

Climate change and urbanization have substantial ramifications for the management and protection of cultural-historical landscapes. This is especially true for historical estate landscapes. Issues of concern include an excess or conversely a shortage of water and a threat to the once so carefully chosen vegetation as a result of rising temperatures. Climate change pressures are compounded by increasing urbanization and the associated recreational needs. As coherent spatial entities, these landscapes are also susceptible to fragmentation as a result of urbanization, change of ownership, change of function and so on. Such challenges call for a design approach that deals sensitively with historically valuable landscape characteristics. In seeking to safeguard the spatial quality of estate landscapes a balance needs to be struck between utility value (economic exploitation), amenity value (identity and familiarity), and future value (ecological sustainability).¹ Such is the complexity of the task that a regional perspective is required in order to fully comprehend the coherence and systemic relations between individual country estates and to develop a common basis for collaboration.

This article introduces just such a regional design approach for future-proofing estate landscapes. Based on the principle of ‘preservation through development’, existing historical landscape structures and any proposed spatial development would be included in a participative process of collaboration and co-creation involving owners, experts, policy advisers and others. Spatial design would be used at different levels of scale as a means of discovering development strategies for landscape formation in a given context. At the same time, the design would help to highlight solutions for rendering estate landscapes future-proof.

1. Bird's eye view of a historical estate landscape around the Western Lake in the Chinese city of Hangzhou, anonymous, 1760. A World Heritage site since 2011, this estate landscape is famous for its historical gardens, pavilions and pagodas (Historical Atlas of Hangzhou)



FUTURE-PROOFING ESTATE LANDSCAPES

A REGIONAL DESIGN APPROACH FOR HISTORICAL
COUNTRY ESTATES IN A
LANDSCAPE CONTEXT

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ESTATE LANDSCAPES

In estate landscapes the character of the landscape is defined by various historical castles, country houses (including their gardens and parks) and landed estates.² When, as so often, they are situated close together they form landscape zones that determine the appearance and identity of an entire region. Estate landscapes occur the world over. Fine examples are to be found in Belgium, Germany, England, Italy, France, Denmark, Portugal and Spain.³ Splendid estate landscapes also exist outside Europe, for example in Russia, Japan and China (fig.1). In the Netherlands, estate landscapes occur in several parts of the country: around the cities of Amsterdam, Utrecht and The Hague, and in the provinces of Gelderland,

Overijssel, Groningen and Friesland, as shown by Hans Renes in his contribution to this thematic issue.⁴

For centuries estate landscapes were the preserve of the nobility, regents and the wealthy middle class, for whom landownership was a basis for power and income.⁵ An estate landscape is the product of the interaction of people with their domain in a specific socio-cultural context. In that respect estate landscapes are an expression of the motives and ideals of the owners in combination with the spatial, functional and economic possibilities offered by the land in question. As such the estate landscape is an important cultural expression, occasionally with emblematic significance (fig.2).⁶ So there is a direct connection between the estates and the landscapes they form. The

2. Bird's eye view of seventeenth-century Honselersdijk, where the garden mirrored the polder landscape in a supreme expression of control over water and nature, A. Bega and A. Blooteling, c. 1680 (private collection)





3. Estate landscapes represent enormous economic value in terms of nature and culture, but also in terms of possibilities for tourism, recreation, farming and forestry (photo Leontine Lamers)

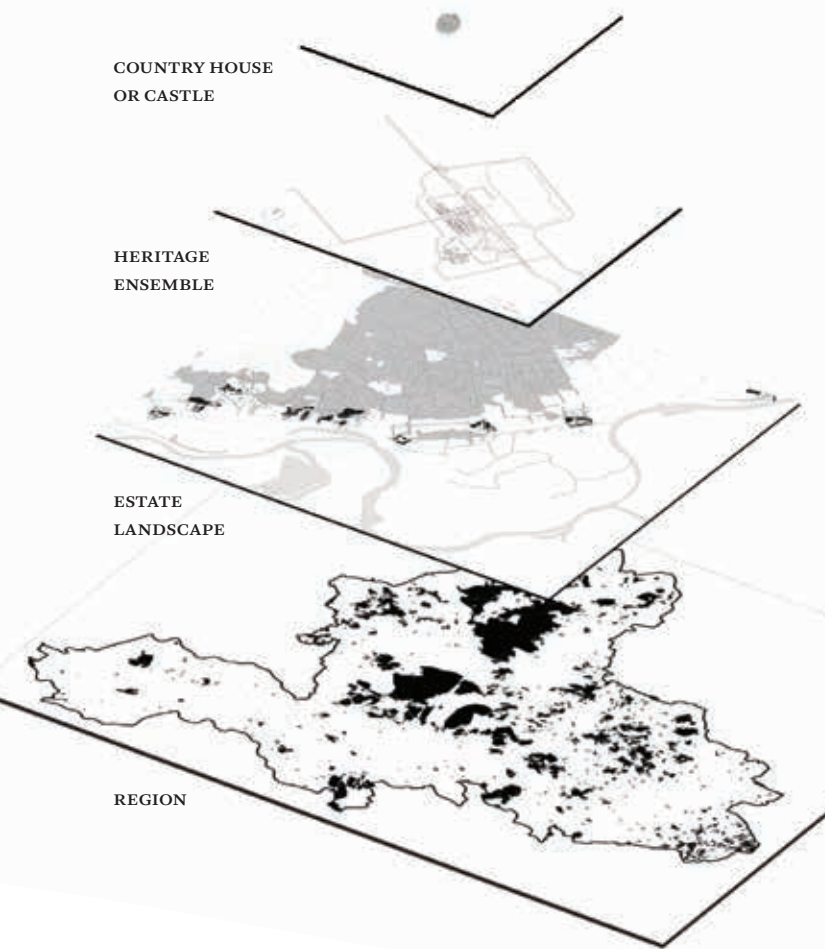
landscape context and available sites were key factors in the choice of location and decisive for land use and the landscape architecture design of the gardens and parks.⁷ Water and road networks were used or built to connect the countryside with urban centres, thereby allowing the nobility and gentry to travel easily between the city and their country retreats.

Today these estate landscapes represent major heritage values in the form of grand buildings, gardens and other landscape elements. In addition, they often constitute a concentration of valuable nature. Far more than in any other landscapes, the traditional agrarian cultural landscapes in these zones have managed to retain their identity. Owing to their cultural-historical significance and natural beauty estate landscapes offer ample opportunities for tourism, recreation and sport. And that means they are also of great economic value (fig. 3).⁸

The Netherlands can boast a long tradition of preserving and protecting castles, country houses and

landed estates. Since the 1930s the focus of this practice has been on the building as heritage object and not on the building in its landscape context.⁹ However, to ensure sustainable preservation and development it is vital to understand these castles, country houses and landed estates in their landscape context. In historical estate landscapes the buildings, gardens, parks and other elements are effectively interwoven with the landscape. ‘They are part of the whole from which they derive their picturesque effect, which they in turn give back to the whole,’ is how Henri van der Wyck paraphrased the view of the nineteenth-century landscape architect Fürst Pückler-Muskau.¹⁰

The estate landscape is a holistic system that we can only understand by looking at different spatial scales and their interrelationships: individual country houses with their gardens, parks and grounds constitute a country or landed estate, several such estates form an estate landscape, and several estate landscapes together form a region (fig. 4).¹¹ Historical



4. The estate landscape as scalar continuum (Steffen Nijhuis and Elyze Storms-Smeets)

castles, country houses and landed estates are part of a scalar continuum in which relations are shaped by the attachment, connection and embedding of a specific place or location within the wider context. These relations can be analysed on several levels of scale.

THE ANALYSIS OF ESTATE LANDSCAPES IN SPACE AND TIME

Over the course of time many different approaches to understanding estate landscapes have been devised. They include socio-geographic, cultural-historical and landscape architecture perspectives, as Hanneke Ronnes explains elsewhere in this issue.¹² The estate landscape is a multi-scalar relational structure that connects and influences spatial, ecological, functional and social aspects.

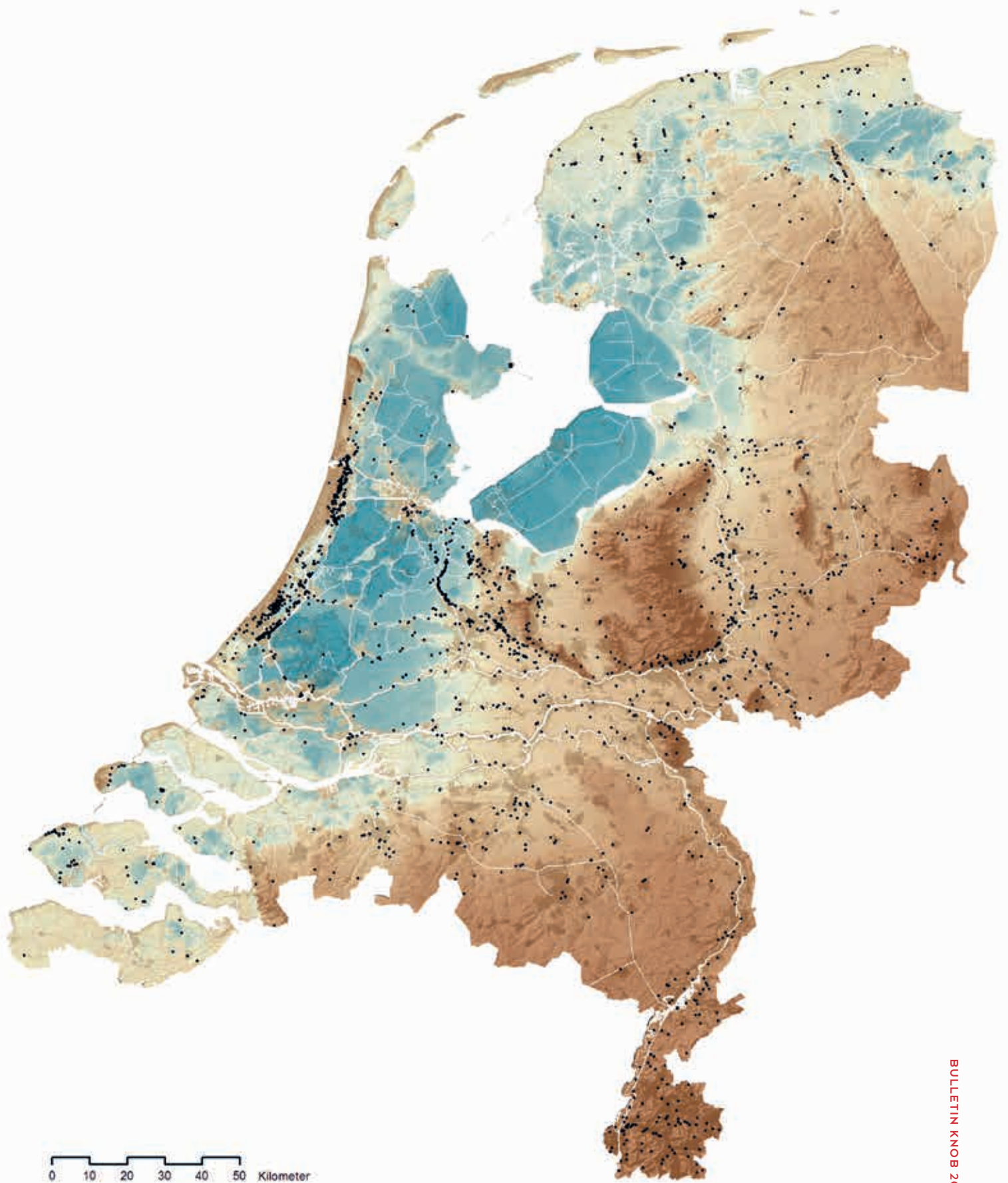
In order to analyse such a complex system and the relationships embedded in it, it is useful to separate the different functional and structural aspects and connections into layers.¹³ That said, we need to be mindful of the danger of becoming deterministic and of thereby losing sight of other important matters. The

aim is to understand individual layers that influence one another to some degree and whose mutual relationships can change over time. In short, the separation into layers should not be seen as a hierarchical and immutable arrangement.

Let us look at these layers in more detail. The estate landscape and its genesis can be researched by examining the following three layers and their interrelationships: the physical environment, or the 'hardware'; human modifications of or interventions in this, or the 'software'; and the cultural, institutional and conceptual ideas, or the 'orgware'.¹⁴ Physical environment refers to the natural context: topographic relief, water, soil, geomorphological structure, climate, and related ecosystems. This first layer encompasses possibilities for farming and forestry and is the basis for the utilization of the landscape. As is clearly visible on a map of the Netherlands, estate landscapes tend to be found in transition areas between high and low ground and connected to glacial ridges, dunes, riverbanks and sandy outcrops (fig. 5). Important location factors, apart from the availability of land, were favourable soil conditions (not too wet, not too dry and stable enough to build on) and access to sufficient water, along with natural watercourses such as rivers and streams.

The logic of the estate landscape cannot be understood without considering human modifications of the natural context: the second layer. Think, for example, of major reclamation schemes like the Beemster Polder, which were created for farming, but also for the construction of country houses as a refuge from the city.¹⁵ Or of the barge canals and railway lines that rendered the country houses and landed estates accessible from the surrounding cities. Over the course of history, the cultivation of the natural landscape for living, working, food production, water supply and recreation has resulted in a succession of sometimes far-reaching, irreversible changes. It is here that the third layer of cultural, spiritual and religious views (encompassing the state of science and technology, organizational forms, political movements, design concepts and aesthetic ideals) plays an important role since those views largely determine how we interact with the natural context.

Time is an essential factor in understanding estate landscapes. Over the centuries the estate landscapes have undergone spatial transformations arising from changes and modifications prompted by necessity or by the obligation to continue to satisfy whatever was required of them (fig. 6). Some structures, patterns and forms were retained, others were developed further or replaced by new ones. The end result is a rich historical and typological layering.¹⁶ In that respect an estate landscape is so rich in meaning that it can be 'read' as a biography, or as a palimpsest illustrating the most



5. The choice of location for country estates is closely related to the underlying landscape, transport networks and landownership. Especially popular were transition from low to high in combination with glacial ridges, dunes, riverbanks and sandy outcrops. Key considerations included a favourable location in terms of soil conditions and an adequate water supply, as well as natural watercourses like rivers and streams (blue is below sea level, brown above) (Steffen Nijhuis, TU Delft)



6. Maintenance activities on De Wiersse. Climate change has consequences for [affects] the maintenance and management of gardens and will eventually lead to changes in, for example, the choice of plant species (photo Leontine Lamers)

important activities that have contributed to its formation.¹⁷ Knowledge of these historical traces is one of the starting points for new transformations: the addition of new functions that make the estate landscape future-proof.¹⁸

Ecological, socio-cultural and economic processes come together in the physical space and give it shape. Estate landscapes are the outcome of those processes. The landscape structure is the physical foundation formed by the interrelated supporting elements without which the landscape cannot function.¹⁹ By conducting a multi-scalar analysis of the layering of an estate landscape and correlating the resulting data, the landscape structure and associated landscape patterns and elements that have determined its character are laid bare. In an ever-changing environment, the landscape structure is a solid basis for the preservation of local characteristics on the one hand, and on

the other for the creation of conditions for the introduction of coherence and the addition of spatial qualities in tackling the previously outlined challenges.

TOWARDS A LANDSCAPE-FOCUSED, REGIONAL APPROACH

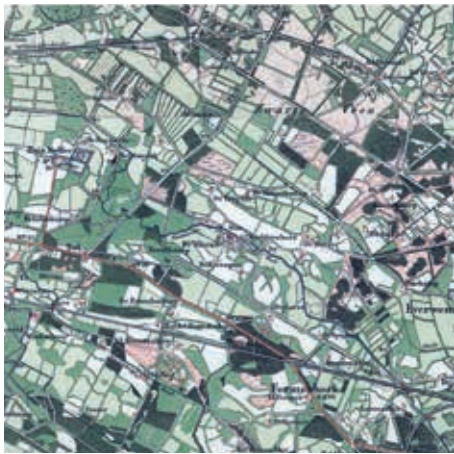
Climate change, spatial fragmentation, increasing recreational pressure and changes of function cause problems that compromise the layering and legibility of the estate landscape and pose a threat to its coherence and cultural identity. Indeed, a lack of awareness of landscape resilience increases the risk of damage and loss of capital.²⁰ Avoiding this outcome requires a careful approach in the form of a regional spatial strategy based on in-depth knowledge of the landscape and its development over time. This calls for 'management of change', focused on creating resilient estate landscapes in which the past continues to play

▼ DE WIERSSE

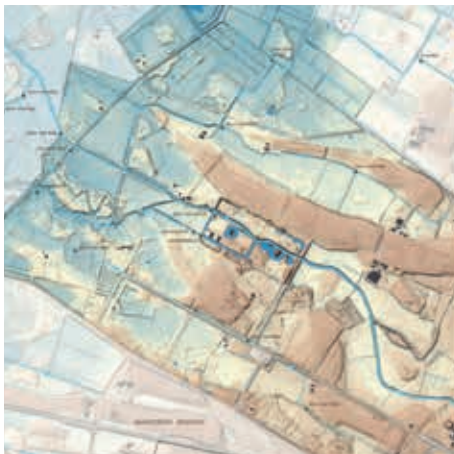
Situation
ca. 2018



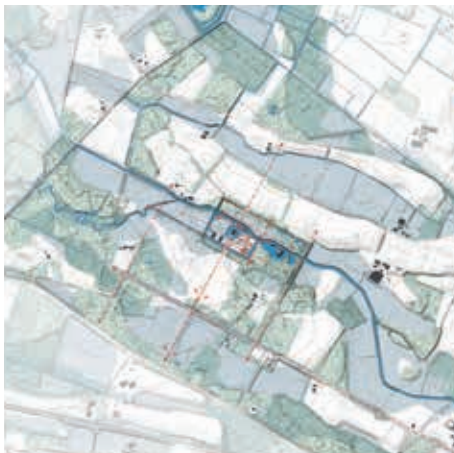
Situation
ca. 1900



Altitude
and water



Spatial
structure



ROSENDAL ▼



7. Comparison between the De Wierse estate along the Baakse Beek near Vorden and the spatial development and landscape location of Rosendael on the glacial ridge near Arnhem and: (1) situation c. 2018, (2) situation c. 1900, (3) altitude and water, (4) spatial structure (Steffen Nijhuis and Michiel Pouderoijen based on data from Topografische Dienst Kadaster and Rijkswaterstaat)

an important role.²¹ It also entails a ‘vertical approach’ that takes advantage of variations in the soil and water system when siting and designing changes and adding new functions.²² The diversity and identity of the estate landscape is in large part a reflection of the diversity of the physical substratum (fig. 7).²³ An estate landscape in the fluvial region, with its clay deposits, levees and river dunes, looks quite different from one on the sandy glacial ridges.

It is high time we started respecting this landscape logic in spatial developments related to climate, nature, water management and agriculture. In this approach, the natural substratum guides the land use, which follows the structure of elevation, soil and water. For example, a shortage or excess of water might be tackled by storing water in natural concavities such as stream valleys. Cultural-historical elements like *rabatbossen* (lines of trees planted on the ridges between ditches) and water meadows can play a role in water retention and simultaneously acquire a new relevance.²⁴ Old streams and springs can once again be the vehicles of biodiversity and spatial variety, while also providing scope for natural vitality in the water system.

THE PROCESS: NEW FORMS OF COLLABORATION

A regional approach also means striking a new balance in the relation between experts, citizens and governments. This calls for a process that is not confined to the domain of landscape experts, but which seeks the active involvement of landowners, administrators, the business world and other stakeholders.²⁵ The idea is that the participation of all these parties in strategic planning, design and decision making will enhance the resilience and adaptability of historical estate landscapes; not just in a physical sense, but socio-economically as well. Resilience is defined as a system’s ability to react to change or disruption without any alteration to the primary condition.²⁶ Adaptability is the degree to which certain practices, processes or structures can be modified to suit changing social, economic or ecological circumstances. Modifications can be spontaneous or pre-planned, carried out in response to or in anticipation of such changes. This implies a shared understanding of how the landscape system works on the part of all participants. It also requires a forward-looking, proactive approach in which the interaction between citizens, businesses, experts and government is pivotal.

In practical terms this can be achieved by setting up ‘living labs’ (or ‘communities of practice’). Here the focus is on collaborative thinking and on the generation and implementation of sustainable solutions on different levels of scale. This process is supported by a combination of research, design, engagement and

imagination.²⁷ A ‘living lab’ can work with both an area [regional] and a shared approach. Citizens, academics, designers, entrepreneurs and policy makers work together on an existing situation, defined by geographic and institutional boundaries.²⁸ The experience of experimenting responsibly together, of monitoring outcomes and learning from mistakes, gives rise to an informal space in which everyone is equal. And this is consistent with the social and political circumstances that are required in order to arrive at solutions on a policy and practical level. Successful examples of this approach can be found in Gelderland, Zuid-Holland and Utrecht. In Gelderland, the province, the Rhine and IJssel water boards, landowners, conservationists and farmers work collaboratively on challenges relating to the Baakse Beek estate landscape.²⁹ The end result is that historical structures are preserved and developed further in the interests of sustainable water management, biodiversity and recreation, while there is also scope for local modifications to meet the needs of individual landowners.

In a landscape-based spatial strategy, content is linked to a process aimed at promoting socio-ecological inclusivity, diversity and flexibility – preconditions for the emergence and continued existence of a resilient system.³⁰ This approach effectively creates conditions for change and guides it in positive directions through the development of robust landscape structures that connect spatial levels of scale and provides scope for individual elaboration at the local level. Spatial quality is key to striking a balance between identity, familiarity, economic exploitation and ecological sustainability. Moreover, multifunctionality, accessibility, heritage and biodiversity are just a few of the ecological, economic, social and cultural interests that need to be promoted. Adopting a landscape-based spatial approach to the challenges facing the estate landscape can contribute to integrated sectoral activities and lead to coordinated sustainable outcomes that profit everyone. It is a design-focused and transdisciplinary approach that guides, harmonizes and shapes change by:

- taking the regional landscape structure and associated processes as basis (vertical approach), and the natural landscape as guiding principle in the design of spatial transformations of estate landscapes at all levels of scale;
- creating and regenerating living ecological and social systems; (bio)diversity, cultural history and multifunctionality as the basis for socio-ecologically inclusive and water-sensitive estate landscapes;
- developing resilient and adaptive spatial frameworks; robust landscape structures for

the coherent development of the region (long-term strategy) while adopting an enabling and flexible approach for local projects (short-term intervention);

- pursuing a design-focused, multidimensional approach; knowledge-based spatial design as an integrated approach involving owners, academics, entrepreneurs, professionals and government officials.

THE ROLE OF DESIGN AS RESEARCH

What is the role of the design in such an approach? The spatial designer applies their intellectual and design skills to conceptualization and form-making. They draw on knowledge from other disciplines, such as cultural history, ecology and water management, which they translate spatially and integrate into their design. 'Designing is an activity the aim of which is to visually represent an innovative solution, a novelty in the designer's conceptual world, to a given task or problem.'³¹ Definitions like this, which refer to a process or action, are dominated by verbs like find, produce and translate.³² Designing consequently acts as an intellectual tool for structured thought and action aimed at generating ideas and exploring possible solutions. This method is termed 'design as research'.³³ Targeted searching in a process where thinking and producing go hand in hand is central to this approach. Research and design mechanisms are combined with imagination, creativity and innovation. During the process a conscious or unconscious synthesis occurs, which crystallizes in a visual form – through drawing, charting or modelling things using analogue or digital means.³⁴

Design as research is a powerful research method for addressing complex spatial tasks in an integrated and creative manner. Its application to estate landscapes is not about opposing change or locking up the existing landscape, but about creating landscape qualities through well-designed new developments. It involves a structured design process in which important aspects are highlighted and design briefs are translated spatially and given concrete form. Spatial design is used to explore possible solutions from a variety of perspectives. But also, via design as research, to come up with, and immediately visualize new solutions.

Several co-creative sessions are organized together with owners, regional and local governments, landscape designers, experts, students and other stakeholders. Design outcomes provide a context for conversations and observations about the importance of certain landscape structures and elements and make it possible to discuss solutions and measures in terms of their spatial qualities.

Spatial design helps with the identification of problems confronting estate landscapes and with the postulation of possible solutions. It does this by clarifying these solutions with drawings and by sketching the context in which they could be realized. In that sense the design as research process identifies how stakeholders feel about future developments at different levels of scale. Visualizing ideas and design briefs and locating them in the space in question makes it possible to reveal the possibilities and limitations and to formulate questions that require further investigation. In this context, design as research is deployed as a systematic search for potential solutions to a spatial problem. But the research also reveals which landscape structures and elements ought, from a cultural-historical perspective for example, to be preserved.

THREE KINDS OF KNOWLEDGE

Design is not a linear process. It passes through various cycles of conceptualization, representation and evaluation. During this process three kinds of knowledge may be acquired: project-based, form-related and conceptual.³⁵ Project-based knowledge generated by the design relate to the site and to the integrated solutions being proposed for it. For example, in the estate landscape around Baakse Beek in Gelderland, design as research helped participants to understand the systemic relations between individual country estates, to increase the retention capacity of the water system, to reactivate historical landscape elements, and to stimulate the ecosystem and the spatial experience within the landscape. Seemingly contradictory agendas, such as water management and heritage protection, turn out to have the capacity to be mutually reinforcing.

Form-related knowledge concerns visual communication and materialization of the design: how it can be made. Spatial design entails exploring possibilities and analysing solutions. Design principles, which is to say basic concepts or rules that explain or prescribe how something happens or works, are key here. Examples include design principles for sustainable water management, nature-based solutions and historical ecology. These design principles can be derived from field research, a study of precedents, and conversations with experts in the fields of heritage, water and ecology. By means of design explorations and 'draw and calculate' procedures, the options offered by the design principles are contextualized and tested in the estate landscape.

Thirdly, design as research can generate conceptual knowledge. This consists of creative, intuitive and speculative ideas that are translated into spatial terms to sketch an inviting vision for the stakeholders. It can serve as a basis for connecting local projects and evaluating their long-term contribution to regional



8. Speculative design of the regional spatial and ecological cohesion of an estate landscape in which ecology, water management, heritage and forestry coincide (Yangjiao Wang, graduation work, Landscape Architecture, TU Delft)

coherence. It can also be used to clarify a specific context in which both systemic solutions for the estate landscape as a whole and the development of individual country estates are explored.

In other words, design as research is not about producing designs that can or should be realized immediately. Design as research can bring people together and enhance their understanding of the spatial coherence between country estates, which may eventually lead to a concrete design task. It can reveal the potential of integrated development in which historical structures at different levels of scale go hand in hand with innovative contextual solutions for water, ecology, recreation and farming (fig. 8). For this, knowledge of the landscape system is indispensable; it must be the starting point for new transformations aimed at making the estate landscape future-proof.

CONCLUSION

To achieve future-proof estate landscapes it is necessary to put castles, country estates and landed estates in a regional perspective. Take the periodic droughts that are having an adverse effect on estate gardens and parks: that problem can only be solved by a regional approach because the water system is a regional system. Tourism, too, demands more than any individual estate is able to facilitate. What is needed is a supra-local approach that connects interesting places via attractive routes and ensures a dispersal of visitors.

Such tasks call for a landscape-based regional design approach that deals sensitively with historically valuable landscape features while also enhancing the spatial quality by shaping changes. This strategy can be used for understanding historical castles, country houses and landed estates as a coherent whole and within their social and ecological context. It is a form of knowledge-driven spatial design in which knowledge of the vertical and horizontal integrity (the structure) of the estate landscape serves as a basis for its preservation and development. In this approach knowledge of landscape heritage and spatial planning reinforce one another. New tasks involving water, nature, heritage, recreation and farming are seen not as a threat, but as an opportunity to strengthen the structure of the estate landscape and to add spatial qualities related to identity, experience, use and sustainability.

Design as research on a local and regional scale is used for the spatial exploration and visualization of development strategies, principles and potential integrated solutions. This occurs in a participatory process where stakeholders collectively weigh up the pros and cons, learn together and co-create. Owing to the combination of content, involvement and process, the landscape-based regional design approach becomes a powerful methodology for increasing the resilience and adaptability of the estate landscape and in so doing making this landscape future-proof.

NOTES

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A REGIONAL DESIGN APPROACH FOR HISTORICAL COUNTRY ESTATES IN A LANDSCAPE CONTEXT

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Climate change and urbanization have substantial ramifications for the management and protection of cultural-historical landscapes. This is especially true for historical estate landscapes – landscapes whose character is defined by several historical castles, country houses (along with their gardens and parks), and landed estates – where climate change adaptation constitutes a major task. Issues of concern include an excess or shortage of water and changes to vegetation as a result of rising temperatures. That pressure is compounded by increasing urbanization and the associated recreational needs. These landscapes are also susceptible to spatial fragmentation due to urbanization, changes in ownership, changes in function, and so on. Combatting these pressures calls for a future-oriented design approach that deals sensitively with historically valuable landscape characteristics. It involves safeguarding the spatial quality of estate landscapes by striking a new balance between utility value (economic exploitation), amenity value (identity and familiarity), and future value (ecological sustainability). Such is the complexity of the task that a regional perspective is required in order to fully comprehend the cohesion and systemic relations between individual country estates and to develop a common basis for collaboration.

This article proposes a landscape-based regional de-

sign approach aimed at understanding and designing future-proof estate landscapes. It details a preservation-through-development strategy based on spatial development in sympathy with historical landscapes structures in a process of meaningful stakeholder involvement. Key to this process is collaboration and co-creation with owners, experts, policy advisers and others. Design-based research is employed as a method for addressing the complex spatial tasks facing estate landscapes in an integrated and creative manner. Spatial design, at every level of scale, becomes an instrument for working out development strategies and principles for context-specific landscape formation. But also for highlighting possible solutions that can contribute to the protection and development of historical estate landscapes. In other words, this is not about opposing change or locking up the existing landscape, but about creating new landscape qualities through well-designed new developments. This coincides with a collaborative process in which stakeholders jointly weigh the pros and cons, learn and come up with solutions. The combination of substance, involvement and process makes the landscape-based regional design approach a powerful method for increasing the resilience and adaptability of the estate landscape and in so doing making this landscape future-proof.