The landscape in urbanism - a historical view into the future

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Introduction

In common literature the relationship between urban planning and landscape architecture has retrospectively often been described as an antagonistic one. The impression can be gained that only recent projects re-discover the importance of existing natural features as guiding design themes, and that earlier generations ignored them in favor of grand urban schemes. Architectural hardware against green software. Tabula rasa against incremental change. Starting from this hypothetical premise of two contradicting philosophies, the authors decided to dwell deeper into the historic context and to investigate how existing landscape systems have had a major impact on masterplan principles, informing a built reality that could otherwise have taken a different form and turn. In this study the focus therefore lays on interdependencies between the landscape and the architectural layers. On the background of ongoing buzzword discussions, the alleged practice of "Landscape Urbanism" is hence investigated as a historic constant and fundamental constituent of typo-morphological discourses. How can layers of natural systems relate and integrate with built structure, and what do these historic lessons mean for contemporary practice?

The authors will compare two landmark urban developments from the late 19th and early 20th century and investigate how different types of landscape and water infrastructures have been integrated in the urban form. The examples are Sarphatipark in Amsterdam (NL) and Spangen in Rotterdam (NL) (Firley and Grön 2013). The role of landscape systems in these developments will be assessed through the overlay and graphic comparison of contemporary aerial photos and topography plans (Google 2016) with pre-development maps and plans including cadastral subdivisions (Amsterdam, 1914; Loman and Kalff 1876; Niftrik 1866; Sarphati 1862; Spangen 1900 and 1905; Steenhuis 2007; Verhagen 1915; Witkamp 1869).

Designers and planners – as the denomination suggests - cherish the idea that they are in full control of their work, and that one of their major tasks consists in surpassing administrative and economic hurdles for the conscious implementation of an original plan. It is an attitude that underpins the importance of blueprint-style principles to the expense of the openness of a collaborative process. Questioned for decades – prominently for example by

Rowe and Koetter in Collage City (Rowe and Koetter 1984) - it remains, despite its incompatibility with the current Zeitgeist, inherently attached to the "designer's DNA". One of its side effects, and the reason why the authors refer to it, is a biased way of evaluating urban history, interpreting the outcome of spatial transformations as the result of a consciously authored design intent much more than as the result of a complex mix of circumstances. Further specified to the discussion about landscape urbanism, this thesis raises the question to what extent the impact of natural features on urban planning might have been downplayed for projects that occurred in periods that are not primarily known for their environmental agenda. Could it hence be enlightening to practice a reading of 19th and 20th century urban projects that focuses on natural layers, rather than on transportation, housing or sanitation as the era's "official" planning priorities? More importantly, could the results of such a reading inform our contemporary practice of urban and environmental design?

In order to provide first answers to these questions, the authors decided to analyze and compare two historic projects that promise to address the above-stated problematic in a conclusive way. The fact that both are situated in the Netherlands and associated with water issues is an unintended and potentially misleading coincidence. It does however hint to the probability of a correlation between the prevalence of specific landscape layers in urban form on the one hand, and the degree of importance of these layers for the territory's survival and prosperity, on the other. In the case of the Netherlands, this condition is summarized by the country's low datum, partially situated underneath sea level and therefore prone to flooding.

Critical for the understanding of this paper is the fact that the analysis focuses exclusively on the persistence of landscape features over time, bridging long-term transformation processes from one development phase to the other. The authors did not endeavor to assess and compare landscape and green features in general.

Background

It should be emphasized that the two projects' differing use of landscape features has to be put in perspective, and were partly due to a change of planning paradigms that were independent of geographical particularities.

Sarphatipark: This is a classic extension example of a formerly walled town. It can be compared to similar 19th century interventions, most notably in Vienna, Madrid, Paris or Barcelona (Benevolo 1971; Mumford 1961). The remarkable complexity of these large-scale transformation processes is best reflected

through the fact that Sarphatipark does not even have to be compared to counterparts in other cities: it can be compared to the neighboring Vondelpark and Amsterdam Zuid districts, both opting for a consistently different morphological solution. What all these interventions have in common is a clear and spatially adjacent relationship to a concentrically grown historic core (Figure 1).

Figure 1. Aerial Birds's Eye Photo of Sarphatipark close to the former defence walls (http://www.bing.com/mapspreview, 2016)

Spangen: Spangen is quite different: it was built in an area that had only recently been incorporated within Rotterdam's city limits, and previously belonged to the municipality of Delfshaven. The spatial result evokes a multi-nodal rather than concentric model, reinforced through the presence of two off-centered ports. Spangen can hence be considered an early outcome of a planning system that supported the emergence of a less concentric type of spatial growth through the obligation, since 1901, to provide large-scale affordable housing and to plan comprehensively within the limits of the entire municipality. Supported by new means of transportation, the relationship of new developments to the historic core started to change. This, at least partly, explains Spangen's relative isolation, and the fact that a train line and dyke could become major geometric drivers. Affordability played a role in the sense that the city decided to build on comparably cheap land that usually was to be found outside of the core. This new type of socio-spatial segregation was to become in many places a characteristic of 20th century planning (Figure 2).

Figure 2. Aerial Bird's Eye Photo of Spangen (http://www.bing.com/mapspreview, 2016)

Method and applied layers

For a better understanding of how the two chosen urban projects have been influenced and potentially shaped by different types of landscape layers, the authors have redrawn the projects at critical development stages, based on historic mapping information. As a particularly useful tool serves in this context the overlay technique. It unveils how natural features have been superseded by built elements, and helps us make informed guesses about the relationship between the two. Three major criteria were investigated through this technique: Building Features, Landscape Features, and Major Geometries and Orientation. The following tables and custom-made drawings document the urban transformations.

Results

Sarphatipark: Table 1 compiles the important plans and maps for the history of Sarphatipark during the decisive stages of planning and realization. The transformation of the Zaagmolensloot – a channel on the former city boundary with sawmills that had access to the Amstel River – into a street with a year-round pedestrian market is the key feature of the landscape. While the area undergoes significant economical and land use transformations, the major geometries originate from the little ditches and canals of an agrarian landscape in the 1700's.

Table 1. Mapped Layers of Landscape and Architecture in the History of Maps, Visionary Plans, and Present Form

Date of Plan or Map	Name of the Map or Plan	Building Features	Landscape Features	Major Geometries and Orientation	Content of the plan or map in respect to study area.
1862, March **Sarphati Plan**	Plan: "Plan Tot Verfraaiing Van Den Omtrek van het Paleis voor Volksvlijt" Author: Samuel **Sarphati** **Focus area of the map/plan:** Between Amstel and Wetering	Some buildings frame the new park. In the west a frame work of block for future development.	In the south two parks on both sides of the Amstel. One park directly in the south axis of the **Paleis voor Volksvlijt**. The eastern **Zaagmolensloot** is filled; the western part is narrowed and connects to the Wetering Canal.	The extension largely refers the geometry of the existing ditches of the polder.	Early plan for the extension of the city southwards.
1866 **Niftrik Plan**	Plan: "Plan tot Utbreiding van Amsterdam" Author: Jacobus van Niftrik **Focus area of the map/plan:** Larger Amsterdam	Blocks of different sizes; larger free standing buildings align with the street system.	Generous parks and big blocks. Radial street avenues divide larger blocks and connect to periphery. A new canal connects Amstel and Wetering and defines the edge of the development.	The geometries do not refer to the existing ditches in the polder. Orientation to circular defense ring.	Bigger blocks, planned new central station for Amsterdam, single buildings with lower density on the edge.
1869	Map: "Plattegrond van Amsterdam", Author: P.H.Witkamp **Focus area of the map/plan:** Larger Amsterdam	Single buildings. Mills/ block of workers housing on both edges of the **Zaagmolensloot.**	Small ditches and **Zaagmolensloot** as a wide ditch. **Singel Gracht** depicts alignment of former defense ring.	Geometries inherited from earlier centuries. Buildings follow geometry of ditches.	Zaagmolensloot is connected to the Amstel with a sluice.
1876, February 3 J.C. **Loman/J. Kalff Plan**	Plan: "Plan voor de uitbreiding van Amsterdam, opgemaakt in 1875" Autor: J.C. Loman/J. Kalff **Focus area of the map/plan:** Larger Amsterdam	Blocks are displayed with open courtyards.	"Zaagmolensloot"(later Albert Cuypstraat) is displayed as a canal connecting with the Amstel River. No planned Sarphatipark yet (first plans occur in 1877). Single Gracht in the area of Weteringspoort is realigned and does not show former fortification Private open space is depicted within the blocks.	South of the **Zaagmolensloot** the planned development follows the alignment of the former ditches.	Complete plan beyond **Zaagmolensloot** and former boundary Zuidelikj Zaagmolenpad (today: Govert Flinkckstraat). The plan is a development of the former stages from 1870 to 1875. The last portion of the **Zaagmolensloot** was filled in 1890.
1914	Map: Street Map Amsterdam	The scale of the plan makes it impossible to see details of blocks.	The Sarphatipark is the only larger park in the neighborhood. Albert Cuyp Straat became a permanent street market in 1912.		Area seems fully developed from the Singel Gracht in the north to the Rustenburgerstraat in the south.
2016	Google Satellite Image/Google Map	North and south of Albert Cuyp Straat are blocks with very narrow courtyards.	The Sarphatipark has still its original layout.		Area has all the features that were established in the 19th/20th century.

Spangen: Table 2 compiles the important plans and maps for the history of Spangen during the decisive stages of planning and realization. The Delfshavenshe Shie canal, the Mathenesser dike, the national railway dike and the harbor train line (on a former, major pathway with two parallel ditches) – define the boundaries of the development as major landscape features. The geometry of the development follows independent architectural principles.

Table 2. Mapped Layers of Landscape and Architecture in the History of Maps, Visionary Plans, and Present Form

Date	Name of Map or Plan	Building Features	Landscape Features	Major Geometries and Orientation	Content in respect to study area.
1900	Map:"Stadsplattegrond 1900. Een nog onbebouwde polder, begrensd door de **Mathenesserdijk**." **Focus area of the map/plan:** Area Polder Spangen	Some buildings along the **Delfshavenshe Shie** canal (for example wood industry); also clustered at the **Mathenesser** dike (**Hooge boomen**) and one of the major pathways (**Vreelust**).	Series of ditches from northwest to southeast from the dike of the national railway (**HSM**) in the north to the **Mathenesser** dike in the south. **Delfshavenshe Shie** canal in the east. Ditches on either side of larger pathways.	Diagonal SE direction of ditches is prevailing. Properties to the southeast have ditches diagonally from northeast to southwest. Both, **Mathenesser** dike and national railway dike seem to be superimposed on original geometry of ditches.	Area part of the **Old Mathenesse Polder**; area south of the **Mathenesser Dike** is called **Nieuw Mathenesse Polder**.
1905	Map: "Topografische kaart van 1905" **Focus area of the map/plan:** Area Polder Spangen	No significant buildings added.	Same as 1900. Additionally: Dike for the **Harbor Train** dike. Ditches on either side of the Harbor Train dike.	**Harbor Train Dike** is superimposed on original geometry of ditches while an existing pathway to the west and the clustered buildings of Vreelust seem to create a boundary for the train dike.	
1915 **Verhagen Plan**	Plan: "Ontwerp van de woonwijk Spangen door Plaatselijke Werken (ir. P. Verhagen), 1915. Grondslag van uitvoering.", Author: Peter Verhagen **Focus area of the map/plan:** Area Polder Spangen	Long and large blocks; some solitary buildings for community uses. Areas of existing wood industry and adjacent to **Delfshavenshe Shie** canal are not developed yet.	Centrally located public open space in the main axis to the north; reserved for an athletic club – later **Sparta** soccer and athletic association. Linear park elements on the **Mathenesser** dike in the south and smaller pocket parks adjacent to solitary buildings. Linear ditch along the train dike. Some linear public open space along the edges of the central axis.	New alignment denies predominant geometry of ditches. Alignment of blocks follows a symmetric layout.	
2016	Map: "Google Satellite Image/Google Map" **Focus area of the map/plan:** Area Polder Spangen	Complete area developed largely after **Verhagen Plan.**	Public open space along Harbor train dike more generous with water and pathways. Public open space along **Delfshavenshe Shie.** Centrally located playfield is the not accessible soccer stadium **Sparta Rotterdam**. Public open spaces on either side of the stadium. Train dike defunct with spontaneous overgrow.	Edges of the development serve public open space connectivity.	

Figure 3 synthesizes the layers for both developments.

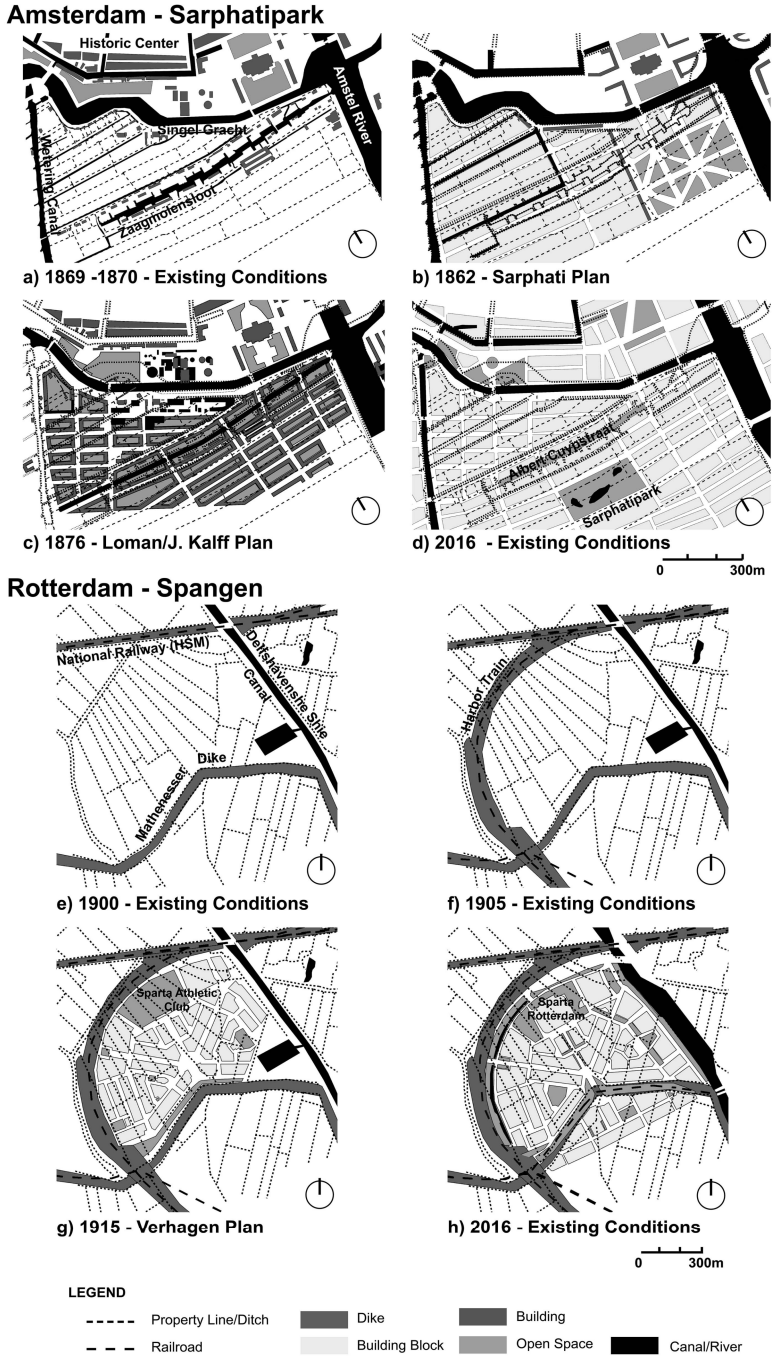

Figure 3. Landscape and Architectural Layers Sarphatipark and Spangen

Discussion and Conclusion

The paper's results document in some detail the interplay between landscape and building layers for two urban projects. What Spangen and Sarphatipark record in a particularly impressive way is the fact that any kind of dualism between natural features on the one hand, and man-made ones on the other, is difficult to uphold. This might be an evidence for practitioners and academics with a landscape background, but it is far less so for architects, urban designers and planners who often still cultivate a pastoral understanding of nature as a green space of relaxation. In the case of the Dutch landscape, the ubiquity of polders, dykes and drainage channels obscures the distinction between natural elements and human artifice. If in many other regions the retention of natural features in the form of waterways, trails or green features is – next to primary ecological concerns – foremost a question of collective memory, the Netherlands seem to entertain a more vital and existentially relevant relationship to land. As just one example among many, it can, if well prepared and protected, accommodate constructions, a benefit that is usually taken for granted and understood as an autarchic endeavor. This intrinsic alliance of necessity is remindful of the ongoing debates in the urban design profession and the quest to address environmental issues in a far more holistic way. The idea to alter and rethink the morphological rules of urban planning in view of new sustainable technologies seems less foreign in the context of a nation that had to drain and protect its land before any kind of settlement could have been envisioned. As is shown by the persistency of the drainage channels in Sarphatipark, the fact that the land itself is an artificial product of human activity does not coincide with an attitude or political will to quickly overcome process and landownership issues in favor of supplementary change. Once the fundamental pattern of land control had been established, it persisted in a similar way as if it had always been there. The new streets and blocks were laid out according to the historic ownership and drainage pattern, a procedure that offered some legal and technical advantages. In the somehow contrary case of Spangen, the large-scale implementation logic – insensible to the aforementioned historic patterns – collides, deliberately or not, with austerity measures that kept the development ground lower and therefore accentuated the existing dykes and train lines to almost doubtful prominence. We hence witness two very different, if not contrary lessons of how natural elements can persist in an urban landscape, and how they shape it: In Amsterdam they undermined the realization of the grand urban gesture as intended by Niftrik's extension plan of 1866. In Spangen, they actually helped to define this grand gesture, and were taken up by the master planner Verhagen as an inspiration for the district's overall geometry. The latter example is more complex than initially expected, because the radius of the train line's bend eventually reveals as being caused by the geometric realities of the historic cadastral pattern.

These remarks make clear that the aim of this paper cannot be the naïve identification of causalities between landscape features on the one hand and consequential design and development activity on the other. Each case-study has to be understood within its own historic and cultural framework. On the more modest scale of this study, the question therefore is to uncover which ones of the observed characteristics are the most relevant ones for today's urban design discussion. In the case of Sarphatipark, it might be the topic of small-scale environmental efficiency, and its repercussions on an urbanism of grand gestures. Today, the small-scale implementation logic - arguably supporting the emergence of social and architectural diversity - appears as a very timely approach for a new generation. Sticking to the existing pattern of drainage channels facilitated this approach, in terms of infrastructural cost as much as legal effort. The same could be said of the district's potential renovation, realizable in a resource-efficient piece-meal fashion without the commitment of a large entity. Does this also mean that it is more sustainable, robust or resilient compared to Spangen's large-scale approach? More research is needed to answer this question, also because it depends on the evaluation of green and public infrastructures for urban life.

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