Brussel Ministerie van de Vlaamse Gemeenschap. Dienst Waters en Bossen.

³ Map 6 of the desired forest structure. Mens en Ruimte. 1996. "De Gewenste Bosstructuur Voor Vlaanderen. Visievorming, Selectie En Globale Afbakening/Differentiatie Voor De Gebieden of Elementen Op Schaal 1/50.000 Door De Overheidssector "Bosbouw", ed. by Ministerie van de Vlaamse Gemeenschap: Animal - Afdeling Bos en Groen.

⁴ Vermeulen, F. and Allaert, G.. 2007. "Ontbossing in Woonparken En Boscompensatie". U Gent: 16.

Soil as a qualifier

In current practice, forests are considered one of the main land-uses together with agriculture (including pasture, grazing lands...), urban and wasteland. On a quantitative macro-scale and since reliable mapping has been executed (1775, Ferraris mapping), the forest cover remained relatively stable in the last two or so centuries with minor fluctuations. A geographic analysis shows that the total accumulated forest cover in that period was more than double of the current forest extent. In a period of about 200 years, the forest moved around. The perceived quantitative stability is thus at least partially misleading.

The seven discussed cases taken over a geological cross-section of Flanders bring together the different dominant soil types of the dispersed territory. The section from the low coast, the polders, the transition from low to middle-high Belgium is not only a topographic gradient from low to high, but equally a soil gradient from heavy to fine grain soil textures that resulted from the last period of quaternary wind-induced wechselian deposits from the coast inwards. The heavier sands were deposited close to the coast, while the silt soils mark the transition from Flanders into Wallonia. Each of the cases covering the soil gradient contributes to a piece of the forest urbanism genealogy of the dispersed territory.

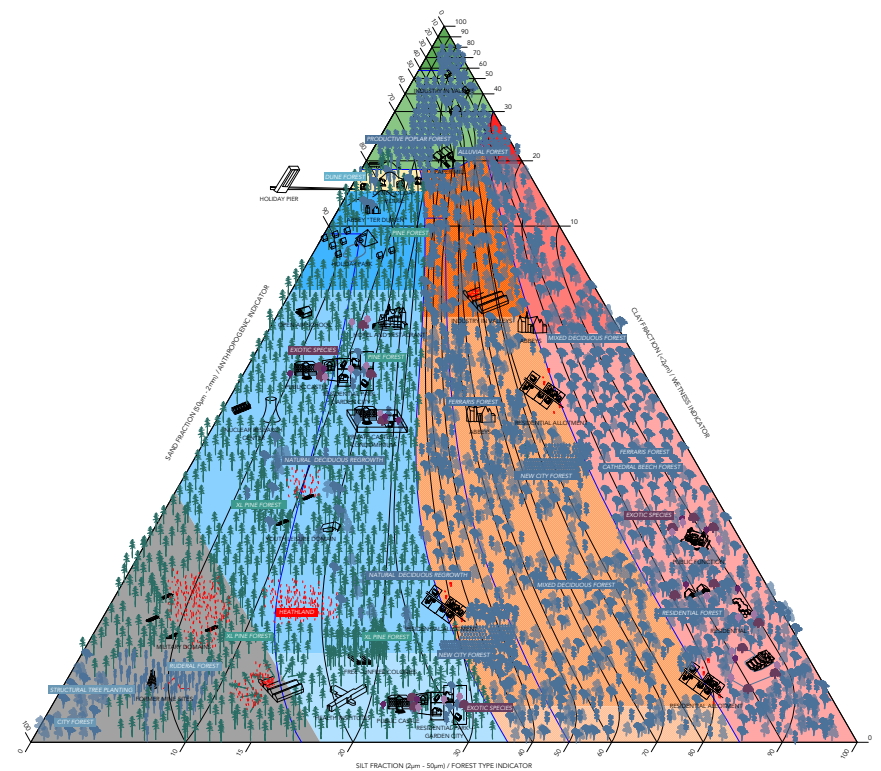
Soil is indeed a fundamental qualifier for forest presence, in extension for any land-use. In this dissertation, the soil texture class has been retained as the main qualifier. Soil determines the usability of the land. Human occupation has been grounded consistently in the soil type, and the many issues regarding the urban metabolism of Flanders are related to man-made alterations and impacts on the level of the soil, aggravated or remediated depending on the soil texture class: soil sealing, pollution, erosion, infiltration, fertilization, soil production, soil authenticity and, the forest has a fundamental important role in all of these soil processes.

The establishment of forest - natural or man-made - and the manipulation, cultivation or occupation of the soil are intrinsically related to the dynamics of usability. The isolation of the forest evolution in different soil texture classes shows how forest presence cyclically changes in a rotation with wasteland and agricultural land. The urban grew completely within and in between these land-uses, resulting in the dispersed urban condition. The cases show that a significant amount of the urban appeared and appears in forest urban figures – an interlaced state of the urban and forest - that are produced by or are producing the changes in forest presence, both deforestations as afforestation. Although forest is considered a land-use, it is in its intermediate and transitional role between and within land-uses – both in time as in space – that the forest valorises and activates the territory. Just as forest once covered the whole Flemish region, forest is interstitially present through all the different land-uses, exercising different beneficial roles that change over time.

A geological section

The main soil textures that are discussed in the cross-section of Flanders from the coast to Middle-High Belgium are: dunes, clay (polders and other), sand (from wet to dry in the higher Campine plateau), loam and silt. From a quantitative perspective the subdivision between wet, humid or dry soils indicates differences, but analysis shows that this variation has not been significantly determining for forest-urban dynamics.

The high diversity of soils on the macroscale of Flanders – from dunes, polders, clay, sand, loam, silt... - has created both the base for the cyclic dis- and reappearance of forest. The diversity allowed temporal flexibility. When the role of forest on silt soils declined, the sandy soils were colonized by afforestation, allowing for a continued, yet changing role for the forest on different locations. Within

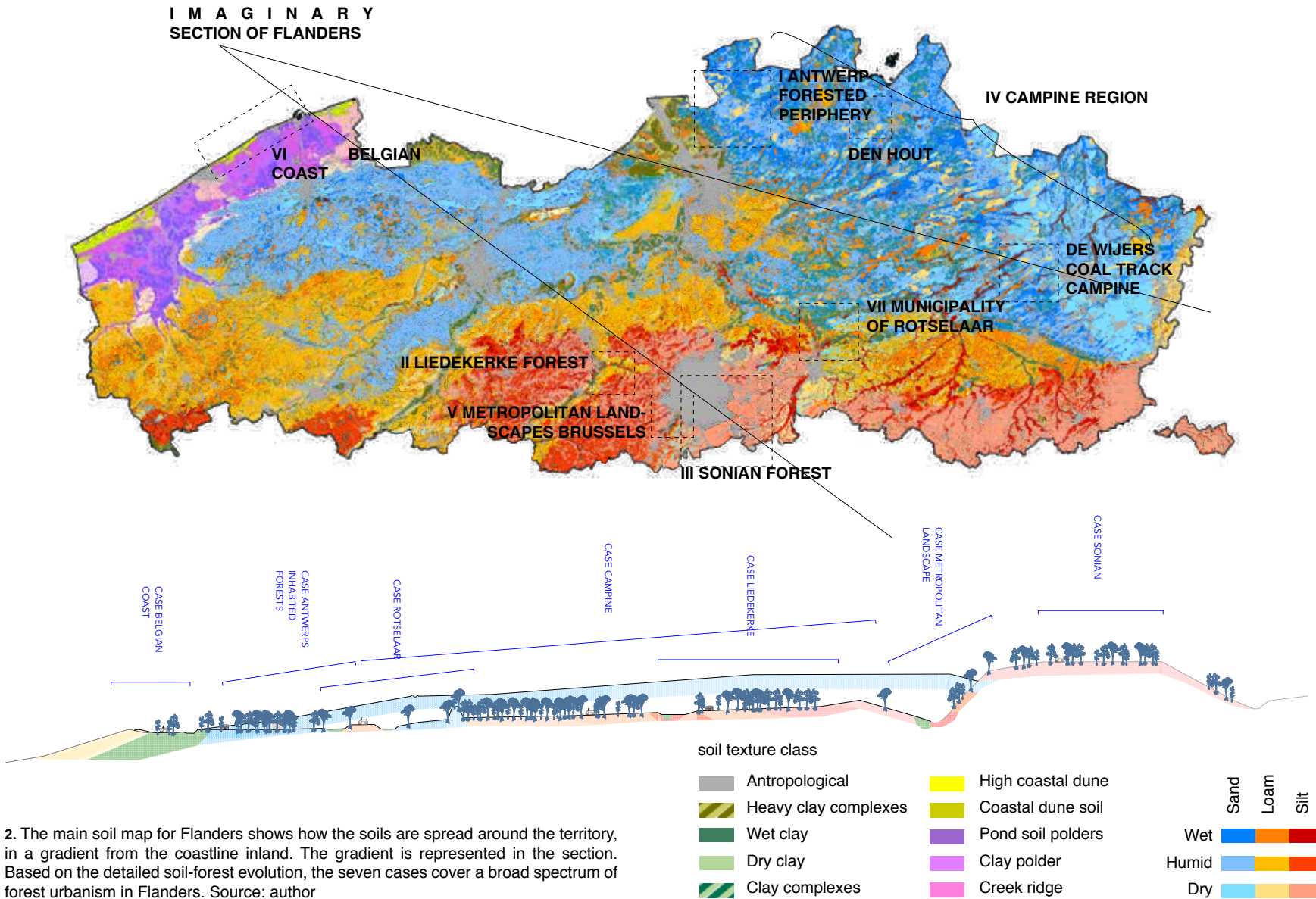


1. Forest Urbanism Soil Texture Triangle: the conceptual representation of the thesis
Source: author.

the landscape of changing forest presence, forest type, forest roles, the urban found various diverging ways to appropriate the forest (space), see image 2.

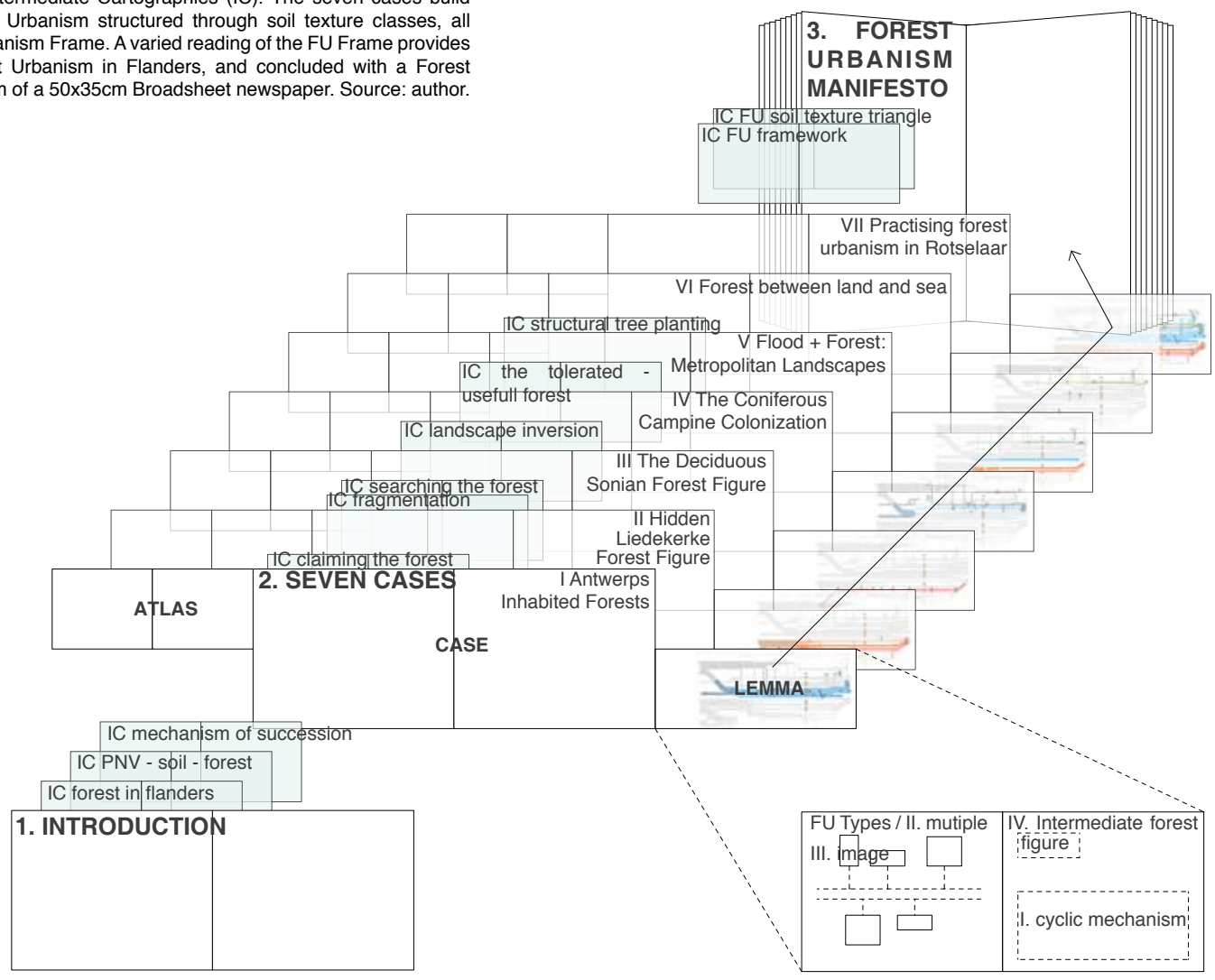
Forest urban metabolism

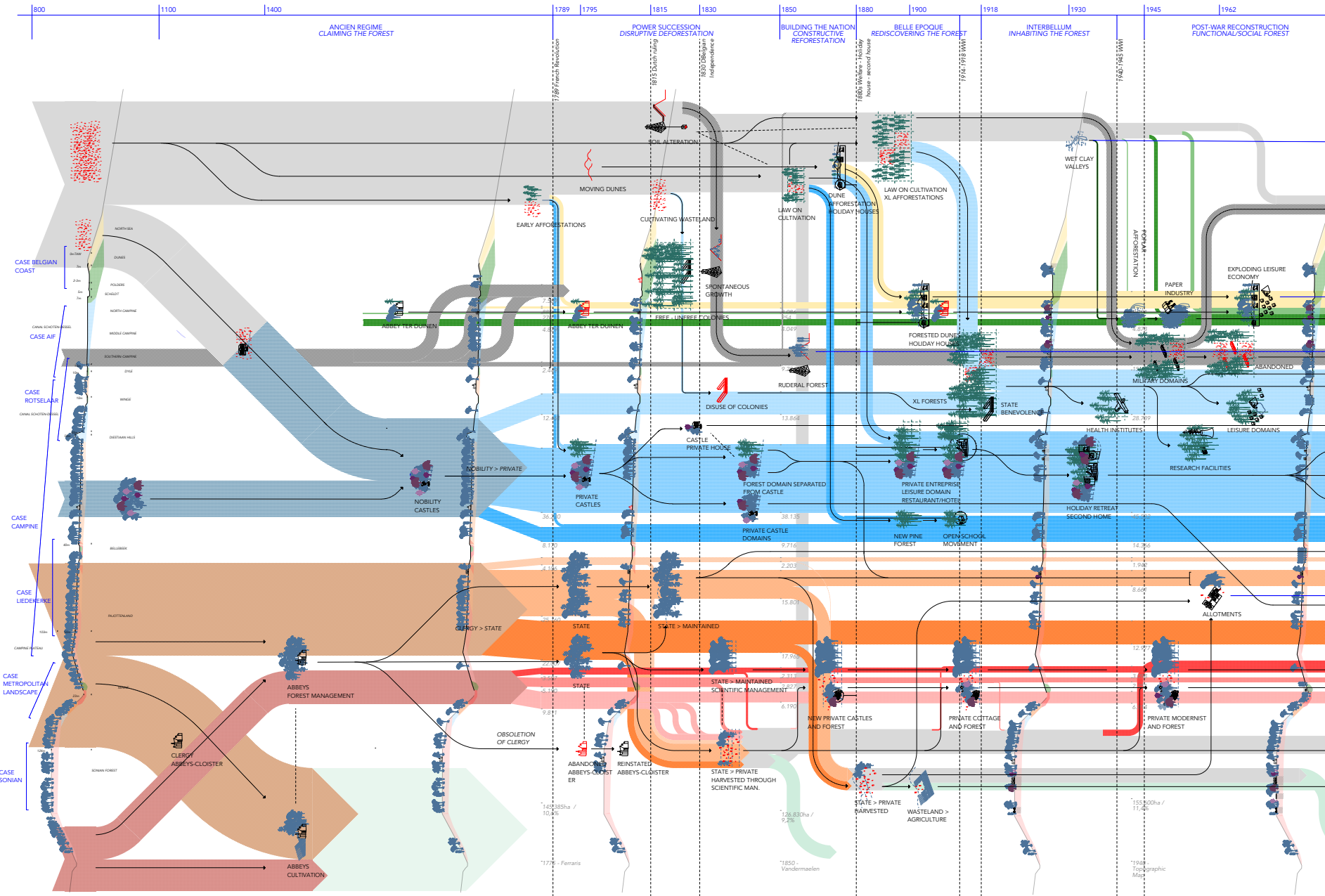
The seven cases, each relating to specific soil conditions, together build up a critical understanding of the relation between the territory and forest, summarized in the Forest Urbanism Frame, which then serves as a base to explore the expansion and/or intensification of the forest-urban interface, with the objective to remediate the ecological problems of the territory.



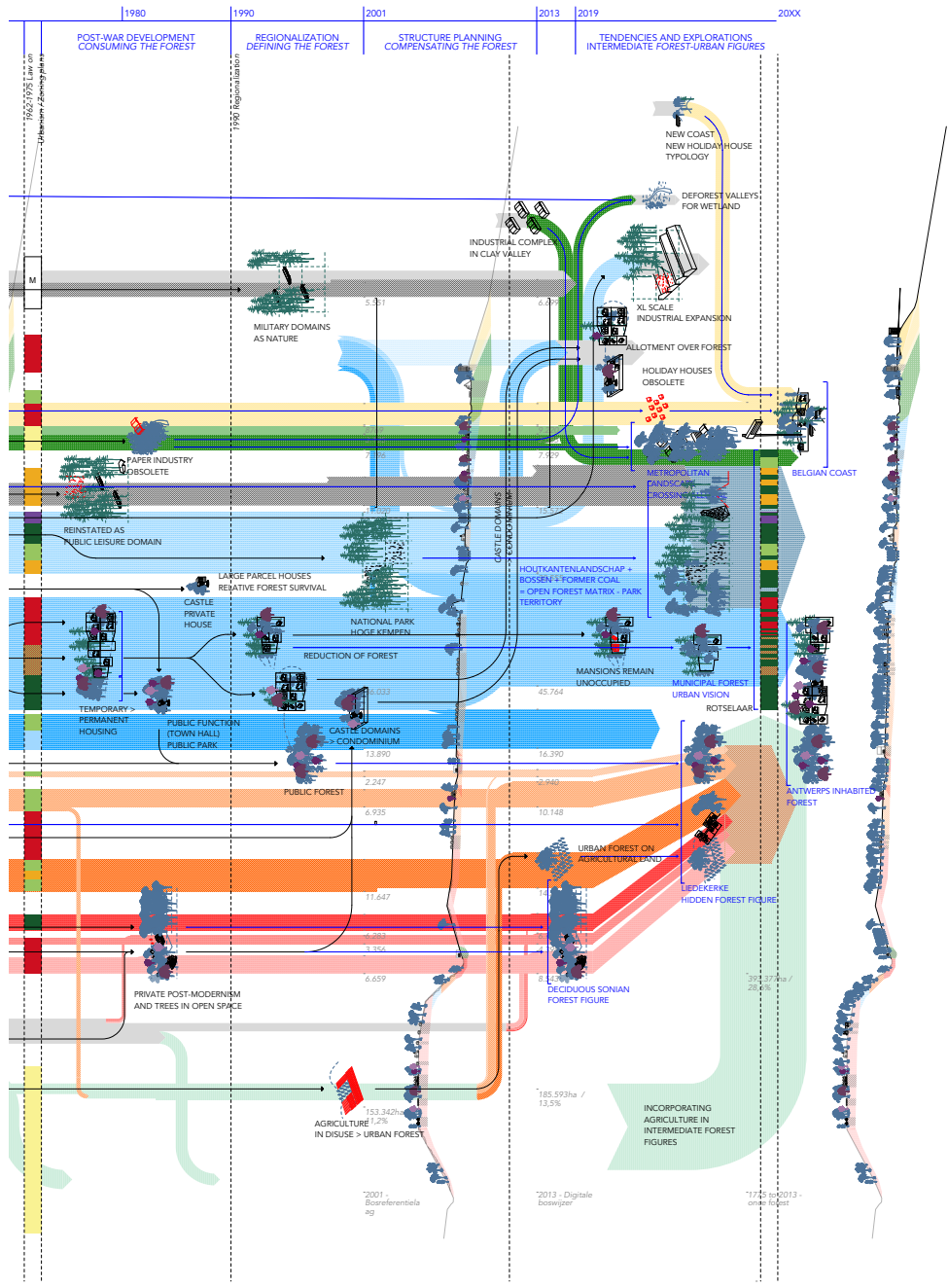
2. The main soil map for Flanders shows how the soils are spread around the territory, in a gradient from the coastline inland. The gradient is represented in the section. Based on the detailed soil-forest evolution, the seven cases cover a broad spectrum of forest urbanism in Flanders. Source: author

3. The thesis structure based on research on seven cases, complemented by interpretive mapping in the Intermediate Cartographies (IC). The seven cases build a knowledge base for Forest Urbanism structured through soil texture classes, all consolidated in the Forest Urbanism Frame. A varied reading of the FU Frame provides different viewpoints on Forest Urbanism in Flanders, and concluded with a Forest Urbanism Manifesto in the form of a 50x35cm Broadsheet newspaper. Source: author.





4. Forest Urbanism Frame: an open-ended frame of relations between forest and urban, based on soil sciences. Source: author.



Forest Urbanism Frame (Figure 4)

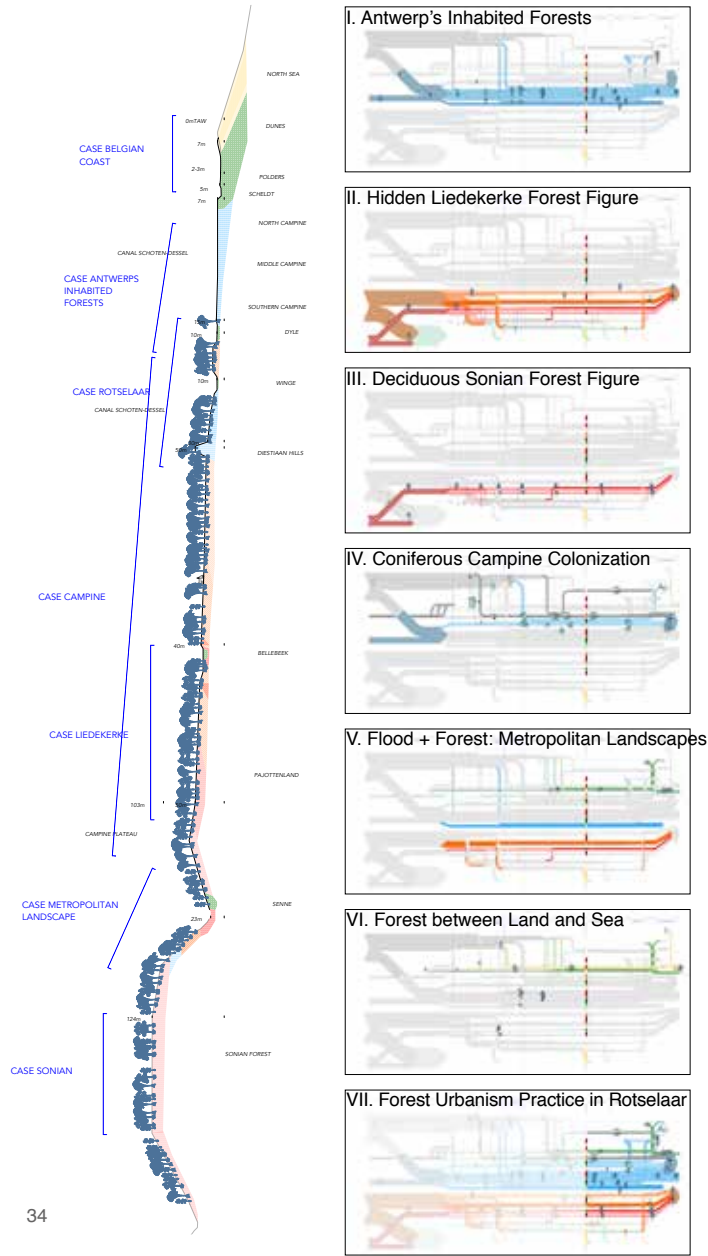
The research, conducted through a sequence of seven cases and a series of intermediate cartographies, is grounded in a body of knowledge on forest urbanism in Flanders. The seven cases were selected carefully to represent the different soil texture classes and alterations in the dispersed Flemish territory.

The produced knowledge is compiled in and represented by the Forest Urbanism Frame (FU Frame). The combination of seven representative cases into the FU Frame therefore represents Forest Urbanism in the dispersed Flemish territory. The FU Frame is not rigid as variations of cases exist that can consecutively be added to the FU Frame.

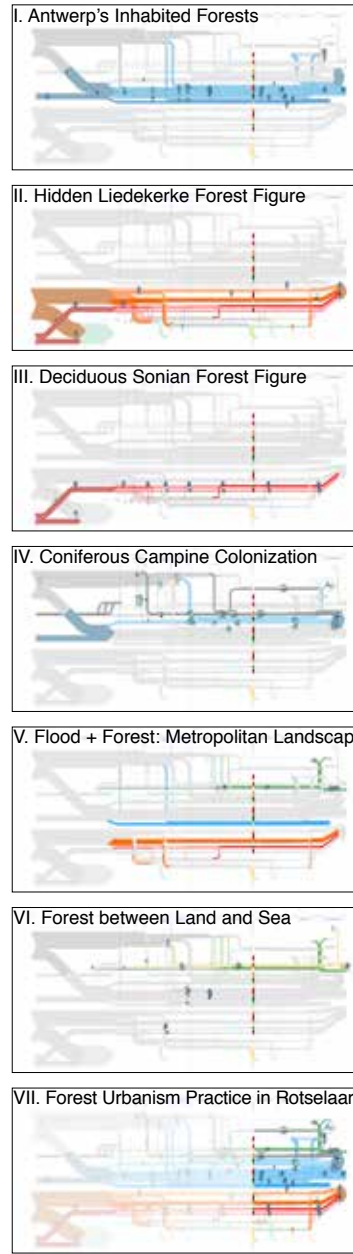
The FU Frame can be dissected as stories on Forest Urbanism in the dispersed Flemish territory that are potentially expandable beyond this context.

The geological section that brings the cases together in a typical section over the dispersed Flemish territory serves as a canvas of this FU Frame that is developed over time. The canvas is understood from historic perspective by looking back in time and projected forward to evaluate potential futures, suggesting that a deep understanding of historic forest-urban dynamics is necessary to be able to envision the future of the forest in the territory.

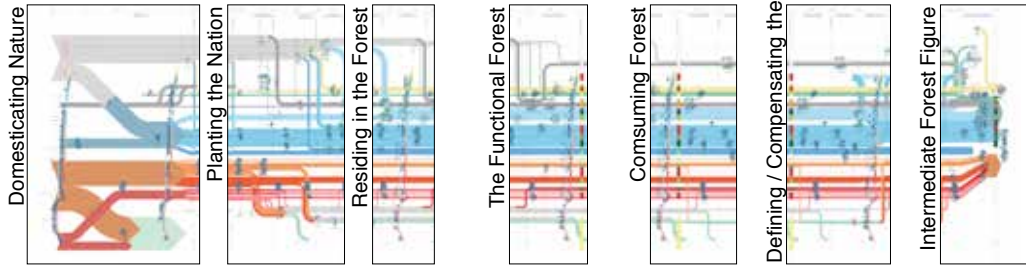
5. Forest Urbanism Frame: its dissection allows for different readings. Source: author.



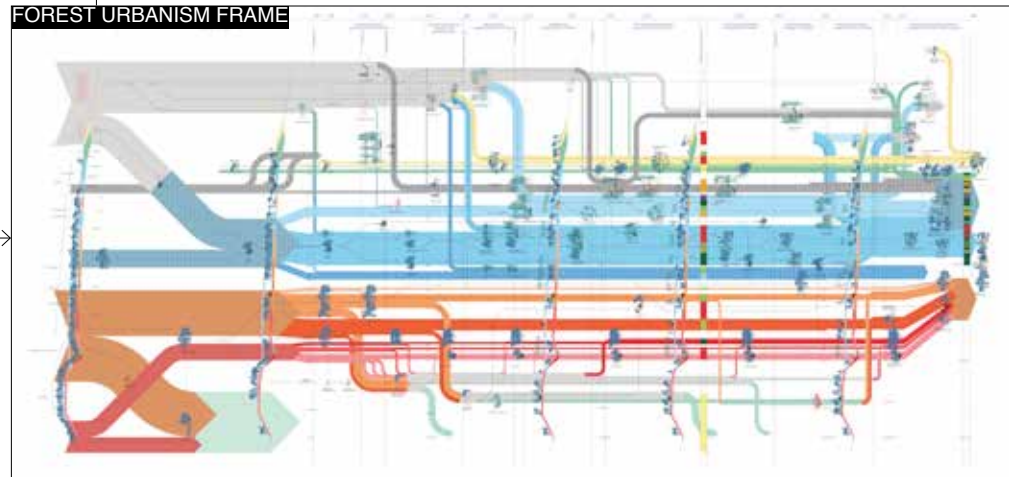
Horizontal - 7 cases



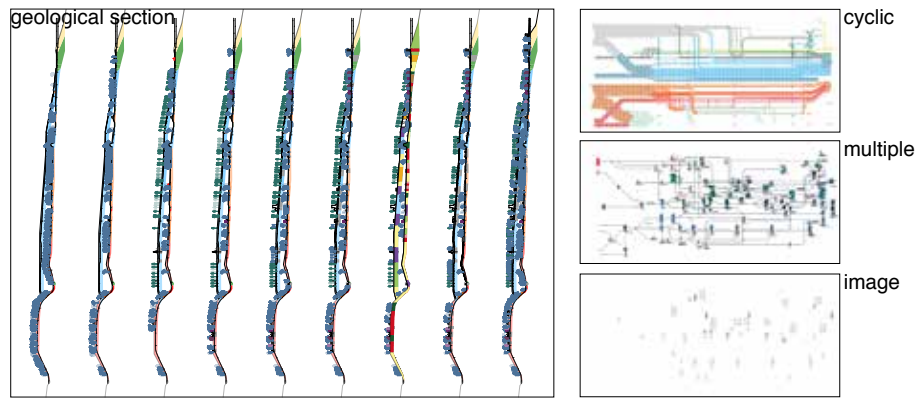
Vertical - 7 eras



FOREST URBANISM FRAME



Transversal - Forest urbanism characteristics



To expose the body of knowledge the FU Frame is dissected (Figure 5):

1. Horizontal reading: 7 cases

The cases cover a range of soil texture classes over a section in Flanders from the coast to Middle-high Belgium. The seven cases can be read diachronically by following a horizontal line. Each horizontal line documents the evolution of forest and settlement for a specific piece of the territory.

2. Vertical reading: 7 eras

The frame assembled with the different timelines of quantitative and qualitative transformations can subsequently be read vertically. The geological section then appears as it is in a particular era. Seven eras are identified in which the forest-urban interaction has a certain consistency.

3. Transversal: Forest Urbanism Manifesto

Finally, and ending with a forest urbanism manifest, a transversal reading of the frame can be made. Three main characteristics of forest urbanism appear: forest and urban cyclically coexist and influence each other; forest and urban form spaces of multiplicity; the image of the forest drives forest urbanism. The forest urbanism manifesto also comes back to and advocates for a new phase for forest urbanism in Flanders,

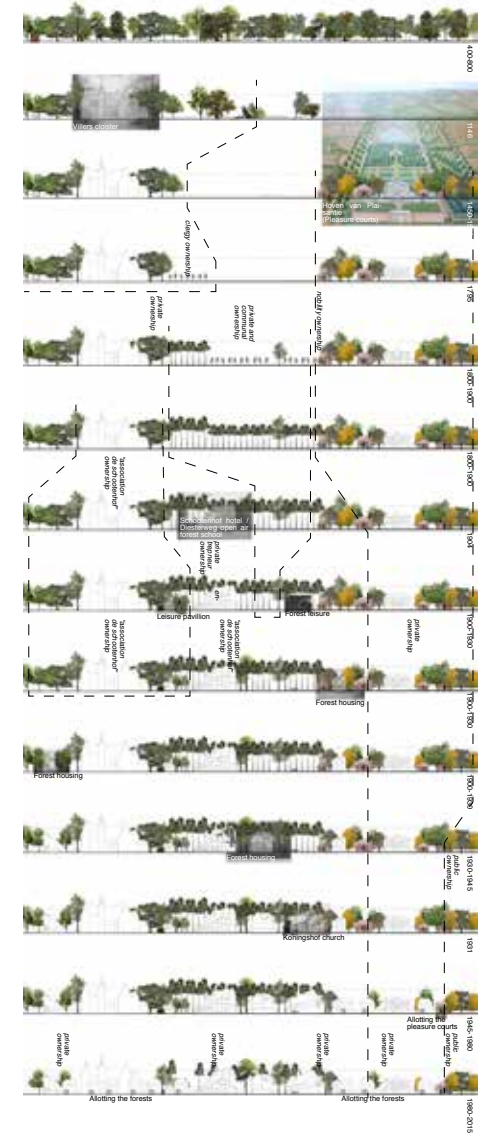
indicated as the next phase in the vertical reading: the intermediate forest figure as a potential concept to rethink and strengthen the dispersed Flemish territory, through the forest as integral part of the territory.

Example horizontal reading: case of Antwerps Inhabited Forests (Figure 6)

The changing dynamics between forest and urbanism that were discussed in the case of Antwerp's north-eastern hinterland (and especially Schotenhof) form a unique history. Some intriguing elements and constants in the relationship between forest and urban planning came to light. Time after time they were raised and they entice us to move to a more general hypothesis for a new vision on (parts of) the infamous nebulous city that we propose to call forest urbanism.

In each of the episodes discussed in the case (always with a characterization of Schotenhof as pars pro toto for the north-east of Antwerp) one can recognize an almost inescapable interplay between forestry and urbanism (in the broad sense of the word: the organization of human settlements).

In fact, the history of the northeast of Antwerp which was reconstructed in this case is in the first place a retroactive manifesto for forest urbanism.



6. Research-by-Design on Forest Urbanism in Antwerps Inhabited Forests: a sequence of forest-urban exchanges. Source: author.

Example vertical reading: Residing in the forest, 1850-1945 (Figure 7)

(Cyclic)

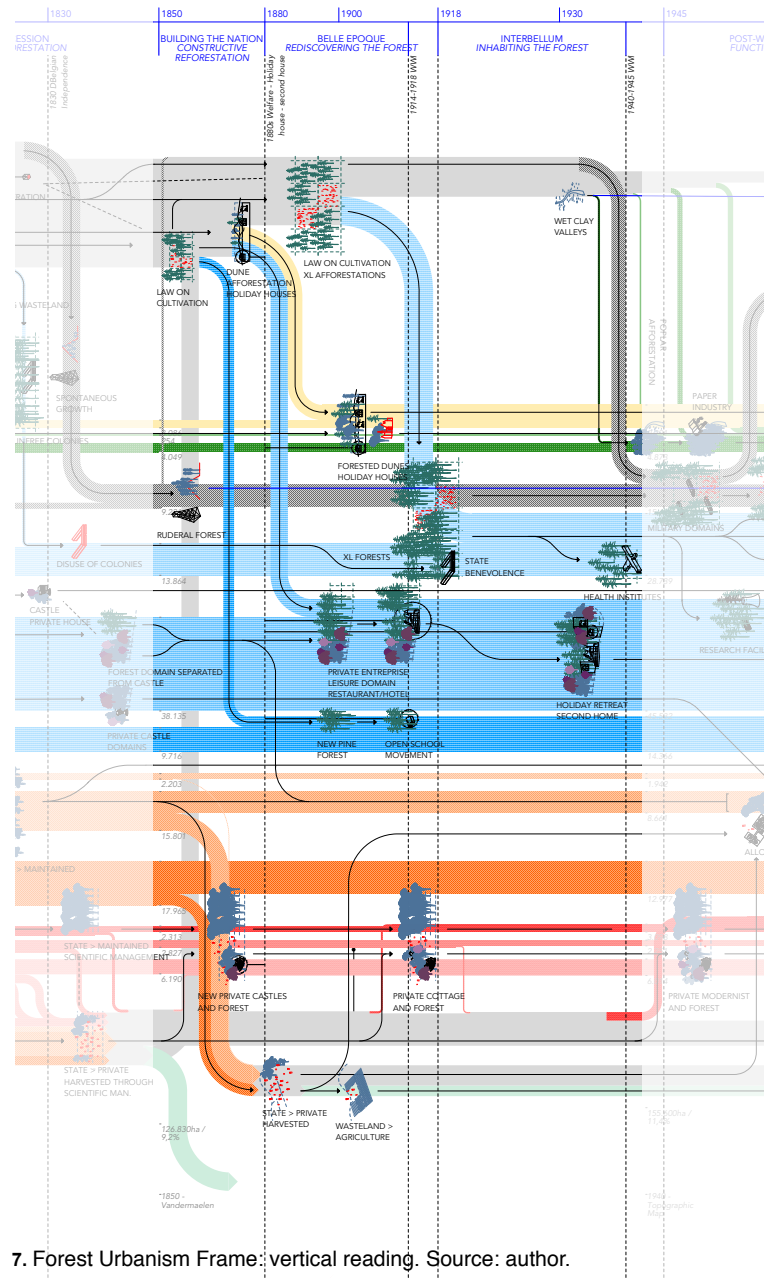
The notion of a “return to nature” became more dominant with the Industrial Revolution, but from the beginning of the nation the pristine nature of the forest called out for the wealthier part of the population. The sporadic trips to the forest became systematic through the appearance of holiday houses and leisure functions as restaurant or a hotel in the forest. The insertion of the holiday houses in the forest was regulated in a collective pact to safeguard the forest’s character. Forest was invaded, but also appropriated and taken care of.

(Multiple)

Forest was seen as the perfect environment for a variety of leisure and health related activities.

(Image)

During this period the notion of leisure spreads structurally. Forest is the pristine nature that can remediate the impact of the Industrial Revolution.



7. Forest Urbanism Frame: vertical reading. Source: author.

QUALITATIVE

FOREST INFRASTRUCTURE TYPES

- radial-centric-star-shaped
- “tire-et-aire”
- small orthogonal
- large orthogonal
- rectangular
- organic
- romantic-landscape
- topographically
- hierarchical

FOREST TYPES

- mixed deciduous forest
- cathedral beech forest
- deciduous forest with exotic species
- new plantation for city forest
- productive (poplar or other)
- deforested - wasteland
- ruderal forest
- mixed dune forest
- coniferous forest
- natural deciduous regrowth

QUANTITATIVE

- WASTELAND (suggestive)
- AGRICULTURE (suggestive)

FOREST

- soil texture
- class amount
- $\frac{145.385ha}{10.46}$ total forest amount. Flanders Absolute / %
- $\frac{1775 \cdot Ferrant}{1775}$ measuring method and year

Estimated amounts (pre 1775)

- Sand
- Loam
- Silt

Measured amounts (post 1775)

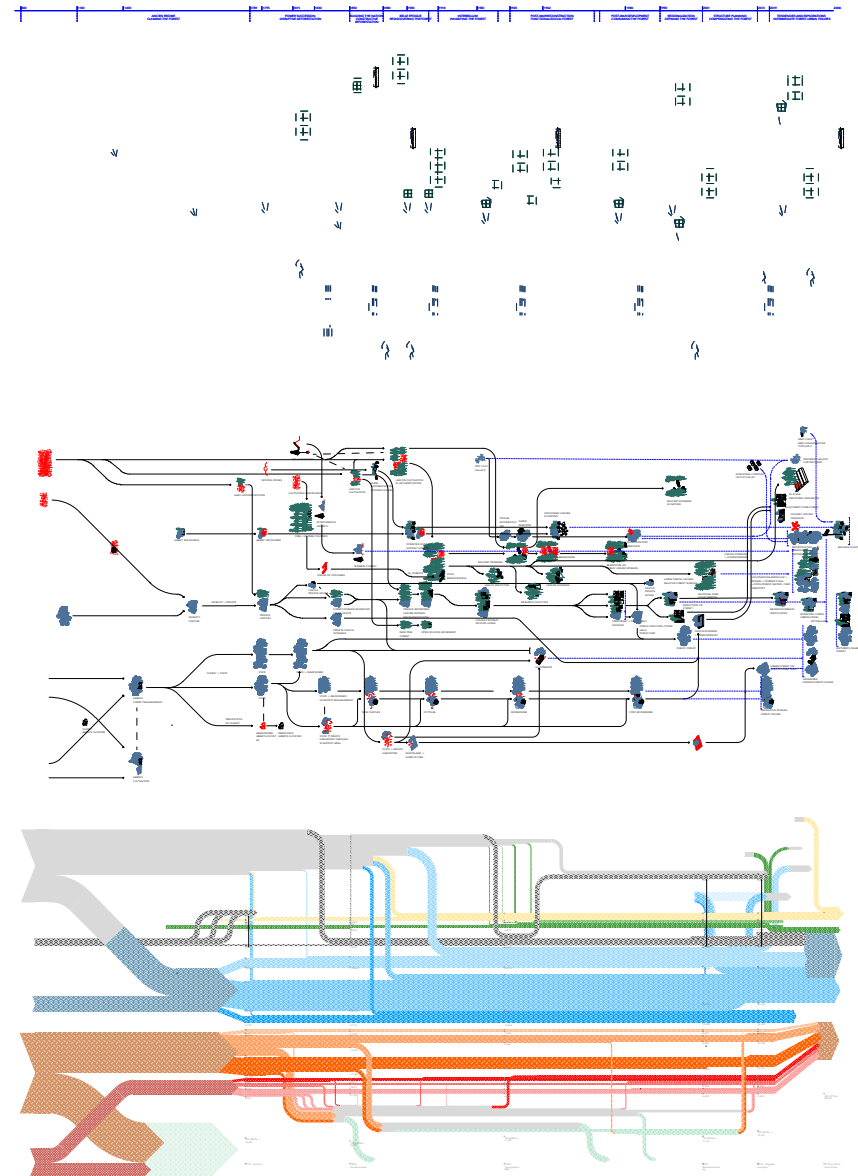
- Wet
- Humid
- Dry
- Antropological
- Wet clay
- Dry clay
- Dunes

Transversal reading / Conclusion (Figure 8)

The relation between forest and urban has been explored in seven case studies that cover the range of the main soil texture classes across the section through Flanders. A detailed forest evolution per soil texture class revealed the dynamics of forest disappearance and reappearance over time. Macro-statistically the forest cover remains relatively stable, but this only hides the dramatic transformations across the territory. Through the seven case-studies a grounded body of knowledge is developed and then takes the form of a forest urbanism framework. It can now serve as a navigation tool for exploring the forest urban relations in Flanders.

The manifesto synthesizes observations from the seven case studies into three main characteristics of forest urbanism (FU):

1. forest and urban are cyclically intertwined;
2. forest and urban find each other in and are by themselves environments of multiplicity; and
3. the forest urban relation is driven by the image of the forest.



8. Transversal reading: manifesto (conclusion). Source: author.

Besides these general characteristics forest urbanism also seems to lead to a particular spatial organisation. The process of interaction between forest and urban seems to always generate an “intermediate forest figure”, an intermediate form of (re)producing a new territory by identifying a collective scale where the previous three characteristics are clearly defined and present within a spatially identifiable area.

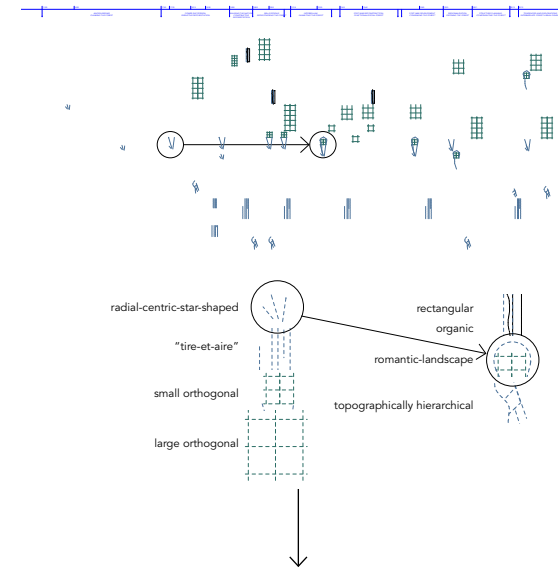
1. Forest and urban cyclically exchange

The detailed forest evolution per soil texture class reveals the forest’s dynamic nature. Forest has continuously disappeared and reappeared on the same, but more often on different locations of the territory. This often resulted in the physical appearance of what we call a “forest urban type” (from here onwards called FU type), i.e. urban development inseparably connected to a (particular type of) forested environment and mostly the result of intentional processes.

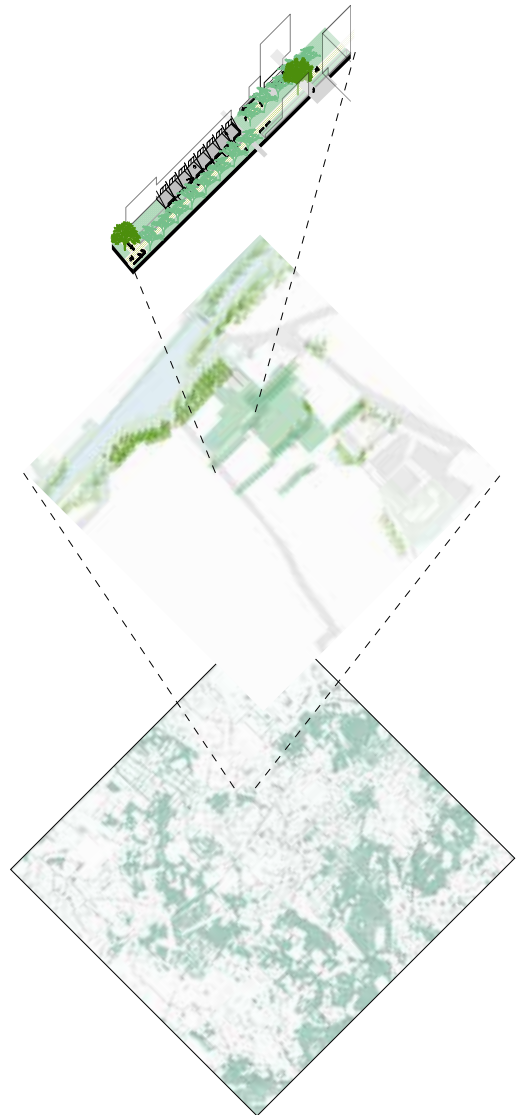
The dispersed and mixed condition of forest and urban initiated cyclic processes: clearings were made in the forest massifs that then gradually transformed into forest fragments; but those fragments were also extensively claimed, protected, maintained and restored. The process of deforestation was accompanied by a process of forest

preservation from the very beginning of settlement development (including agricultural and urban development) within the dispersed territory in the making. Forestry and urban processes have always been an inherent part of the dispersed territory’s urban ecology. The forest in the dispersed Flemish territory is deeply embedded in its development history.

What lingers in the cyclic motion of forest urban changes influences the future. The forest’s management – with its wide range of techniques – generates spatial structures, that subsequently are reused, and thus become urban structures and vice versa (Figure 9). Structure, the element that endures, is in a way de-functionalized, and becomes polyvalent. Mumford would have said polytechnic.



9. The temporal frames: the forest and urban leave traces of their logic organization, which is often appropriated in the next development phases. The superposition of these phases create new forms of forest and urban structuring. Source: NGI, 1948.



10. Forest Urbanism can gain meaning in (relation to) the urban by inserting structural tree planting as part of a forest structure, that is part of a forest ecosystem. Forest Urbanism can be cross-scalar if the forest-urban relation is valorized on all scales, case Campine, Den Hout. Source: Midi, 2017.

2. Forest and urban form a diverse, complex and multiple environment

Both processes of deforestation and reforestation build a forest urban realm. Since the processes never reach completion, traces are left behind that are mixtures of urban and forest. It is often the forest spatial management system that is adopted by the urban processes. The forest (management) structure is easily overwritten by new (management) systems that reflect society's changing needs. The new paradigm is easily absorbed by the forest and forms an addition to the palimpsest. Over time this results in an increasingly complex forest urban mixture.

Multiple functions: forest can be a complex urban environment

The diversity of FU types is directly relatable to the urban forest's roles. In the "spiritual forest" the abbey found a perfect place for meditation; in the forest of "the great escape" holiday houses, holiday parks and campings found a pristine nature, and so on... For each possible role of the urban forest, an urban function has effectively appropriated the forest to intensify this role in a forested environment.

Multiple scales

Forest urbanism works on multiple scales. As urban forestry is the management of urban trees on streets, in parks and on private yards, and the management of urban woods and woodlands, forest urbanism can act through the trees, the woodlands and the woods (Figure 10).

Multiple forest architectures

The ancient intertwining of forest and urban processes also builds on the architecture of the forest. Forest management system and infrastructure, as well as the choice of tree species created a vast range of architectures of the forest, i.e. the forest as a space of notable size with a certain type of trees, certain height, tree density, canopy cover, fullness and transparency, a particular sequence of forest floors, etc. The combination of these elements constitutes the library of forest types.

3. Forest urbanism is driven by forest image

As mentioned, through the urban and forest processes complex lineages of FU types grew that increasingly complexify and multiply. What truly set the mechanism in motion, what drives forest urbanism, is what the forest represents: its image of a pristine nature. The act of seeking and being inside this nature has, over time, been a constant, although the act itself did not remain constant.

4 acts of reenacting domestication of nature

Throughout the case studies four acts of domestication were identified (Figure 11).

The first is the act of taming the wild by intervening in an existing landscape to allow the carefree wandering inside. The true act of taming retains an image of authenticity as original landscape processes continue to exist after the act. The forest itself remains wild. A second domesticating act surges from within the image itself, rather than directly in the original landscape. A third act is in fact a forest ambiguity. The search for a divine nature, an earthly paradise, drives people towards the forest. Yet many ultimately perceive the forest as a “dark” place – also nowadays – and reduce the forest. A fourth and last act of domesticating is sym-

bolically keeping the forest within the urban, where it is under complete control. In the complete absence of forest, the domestication cannot take place, but is simulated.

4. The intermediate forest figure

In all of the case studies, whether they contain actual design or not, the future relation between urban and forest seems to be handled best through “intermediate forest figures”. These are defined as the systemic appearance of a palimpsestic transformation of FU types within an identifiable space, based on the cyclic exchanges between forest and urban; their intertwined complexity; and a commonly supported forest image. In a sense they are forest expressions of the notion of “intermediate natures” coined by Michel Desvigne.

Understanding the forest urban palimpsest

As the intermediate forest figure is the result of century-long processes that remain latently present in its spatial layout, it contains a historic validity. Any new intervention or development should be aware of the coherence and understand that its processes are ongoing.

11. The gradual degradation of the forest image quality in places as the Heikantberg in Rotselaar over time (chronologic order of building periods, from top ro bottom: 70s - 80s - 90s - 2000s). Source: author.





12. The reshuffling of building rights from urban expansion areas towards more productive and qualitative living spaces in relation to the forest, also allows for strengthening the forest itself. A new mode of transport based on soft mobility can grow on the soft traces of forest infrastructure to decongest the forest of heavy traffic. The Intermediate Forest Figure then serves as the space of collaboration between different stakeholders that negotiate a common vision. Here, through a neutral committee, the use of the land is negotiated and balanced with the forest as structuring element. (Liedekerke case)

Intermediate in scales

The intermediate figure is able to appeal to a strategic level at the regional scale but is equally able to ground itself in contextual situations, inexistent today.

The intermediate forest figure - ultimately anchored as it is, one way or another, on soil texture classes - usually supersedes the scale of generic urbanization as ribbon development or allotments. Its scale can therefore be strategic when aiming to reconfigure the urban dispersion that crosses or lies loosely related to the forest figure, while simultaneously realizing strategic forest structures.

Intermediate ecology: between de- and reforestation

Structural exchanges between urban and forest within the frame of the intermediate forest figure can reframe the compensation tool and increase the quality of the development through their entanglement. The main question would shift from “how much to compensate?” to “how to relate forest to the urban in order to generate a rich environment (ecologically and urban)?”, or a shift from solely quantitative to an also qualitative discourse.

Emancipatory intermediate

The intermediate forest figure represents more than the mere creation of a common forest. At its scale it represents different stakeholders and incorporates them in a common vision (Figure 12). The intermediate forest figure is an intermediate platform of negotiation within which strategic decisions can be made and supported by stakeholders. It can therefore become an emancipatory device towards a more commonly supported territory.

The intermediate forest figure as a vision

First, the forest imaginary⁵. The intermediate forest figure must be imagined and collectively appropriated. The forest can be the incentive for the inhabitants of the territory to contribute to a new territory. The forest has proven that, as natural capital and a common, it is able to unite inhabitants from all backgrounds.

Intermediate territory?

The incomplete process of urban formalization - the eternal emergent nature of the dispersed urban territory - and the forest's resistance leaves infrastructure

⁵ In analogy to Dan Handel's “First, the forests” exhibition for CCA. Dan Handel, ‘First, the Forests’, (Canadian Centre for Architecture (CCA), Montréal, Canada, 2012).

often in a unformalized state. The dispersed territory's generic urbanization force did not penetrate the forest figure. In addition, the intermediate forest figure often complements clusters of urbanization or more formal urban spaces as a soft, ecological continuity with unformalized infrastructure hanging loosely together, without any operational collaboration. Surely the model of a forested park territory as proposed by Bart Muys⁶ could emerge out of the intermediate forest figure to restructure the typical dispersed urbanization (Figure 13).

Foresturbanism is not necessarily ubiquitous but organized through the intermediate forest figures. It does not pretend to solve all the problems of the dispersed Flemish territory, but it can be, or should be at least part of the solution when considering the ecological crises at hand impacted by climate change. Several intermediate forest figures are identified through the case studies, but the methodology of looking at the forest-urban relations as presented in the dissertation can be used to identify many more.

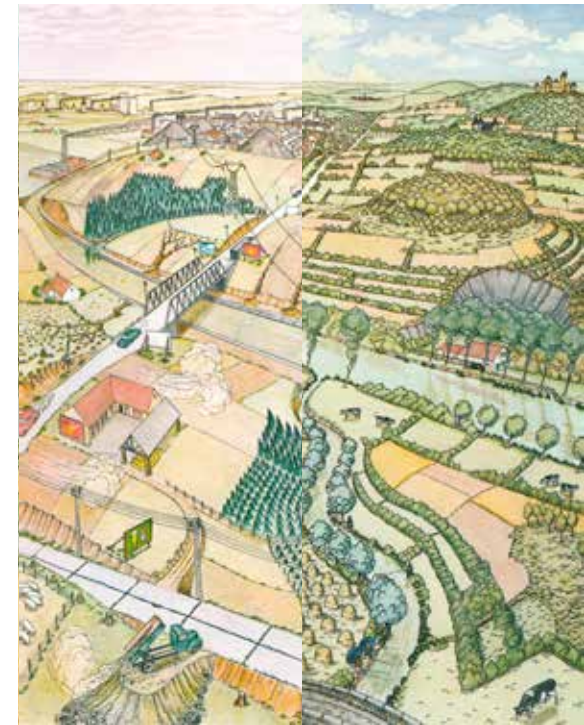
⁶ "Parkstad", terminology used by forestry professor Bart Muys in an article in 2002, Bart Muys, 'Bosbeleid in Vlaanderen Van Heden Naar Toekomst', Oikos : politiek, milieu, cultuur. (2002).

5. An open-ended FU frame

The genealogy of forest urban figures, the conceptual characteristics of cyclic interaction, multiplicity and image, and the notion of the intermediate forest figure based on the different soils of the dispersed Flemish territory are summarized in the open-ended forest urbanism frame. The FU Frame can be used to look at other places of the territory and explore, taking soil as base, what kind of forest urban dynamics might have existed, adding to the palimpsestic history - and future - of the dispersed Flemish territory. The frame brings together 97% of the forests through soil; and through the seven case studies all soil types were dealt with. Yet, the case-based research doesn't exclude other cyclic motions, multiple other figures or forest images to exist, or intermediate figures that divert from the ones described here. The framework doesn't pretend to be exhaustive. It rather is a methodological invitation to further explore the forest urban relation, and to add to the framework.

Forest urbanism and urban forestry in Flanders

Forest urbanism is a positive strategy to approach urbanism in the dispersed Flemish territory. It attempts to raise awareness and attention to the forest as a fundamental



13. What kind of territory do we strive for?

Duvigneaud and Tanghe's iconic drawings about the urban ecology of the territory and the importance of understanding the use and design of the landscape, and in that the obvious role of trees and forest. Two scenarios lie before us, dramatically mirrored (in their original version, here adapted for the summary).

On the left the worst scenario. Are we arriving there? On the right a future territory built through the systemic application of intermediate forest figures.

Source: Duvigneaud, Paul. 1974. *La Synthèse Écologique: Populations, Communautés, Écosystèmes, Biosphère, Noosphère*. Paris: Doin.

piece of the territory, and that is under siege despite support from regional government, to be included in the field of urbanism. In 2002 Bart Muys, a forest professor, used the terminology of a “park territory” to think about the position of forest in the territory and how forest policy should evolve⁷. It is at least remarkable that since then this dissertation is one of few – if not the only – that fully incorporates forest in the urban thinking, in urbanism and urban planning in extension. For the sake of the forest and the territory, the incorporation of the forest into urban thinking must be complete and continuous.

In that sense, forest urbanism can contribute significantly to the goals of urban forestry and vice versa. The concepts of forest making within urbanism are based on principles of urban forestry where the forest can provide a wide range of functions to the urban. Any forest in the dispersed territory of Flanders can be considered an urban forest. Forest urbanism on the other side can provide a framework (the intermediate forest figure) and tools (as building right pooling, urban design strategies related to building in relation to the forest...) of intervention that strengthen the position of the forest in the territory in a way that is far more strategic than urban forestry can realize solely.

⁷ The terminology used was “parkstad”, or “park city”, for Flanders seen as “park territory”. Muys, Bart. 2002. “Bosbeleid in Vlaanderen Van Heden Naar Toekomst”. *Oikos: politiek, milieu, cultuur*. 3.

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