PROJECTING URBAN NATURES

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DOCTORAL THESIS
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+
Investigating integrative approaches to urban development and nature conservation
Dedicated to Juno, Elis and Erik.
Projecting Urban Natures is a compilation thesis in critical studies within architecture, and centers on four design proposals in Stockholm, Sweden in which I have taken an active part. The renewed emphasis on transformation, social-ecological interaction and resilience that is currently taking place within ecological systems science is the point of departure for this thesis, as are the opportunities that these paradigmatic insights in turn have opened up within urbanism and design. The thesis argues that although they are promising, these emerging integrative frameworks are seldom brought into mainstream planning and urban design practice. Instead, the structuring of “nature” and “city” into a dualistic balance relationship still permeates not only the general planning discourse, but also makes its way into planning documents, notably influencing distinctions between professions. In response, this thesis sets out to rethink and explore more integrated approaches to human/nature relationships, through the utilization of design-based and transdisciplinary research methods. While this core aim of the thesis remains the same throughout the work, the task is approached from different perspectives: through different constellations of collaborative work as well as through parallel and complimentary case-based explorations that emphasize the relational, anti-essentialist and situated articulation of values of urban natures and how these forces come into play. The work has been propelled through reflective, workshop-based, site-specific, and experimental design processes with professionals and researchers from the fields of, for example, systems ecology, natural resource management, political ecology, urban design, architecture, and landscape design, as well as planners, developers, local interest groups, and NGOs. Specifically, projects performed within this thesis include: Nature as an Infrastructural Potential — An Urban Strategy for Järvaället of which I was the sole author; Kymlinge UrbanNatur together with NOD, Wingårds, MUST & Storylab; Årsta Urban Natures with James Corner, Field Operations and Buro Happold; and Albano Resilient Campus — a collaboration between Stockholm Resilience Centre, KTH and KIT.

Keywords: research through design; interdisciplinary; transdisciplinary; resilience, legibility; landscape urbanism; ecological urbanism; Stockholm; Green Wedges; projective narratives; comprehensive narratives; prototyping; ecosystem services; urban nature conservation.
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TABLE OF CONTENTS

PART I

INTRODUCTION 13
Background and researcher’s position — challenging dichotomies
Aim and scope of the thesis — a search for a third path
Structure of the thesis
Summary of projects
Summary of papers

THEORETICAL POSITIONS AND PRACTICAL UNDERPINNINGS 41
Ecology in science and the resilience concept
Ecology and urbanism

METHODOLOGICAL FRAMEWORK 67
Research through designing
A transdisciplinary approach

PROJECTS: THE STOCKHOLM CONTEXT 81
Contested landscapes in the Stockholm context

Project 1: Nature as an Infrastructural Potential (Erixon Aalto).
Project 3: Årsta Urban Natures (Field Operations, Buro Happold).
Project 4: Albano Resilient Campus (SRC, KTH, Beijer, KIT).

EMERGENT THEMES 107
Multiple legitimate paths in resilience thinking and design — synergies and risks
Resilient designs enables complexity but demands legibility
Protecting through projecting — narrating the future as a tool
The epistemological role of design
The agency of the designer

FUTURE FORWARD FRAMEWORK 127

REFERENCES 132
### Part II

#### Projects

<table>
<thead>
<tr>
<th>Project 1: Nature as an Infrastructural Potential</th>
<th>145</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Erixon Aalto)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project 2: Kymlinge UrbaNatur</th>
<th>177</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NOD, Wingårdhs, MUST, Storylab)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project 3: Årsta Urban Natures</th>
<th>209</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Field Operations, Buro Happold)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project 4: Albano Resilient Campus</th>
<th>241</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SRC, KTH, Beijer, KIT)</td>
<td></td>
</tr>
</tbody>
</table>

### Part III

#### Papers

**Paper A:**


**Paper B:**


**Paper C:**

Erixon Aalto, H. Marcus, L. & Torsvall, J.

(Submitted to journal).

Towards A Social-Ecological Urbanism: Co-producing knowledge through design in the Albano Resilient Campus project in Stockholm.
I. INTRODUCTION

The point of departure for this thesis project is a critique directed at the current polarized relationship between urban development and nature conservation/green structure planning in the Stockholm region. Traditionally, ecological issues within planning have lacked strategic and innovative dimensions; instead, there has been an emphasis on prescriptive and preventive aspects. In this context, green areas are often treated in a dichotomized matter, where they are either “spared” or “sacrificed” instead of being integrated (conceptually, physically, economically and ecologically) in the urban structure. This dissertation aims to challenge this praxis through the exploration of more integrative and operative approaches. As a departing point, the thesis argues that environmental and ecological aspects are not the type of issues that can simply be added to the existing tradition of urban planning and design practice, but that an integration of ecological aspects demands a renewal and reinvention of these practices and a renegotiation of their structural conditions. In this introduction, I will provide framework and background for this dissertation and state the main topics and central questions of the work — What is it about? Why is this subject matter important and urgent? Furthermore, I wish to provide an idea of myself as an author, addressing my double role as a practicing architect and researcher. Why have I chosen to work in a design-based and transdisciplinary manner? The introduction also includes a reader’s guide that presents the structure of the thesis and provides a summary of the papers and projects.

BACKGROUND AND RESEARCHER’S POSITION
— CHALLENGING DICHOTOMIES

What initially sparked the thesis — the fuel that has driven this project — was a frustration with my own profession and what I perceived as an inability within my field to think integratively about urban development and green structure planning. My experience was that architects often used conceptualizations of “nature” merely as an aesthetic inspiration contrasted to the building or object — as a “setting” or “backdrop” for the work,
but seldom as a truly integrated part of the design. Furthermore, I found that when this kind of approach was transferred to more large-scale urban design and planning projects — which it often was — “green” or ecological issues were handled in a similar either/or mindset, where the task of the planner or urban designer was simply to determine which green structures were to be “preserved” and which were to be “given up”.

When I started investigating the fields of expertise available in planning from the “other” side — i.e. the “green” side — I discovered a seemingly similar, but reversed, simplification, but this time towards the built environment. Ecologists, park planners and environmental professionals to whom I spoke, and with whom I later came to collaborate, chaired a similar frustration over the massive gap that they perceived between development issues and green issues in planning. Often, and unwillingly, they felt that they needed to take on defensive positions in order to protect and safeguard urban natures, and that their field of expertise was seldom allowed to take on more strategic and innovative approaches within planning and urban design. It seemed almost as if one side was seeing only solid grey, and the other side saw only an unvarying green.

A similar unproblematized distinction between “nature” and “city” was prevalent in the more general planning debate of Stockholm at the time. There was almost a caricature-like division into two separate camps: on the one hand were those who stressed the importance of safeguarding urban nature and cohesive green structures in the city — the “nature lovers”. On the other hand were the “city lovers” or “urbanists” who stressed the importance of allowing for a more interconnected city that would be better able to meet growing urbanization pressures. Although the nature lovers and urbanists were inherently counterparts, they seemed to share a common point of departure: where one wins, the other must automatically lose. In a sense, and as a result of this zero-sum game, they seemed to share a common view of nature as something separate from and untouched by human society and culture — something that must either be sacrificed to or saved from the processes of change.
Although these first tentative observations that formed the basis of my diploma work were doubtless rather unarticulated and simplified at first, my conviction about how very deeply the dualism of nature and city is embedded in praxis and professions, both internationally and in relation to the Stockholm region, has only grown stronger in the years during which this work has developed. Since this thesis was initiated, the discourse on sustainable urban development in Stockholm has become increasingly structured by binary conceptual couples, resulting in polarizations such as compact/sparse, city/countryside or inner city/suburb (Tunström, 2009). In the current comprehensive plan (City of Stockholm, 2010) and the forthcoming plan, which has yet to be ratified at the time of writing (City of Stockholm, 2017), a new direction for the city’s development has been delimited that stands in sharp contrast to earlier directions articulated in the plan from 1999, which emphasized the need to preserve coherent greenfield sites. The present plan states that:

The general focus of the City Plan 1999 was to retain these parts of the contiguous green structure. However, there are strong arguments in favour of abandoning this principle as the city grows and the needs of Stockholmers change. The ambition in this City Plan is to bring a modern urban layout to postwar Stockholm. (City of Stockholm, 2010, p. 34 in English version)

What this changed mind-set regarding the suburban physical structure and large-scale urban green structures might entail, however, remains to be seen. So far, the urban natures that have been amplified through planning and policy documents seem to be based on a strongly normative outlook that holds up the traditional inner city as an ideal (Tunström, 2009).

In her analysis of how “urban” and “nature” are constructed in urban planning in Stockholm, sociologist Ylva Uggla (2010, 2012) has found that “nature” is simultaneously represented as something desirable and problematic:

On one hand, green-field sites and parks are characterized as important to the city, having recreational value and functioning as public meeting places. On the other hand, green-field sites and parks are constructed in opposition to desirable qualities of urban life, and cast as places that must give way to expansion and increased urban density. In this sense, green areas and nature are constructed as something qualitatively different from the rest of the city. (Uggla, 2010, p. 57)
In her further analysis of Stockholm’s comprehensive plan, Ugglà points toward a tension between urban densification and preservation of green areas. Here, planning is based on a presumption that urban environment and nature are two qualitatively different things, between which there is a clash of interests:

Nature has to give way for the development of the city and citizens’ needs. It is something qualitatively different that creates barriers in the city, resulting in fragmentation. Although the need for protection of green areas is recognised, this is not perceived as a task for the city but is delegated to regional protection of certain areas. (Ugglà, 2012, p. 82)

An incompatibility is thus constructed between the coherent city and coherent green areas, favoring, as Ugglà finds in her analysis, the coherent city (2012). In this prevailing discourse, a conflict between the preservation of large-scale urban green structures and urban development becomes evident, as well as a divide between biodiversity conservation and human wellbeing and safety (Tunström, 2009; Ugglà, 2012).

The nature-culture dichotomy also prominently influences distinctions between the professions and roles of officials within sectored planning institutions. In their study of how sustainable perspectives were integrated into Swedish municipality planning, Dovlén and Skantze found that the relationship between environmental officers and planning officers was often conceptualized in dualistic terms, and often in metaphors of “battle” or “combat.” Planners described environmental officers as “the police” or “soldiers” who used environmental legislations as a “weapon”. They in turn felt that they were often regarded as “intruders” or “spies” who needed to “fight” to put forward environmental issues. Both professions talk about “winning” or “losing”, but the battle was not perceived as taking place on equal terms, since environmental issues were often seen as less dominant in the planning process (Dovlén & Skantze, 2005).

Additionally, ideas about “urban nature” and development often seem to be constructed as opposing polarities in the general planning debate. As exemplified by the citations drawn out from the debate in a series of articles
in Swedish morning papers (pp. 18–19), green areas become a political punching bag, not subject to solution-oriented approach, but rather used to take a stand — thus further cementing polemic roles. Since the initiation of this thesis, this polarization — albeit increasingly revealed as precisely a “constructed opposition” in the debate (see for instance Sandahl & Wallberg, 2016; or Sundin's final reply, 2016) — has intensified rather than been solved. In a more thorough discourse analysis of a series of articles in the morning paper Svenska Dagbladet (SvD) done by Uggla, various actors – e.g. planners, public authorities, politicians, environmental movements, researchers, citizens, bird-watchers and strollers – gave their perspectives on urban nature. Although diverse opinions are represented, two different lines of thought are broadly expressed when discussing urban nature and biodiversity: one in favor of “wild nature” and coherent green areas, and the other in favor of a coherent city (Uggla, 2012 p. 76). The dichotomy also permeates conventional practices of nature conservation, e.g. through the safeguarding of identified nature values by the setting aside of land from human disturbances. These practices are often rooted in a firm conviction of the effectiveness of such protected areas; believed to preserve ecological values through their functional separation from other land uses. Within this understanding, and often through a rhetoric of “optimization,” there is an underlying assumption of nature as linear, predictable and closed (Holling & Meffe, 1996; Folke, 2006), and future potential for novelty and change is rarely considered (Asikainen & Jokinen, 2009; Lundgren Alm, 2001).

In these unproblematized distinctions between nature and culture that extend throughout not only the general planning debate, but also official planning documents and roles of officials within sectored planning institutions, the concepts are, as Uggla puts it “bound together, gaining meaning from each other” (2010, p. 50). In this thesis, I argue that the core of the problem here is that the very conceptualization into a dualistic balance relationship in fact opens up the possibility for one of the two units to dominate and govern the other — i.e. a hierarchical dualism. In light of increasing urbanization pressure and the accompanying competition for space, in combination with the seemingly continued neoliberal and market-driven ideologies driving urban planning, green
2. Throughout the ages, researchers and philosophers have studied the origins of the perception of nature and culture as separate entities, and they have argued convincingly that such a perception is deeply flawed (e.g. Meyer, 1997; Swyngedouw, 1996; Gandy, 2005).

These statements, published in two of the major Swedish newspapers between 2005 and 2016, are a good illustration of the views held by the main camps in the planning debate in Stockholm. The conflict concerns the seemingly incompatible endeavors to protect and maintain green and open space values in the city’s green structure on the one hand and, on the other hand, to address the housing shortage and create a more polycentric, dense and connected urban fabric across the current radial configuration.

spaces and the diversity of urban natures are bound to weigh more lightly.

The tendency to divide into binaries is hardly a new observation, and nor is it unique for the Stockholm context. The dichotomy is evident, as we have seen, in many different fields, and to a large extent it characterizes the very core of Western thinking. It is built into our language and institutions and also prominently influences planning and urban design as well as distinctions between professions. While this thesis does not claim to identify a whole new problem area, it makes specific contributions to the understanding of problems and challenges in that it outlines the specificity of this thinking and its consequences in relation to the sustainable development in general and the Stockholm context in particular.

"Järva is Chewed into Pieces"

"Järva is an area that is threatened from all directions. At the same time as the Swedish County Administrative Board has proposed to create a nature reserve along the valley of the Igelbäcken stream, concerns about this precious recreational area are growing," claims the Swedish Society for Nature Conservation, which hosted a seminar on the subject ‘Vision Järva’ this Friday. "There is no shared vision for what will happen to the area," stated the Chairman of the Society Magnus Nilsson in Stockholm. Meanwhile, the excavators are systematically chewing the area into pieces. The green wedges of Stockholm have emerged by coincidence, but are of great importance for people’s quality of life." (Anna Gustafsson, Dagens Nyheter, August 28, 1999).

"Following the debate on housing development in Stockholm, one might get the impression that the real question is whether there should be more or fewer nature reserves. With slight exaggeration: will the Stockholmers be forced to sleep outdoors, in parks and green spaces, or will homes be built where the greenery previously was? (...) If the naysayers and those that are unwilling to compromise continue to assert their trajectory, this will eventually result in a serious threat to nature values — nature conservation will not win if it is constantly put in opposition to housing development. The best thing that we who care about nature and the outdoors can do is to be constructive, be willing to compromise, and propose good compensation for the green space that must disappear in order for Sweden to solve the housing shortage." (Björn Sundin in DN (debate article) March 29, 2016).
“Björn Sundin, Social Democratic councillor and Mayor of Örebro, writes in Dagens Nyheter (March 29) that he wants to help Stockholm and surrounding municipalities build houses in green spaces. This démarche is one in a series of many. Last week the Stockholm Chamber of Commerce released a report in which they claim that the solution to the housing crisis is to build in the green wedges. Recently, the Conservatives also demanded an end to the creation of more nature reserves (...). For the Green Party, housing construction is one of the key issues that must be resolved if Stockholm is to continue to be a development engine for Sweden. (...) At the same time, all available research shows that continuous green spaces are necessary to preserve both ecosystem services and biodiversity. They also have a proven positive impact on human health.” Tomas Eriksson (The Green Party, Reply in DN March 29, 2016)

“Everyone knows that proximity to green spaces, parks and natural areas is crucial for quality of life, health and development. At the same time, we have an acute housing shortage that may threaten conservation values when the need to build is so great. For there is no doubt about which values will draw the short straw if these dead-lock positions are allowed to continue.” (Björn Sundin(S) in DN (debate article) March 29, 2016).

“There is a constructed conflict between nature reserves and housing development flourishing at the moment. (...). In Stockholm, the “green wedges” make up landscape sections where many different values still exist. In RUFS 2010 it is described how these green spaces contribute to the “attractiveness of the region, act as areas for excursions, describe historical events, comprise core areas for biodiversity and more. (...) When these natural areas are built, values disappear that can’t be recreated. Decisions cannot be undone.” (Johanna Sandahl and Mårten Wallberg, Naturskyddsföreningen. Society for Nature Conservation, Reply in DN March 31, 2016) 3

“When you talk of biodiversity you often end up discussing beetles (...). If it means that we have to preserve unsafe woodlands with rotten trees close to where people live, there is a higher goal than biodiversity and that is the safety of Stockholm’s citizens. Interview with City commissioner by Jenny Kallin, “Storstadens natur trängs undan”, SvD, December 29, 2008.) 4
AIM AND SCOPE OF THE THESIS
— A SEARCH FOR A ‘THIRD PATH’

Two main directions have been dominant in the prevailing sustainability paradigm. In the first of these, the “solutions” to the massive problems that our world is currently facing have been focused mainly on technical aspects. The task and role of the designer in this context has been to create technical designs that for instance save energy, facilitate recycling, or improve storm water handling (e.g. Bradley, 2009; Mostafavi, 2010). These interventions often take place at an architectural (object) scale, and seldom at a larger, more interrelated scale that involves the complexity of ecological, economic and social processes of the city at large. The other main direction within the scope and scale of sustainable planning emphasis has tended to focus on prescriptive and preventive aspects. Here, the task or the role of the planner — in this case the policy-maker — has been to create rules and regulations that can protect nature against the forces of urbanization and development to the greatest extent possible. This tradition is set within a scientific, reductionist framework, built on ideas of “thresholds” and “impact evaluations”, and tends to rationalize and simplify the interactions between humans and their surroundings. The prevailing scientification of ecology within planning and the associated attempts to assure sustainable development merely through technical solutions or prescriptive policy externalize the “problem” from social and cultural values, as pointed out by Corner (1997), thus enhancing the divide between nature and culture in urbanism. In light of this, there is a strong need to, as environmental historian Sverker Sörlin puts it, “invest heavily in the knowledge needed, besides the natural sciences, to create the conditions for thinking differently about the type of societies that are needed in order to live responsibly with the climate and the environment” (2013, Dagens Nyheter, April 5, 2013, translated from Swedish).

Although both of the directions described above indeed constitute important contributions to the scope of sustainable and ecological planning, there is a risk that, as the urban theorist, architect and spatial planner Nel Janssens postulates, the “present tendency to treat the socio-ecological problematic as a mere technical or management problem causes a deficit
in the fundamental reconceptualization of the way we inhabit our environment” (Janssens, 2012, p. 81). Although often highly effective and specialized (and thus instrumental in offering solutions to concrete problems), such technical or managerial approaches hold a kind of simplified, objectifying, and reductive view on the interaction between humans and their surroundings that is deeply problematic (Janssens, 2012). In the search for more sustainable ways forward, there seems to be an absence of what we could think of as a “third path”, in which ecological knowledge and thinking is truly integrated into planning and urban design. In this thesis, I wish to not only highlight and analyze the causes of this missing third path, but also direct a call to all urban-oriented design professions that there is a need for new ways of working — a design task at hand here that has largely been unexplored as yet. While literature in inherently cross-disciplinary fields such as urban ecology, landscape urbanism, and ecological urbanism has grown steadily in the past decades, there are still few examples of how ecological issues can be integrated in actual, hands-on planning and urban design projects (Steiner, 2011).

Given this context, this thesis sets out to challenge nature/culture dichotomies and explore more integrative and synergetic approaches by concurrently analyzing the current situation and projecting alternative futures through design work. This core aim remains the same in the various projects and papers of this thesis, but I approach the task from different perspectives, with different tools and in different constellations of collaborative work. Reconceptualizations of the human-nature relationship are thus explored here both through the lens of emerging non-equilibrium concepts provided by ecological science and “ecological thinking” (e.g. resilience theory, landscape- and ecological urbanism and social-ecological urbanism), as well as through parallel and complimentary case-based explorations that emphasize the relational, anti-essentialist and situated articulation of values of urban natures and how these forces come into play. By taking on these various positions, the thesis aims to deflate — or at least poke bleed holes in — the bloated Nature/City oppositions that still prominently influence planning and urban design, and in doing this provide a platform through which more socially-ecologically integrated, dynamic and complexity-embracing
low-cased configurations of urban natures can be explored. Through the work with this thesis, I have found two aspects to be central in pursuing such an alternative path. These aspects will be further elaborated throughout the dissertation.

First, I wish to highlight the need to recognize the specificity inherent in design (as a process) and the designer (as a profession), celebrating and truly taking advantage of the ways design thinking and a designerly perspective can contribute to the scope of ecological and sustainable urbanism. This implies, as argued by Janssens, the recognition of design as another kind of knowledge building that can “complement the scientific analyses because design is trained in combining issues of facts with issues of values” (2011, p. 81). The designer is trained to seek synergies, and is, as Herbert Simon puts it, not only concerned with “how things are”, but also with “how things ought to be” (Simon, 1969). This is about recognizing the potential of projection; of what happens when the critical and the creative is combined. Here, the ability to reformulate the problem set-up and the questions asked, and to project new possibilities that link past and present, thus becomes particularly relevant in light of the environmental problems and contested planning situations we currently face. In this context of the inherently wicked and ill-defined, there is a need to develop and further explore concepts and methods that can reframe our thoughts and facilitate the break from habitual patterns (Janssens, 2012).

Secondly and simultaneously, I wish to emphasize the inherent potential and power of knowledge building through design, as well as stress the importance of the urbanist or designer being able to recognize the limits of his or her area of expertise. Central to finding a third path of sustainable and ecological urbanism is recognizing the complexity of the problems at hand, and thus the need to engage various kinds of knowledge in the process. Designers and planners thus need to develop ways of working in truly inter- and transdisciplinary fashions, where knowledge — for example ecological — does not enter the design or planning process merely as an advisory expertise — i.e. through biotope maps, inventories of red-listed species, or worse still, as impact evaluation in retrospect — but as an active, strategic, conceptual component from the start.
Thus, it is not enough to ensure the presence of various facts and expertise in a project; they must also be made part of, and truly integrated in the creative, projective process.

To this end, the main research questions of the thesis are the following: first, what would it look like if we attempted to incorporate the non-equilibrium ecological systems approach into planning and urban designs, and attempt to truly merge the entangled social and ecological perspectives inscribed in complex systems theory? What particular tools, techniques and strategies do we need to engage and develop in order to design for resilience? Can we re-imagine and re-invent the role of large-scale urban green structures as social-ecological “connective tissue,” and what could that mean specifically in the context of Stockholm? And which particular roles do we see a need to re-think (the expert or non-expert for instance)?

Furthermore, on a meta-level, this thesis asks if and how a design-based and transdisciplinary working method as such can become a knowledge-generating phenomena. What might the epistemological role of design be in such processes — what agency is there in design, and what agency is there in the designer? How can the “making professions” as they are termed by Dunin-Wojseth contribute (i.e. architects, landscape architects, designers, urban designers and spatial planners), and what clearly lies outside their roles and capacity? What potentials and challenges/obstacles do we see in these emerging approaches; what are the traps and pitfalls, and what needs to be developed further? The following section will outline the structure of the thesis in order to address these questions.

STRUCTURE OF THE THESIS

This work is a design-based compilation thesis consisting of four projects and three papers that comprise the main building blocks of the work. In addition, the book has an introductory summary chapter, or a “kappa”, with five sections that binds the work together and builds cross-references between the various building blocks. These three parts constitute different types of texts that deploy different modes of writing, e.g. the papers which relate to a specific academic peer-reviewed context and the scope of a particular journal. The projects, which are not academic texts (although, importantly, they are not uncritical),
should be understood in their specific context, in which language and words are intended much more to “convince” or engage the receiver/client/public of the benefits of the project. The commitment and exploration with these different types of writing, and the links between them, have also been a crucial ingredient in the development of research by design that has helped me to explore and jump between positions.

Graphically, each separate building block (Fig. 2) — the papers and the projects — has a separate color that appears in the spine and also in the middle of each spread (Fig. 3 and 4). Cross-references between the various building blocks and studies performed within the framework of the thesis are highlighted by the use of conceptual post-it notes (Fig. 5). The design of the book, which has been stripped of its cover and has a “naked spine” that exposes the different parts of the work for the reader, intends to reflect the transparent, legible and work-in-progress approach to transdisciplinary and design-based knowledge production that I believe to be necessary.

SECTION 1 outlines the “Theoretical Positions and Practical Underpinnings” within which the thesis is situated. First, the paradigmatic shift that has occurred within ecological science is traced with particular focus on emerging theories of dynamism, complexity, change and resilience. These reconceptualizations, it is further stated, have been instrumental in shaping new approaches to urbanism through their emphasis on social-ecological integration and human agency as well as opened up for generative capacities for renewal and innovation.

SECTION 2, “Methodological Framework”, outlines the two main methodological approaches of the thesis: 1) a design-based research approach and; 2) a transdisciplinary approach. Furthermore, this section discusses how these methods, by bridging theory and practice and designers and researchers, and by bringing together different research fields that are usually separate, can be valuable in reinterpreting the inherently “wicked problems” of planning and urban design to reveal unexpected potential and provide more integrated ways forward.

In SECTION 3, a brief background of the four projects performed within the framework of the thesis is presented in relation to the Stockholm context: 1) “Urban Strategy for Järvafältet — Nature as an Infrastructural Potential” 2); “Kymlinge UrbaNatur”; 3) “Årsta Urban Natures” and; 4) “Albano Resilient Campus”. Together with the papers, these
Diagram of the process of this thesis over time. Numbers show a sample of the actions that occurred within the framework of the work.

- Project 1
- Project 2
- Project 3
- Project 4
- Paper A
- Paper B
- Paper C

1. Presentation of student work “Järvafältet” at KTH, held at Färgfabriken through “Nya Stadsbyggnadskontoret”.
2. Participation in the group workshop “Stockholm at Large” organized by Färgfabriken and led by Farshid Moussavi.
3. Initiations of diploma work, with Anders Mårsén as supervisor and Gunilla Bandolin as examiner.
4. Meetings with local actors at the site and semi-structured interviews with planners, ecologists and landscape designers.
5. Examination of diploma work “Nature as an Infrastructural Potential – Urban Strategy for Järvafältet” (Project 1).
6. Guided tour of the site by a local farmer at Järvafältet.
7. Meeting with system ecologist professor Margareta Ihse at SU.
8. Initiated PhD position at KTH.
10. Diploma work on exhibit at KTH.
11. Meeting and discussion about diploma work with Ulrika Egerö.
13. Workshop with Margareta Ihse at the offices of Wingårdhs in Liljeholmen.
14. Meetings with and presentations to the municipality of Sundbyberg and Vasakronan.
17. Lecture at Färgfabriken, Stockholm at Large, Urban Turntable.
18. Opening of Kymlinge exhibition, Marabouparken, Sundbyberg and seminars.
19. Diploma work published in the journal Byggekunst in December.
21. Meeting with Bette Lundh Malmros at TRF.
23. Meeting with Ulrika Egerö, SBK.
24. PEC-SRL-Conference in Berlin and presentation of conference paper in Brandenburg.
25. Urban Turntable workshop at Färgfabriken.
26. First contact with Sara Borgström at Stockholm Resilience Centre.
27. Workshops at Stockholm Resilience Centre with Henrik Ernstson, Erik Andersson and Sara Borgström from “Urbangruppen”.
28. Meetings at Stockholm Resilience Centre with “Urbangruppen” and Alexander Stähle from KTH in preparation for TRF report.
30. Participation in workshop “Regional landskapstrategi för norra Stockholm” at the Growth and Regional Planning (TRF).
31. Together with Sara Borgström, organized a workshop for invited regional planners (held at TRF).
32. First outline for Paper A.
33. Together with Sara Borgström, organized a workshop at KTH inviting professionals and researchers from the fields of systems ecology, natural resource management, political ecology, urban design, architecture, environmental history and landscape design, as well as planners.
34. Field Operations submits pre-qualification proposal for Årsta.
35. Interviewed by Elisabeth Andersson Svd about large parks.
36. Field Operations shortlisted for the Årsta Competition.
37. Together with Sara Borgström, organized workshop with invited city-wide planners (at SBK) in August.
38. Kick-off meeting for Årsta Competition in Tekniska nämndhuset and first site-visit. First met Christopher Marcinkoski from Field Operations and Byron Stygge from Buro Happold.
39. Organized seminar with the activist group Nätverket Årstafältet and researchers from the fields of systems ecology, anthropology, as well as planners and urban designers.
40. Meeting with Field Operations, Buro Happold and Niklas Svensson at SBK.
41. Site-visit to Årsta by bike and foot.
42. Presentation of diploma work at Field Operations.
43. Meeting with Field Operations and Buro Happold.
44. Material from ecologist Andreas Zetterberg, KTH.
45. Submission of final designs for "Årsta Urban Natures".
47. Interview with Robert Hammond, co-founder of Friends of the High Line.
48. Workshops at Stockholm Resilience Centre with Sara Borgström and Erik Andersson, including seminar with environmental historian Sverker Sörlin.
49. Keynote speaker at ACSIS conference.
50. Participation and poster presentation at IALE conference.
51. SRC, KTH and KIT came together and formed the PatchWork group.
52. Design workshops with PatchWork group.
53. Outreach design workshops with landscape designers, planners, developers, local interest groups, and NGOs.
54. Site-visits at Albano.
55. “Green Urbanism” conference in Albano organized by Stockholm Resilience Centre.
56. Seminar with Lisa Switkin from Field Operations in Stockholm, KTH.
57. PatchWork proposal presented in Hagabladet, in an article by political ecologist and PatchWork member Henrik Ernsson.
58. Presentation of ARC proposal at SRC for the Vice Mayor, environment and transport at the time Ulla Hamilton.
59. Publication of ARC in the KTH based journal Serie A.
60. Interview with Katherine Clarke, co-founder and artist partner of muf architecture/art, London.
61. Site-visit to “A Horse’s Tale” project in London.
63. Presentation of ARC proposal to SBK.
64. Text-seminar with Sara Borgström at SRC.
65. Publication of Article SvD "Bygget som förstärker naturen".
66. Scholarship with Gert Groening at Berlin University of the Arts.
67. Participation at PCRL conference.
68. PatchWork proposal presented and workshops held at Expo 2010 Shanghai.
69. Participation in the "Storstadsnaturl" conference at TRF.
70. Work of translating ARC into a Zoning Plan begins by other members of PatchWork.
71. Paper A is submitted to the Planning Theory & Practice journal.
72. Interview in relation to the High Line with Chief Planner for Manhattan Special Projects for the New York Department of City.
73. Interview with Lisa Switkin, principal and lead designer for the High Line project, working for design firm James Corner Field Operations.
74. Interview with Leslie Wolf, Program Manager for Department of Parks and Recreation, New York City.
75. Article in Dagens Nyheter published by the PatchWork group.
76. Publication of joint book project "Principles of Social-Ecological Urbanism".
77. Paper A accepted for publication.
78. Interview with Tatjana Schneider, at research centre ‘Agency’, University of Sheffield.
79. Interview with Katherine Clarke, co-founder and artist partner of muf architecture/art, London.
80. Interview with Tenant Participation Manager of Thurrock Council.
81. Interview with Strategy and Project Operations Manager of Thurrock Council.
82. Paper B accepted for Landscape and Urban Planning.
83. First draft of Paper C.
84. Meeting about Paper C with co-writers and feedback from PatchWork members.
85. Paper C submitted to journal.
are the main building blocks of the thesis and have served as vehicles through which I have explored and deepened the main questions and topics of the work. The projects are all situated in Stockholm and include both proposals where I have been the sole author (Project 1) and co-authored projects in collaboration with multidisciplinary teams (Projects 2-4). First, the context in which the project has been conceived is outlined and a distinction is sometimes made between the “informal” and “formal” brief. The working method of each project is subsequently described and reflected upon.

In section 4, “Emergent Themes”, the projects and papers are analyzed and discussed, and conclusions are drawn out of the work as a whole. With its inherence of change, uncertainty and risk, what does a social-ecological approach to urbanism, imply? How can design-based and transdisciplinary approaches be valuable in relation to finding paths of sustainable development in general and in challenging dichotomies and deadlocks within planning in particular?

Finally, in section 5, the contours of a “Future Forward Framework” are briefly traced. What potential might the superimposition of the non-equilibrium ecological systems thinking on a design-based research approach offer? How can we move towards more integrative approaches? How can a scholarship that better harnesses lessons learnt from practice be developed?
SUMMARY OF PROJECTS

Project 1: Nature as an Infrastructural Potential
— An Urban Strategy for Järvafältet
(Masters Diploma work by Erixon Aalto [Erixon, 2005]).
This project is based on the assumption that a key issue in safeguarding urban natures does not lie solely in the production of yet more “scientific arguments” in support of biodiversity and ecosystem services, but in the very integration of such aspects into the scope of urbanism through the exploration of alternative city/nature relationships. Centering on a section of the Järvafältet in northwestern Stockholm, the project: engages issues of nature and values (both anthropocentrically and biocentrically); speculates on formal and informal land use and aspects of size; and explores questions of social and physical integration/segregation in the context of suburban large-scale urban green structures. The overarching design narrative and strategy of the proposal is built around the idea of a synthesis between an ecological infrastructure and a social infrastructure, merged into a cohesive Urban Strategy for Järva. Through the exploration of synergetic overlaps between these structures, the proposal seeks to provide an underlying framework and composition — a social-ecological infrastructure — that flows through and binds together public activity, open spaces, development strands, ecological “dispersal zones” and amplified nature areas that encircle ecological “core areas”. Existing reports and models on regional and municipal levels underpin the work, but they have been re-interpreted within their own logic to see if the prevailing antagonistic relationships between city and nature can be turned into synergistic ones, becoming part of the solution instead of the problem. The proposal aims at operating in a concurrently projective and discursive mode, both challenging, making visible, and playing with binary culture/nature thinking in urban planning and design. The work process was set up as a dialogue with local actors, planners and ecologists, and later continued to work as a “touchstone” for discussions through the transdisciplinary workshop series held in collaboration with scholars from Stockholm Resilience Centre between 2007 and 2010.
Project 2: Kymlinge UrbanNatur

(NOD, Wingårdhs, MUST, Storylab, Space Scape, 2005).
This proposal was the result of a parallel commission organized by the landowner Vasakronan and the municipality of Sundbyberg with the objective of stimulating visions and serving as a basis for dialogue about the future of the Kymlinge area. The site, situated in northwestern Stockholm (adjacent to Project 1) centers on a built but never opened “ghost subway station” — and comprises a large green space surrounded by high-speed motorways. Next to the site are housing and non-housing areas from different periods, including the area of Kista to the west, which comprises one of Sweden’s leading IT clusters. To the south, and within the Järvafältet green wedge, lies the Igelbäcken nature reserve, which was formed in 2004. With Kymlinge’s central positioning within the green structure yet proximity to strategic urban nodes and existing public infrastructures, the area has been the subject of conflict and controversy for many years. In our team’s take on the project, there was a conscious focus on exploring ways to set up a working method and process that could support complex thinking and open up a dialogue — both internally within the team, but more importantly, externally with local stakeholders and the general public — that we called the “Kymlinge Process”. The vision builds on the notion of a Platform that comprises a sort of “open system” able to support a number of possible scenarios which are initiated by a set of strategic sociocultural, ecological and economic measures that operate within the given conditions of the landscape. In the internal working process within the team, three core workshops with invited experts were set up, and driven by a co-authoring tool conceptualized as an “encyclopedia of scenarios”.

Project 3: Årsta Urban Natures

(Field Operations, Buro Happold, 2008).
This project was an invited ideas competition arranged by the City of Stockholm Development Administration and the City Planning Administration. The site, Årstafältet, is located just south of Stockholm’s city center, which comprises a 50-ha. suburban green space surrounded by enclaves of housing- and non-housing developments. The brief explicitly called for projects that could propose strategies for the development
of new neighborhoods and a large park in accord, and it particularly emphasized that the projects should propose ways of creating links; “bridg[ing] the barriers surrounding the site”, as well as creating a varied and mixed program and a “park in world class.” In the resulting response to the brief, the Field Operations team proposed a strategy aimed at protecting the large scale of the landscape, arguing that if Årsta was to be developed into the new hub that the City envisioned, it needed to be matched by a green space of a certain proportion and dignity. Instead, the large amount of residual space in the insular existing development was activated by densifying and diversifying with new building types and uses, including commercial and cultural. These new neighborhoods were in turn tied to new and existing mobility corridors and transit stops. The project, however, acknowledged an “additional ingredient” in relation to the density, mix and connectivity requested in the brief and introduced what is conceptualized as the Green Web — a singular, loop corridor and tissue-like fabric of open space and nature that “weaves together and interconnects disjointed urban neighbourhoods”. Instead of a polarity between green and built, the proposal aimed to creating a ‘new model’ for urban development where the green was interwoven, interconnected and fundamental to the shaping and character of the urban form.

Project 4: Albano Resilient Campus (SRC, KTH, Beijer, KIT). The project, which was initiated in 2009, grew out of dissatisfaction with a proposed plan to extend Stockholm University at the area of Albano, and comprised a collaboration between four primary parts: the Stockholm Resilience Centre (SRC); the School of Architecture at the Royal Institute of Technology in Stockholm (KTH); the Beijer Institute of Ecological Economics, and the architecture and urban design firm KIT. The objective was to develop and deepen an interdisciplinary collaboration between these institutions and parties, as well as to investigate how social-ecological research could be integrated into a hands-on proposal — a sort of shadow project — that could potentially spark interest and encourage debate. The site, Albano, is a contested brownfield area located within the National Urban Park (NUP) in between three major universities and close to the city center. The proposal set out to explore if and how a more
connected urban fabric could be combined with a maintained, or even strengthened, ecological infrastructure at the site and its surroundings. In response, six interacting design components were formulated: three spatial components (Green Arteries, Performative Buildings and Active Ground) and three institutional components (Property Rights/Rules, Local Knowledge, and Social Networks). The work was propelled through a transdisciplinary and design-based work process in which professionals and researchers from the fields of systems ecology, natural resource management, political ecology, urban design, architecture, and landscape design, as well as planners, developers, local interest groups, and NGOs participated.

SUMMARY OF PAPERS

Paper A: Challenging Dichotomies — Exploring Integrative and Operative Approaches to Urban Green Space in Stockholm (Erixon, Borgström & Andersson, 2013) takes its point of departure in a discussion regarding the role of regional green structure concepts (i.e. green fingers, green wedges, green belts, green hearts) within sustainable urban development. As products of modernistic understandings of the world, such concepts are often found to be characterized by dichotomized notions leading to conservationist ideals, defensive strategies, and an underpinning of value through scientific evaluations and normative goals. Specifically, the study focuses on the regional green structure of Stockholm known as the “Ten Green Wedges” and takes its point of departure in the seemingly conflicting intentions of on the one hand protecting and maintaining green and open space values present in the green structure, and on the other hand creating a denser, polycentric and more connected urban fabric across the radial structure. Using a suburban stretch of the Järvaberg wedge as a focal study area, alternative frameworks were explored and discussed through the lens of emerging ecological complex systems theory and the concept of resilience. The study was set up as a series of workshops in which professionals from the fields of ecology, urban design, planning, landscape architecture, environmental history and regional and city-wide planning participated. Preliminary designs were used as touchstones during the process, which shifted questions from the realm of theory and brought them the practical
and particular local context being discussed. Finally, three specific ways were identified in which resilience science can be useful for the planning and management of large urban green structures. Firstly, resilience can introduce complexity, rendering synergies and “win–win” situations visible within planning. Secondly, by highlighting change, resilience can offer alternatives for the present conservationist perspectives on green space planning and thereby also provide options for constructive ways out of planning-related deadlocks. Thirdly, resilience can be combined with the concept of “legibility” in clarifying common goals, and in this way, contribute to building a constituency to sustain large-scale green structures in the long-term.

**Paper B: Of Plants, High Lines and Horses: Civic Groups and Designers in the Relational Articulation of Values of Urban Natures**

(Erixon Aalto & Ernstson, 2017) delves into how value is created in relation to urban green space and addresses three interventions into urban green spaces: a wetland in Cape Town; a post-industrial site in New York; and a neighborhood park in London. Their diverse contexts serve to illustrate the broader phenomenon of urban land preservation facilitated by protective narratives. These interventions were analyzed as examples of “value articulation”, which in public discourse *de facto* created values of land that are tied to particular places with unique histories and often contrast with other values and land uses. For each case study, moments are also highlighted when narrative practices move beyond mere protection and status quo and start to alter the very context in which they were developed. These are referred to as projective narratives, which emphasizes how novel values and uses are projected onto these spaces, opening possibilities to re-work them. These three (successful) attempts to protect land demonstrate how values emerge as part of inclusive yet specific narratives that mobilize and broaden support and constituencies. Narratives of this kind embed places in broader geographic entities where the landscape itself acts as a narrative element. Unlike rationalist and external framework used to analyze values related to urban natures, the bottom-up approach here facilitated a deeply different perception of planning and practice by putting urban nature into particular contexts. Thus, we can (i) challenge expert categories and the
city/nature dichotomy; (ii) offer vernacular ways of knowing and understanding; and finally, (iii) reconceptualize the role of urban designers.

**Paper C: Towards A Social-Ecological Urbanism: Co-producing Knowledge through Design in the Albano Resilient Campus Project in Stockholm** (Erixon Aalto, Marcus & Torsvall submitted) gives an account of the transdisciplinary design process that resulted in the proposal for Albano Resilient Campus in Stockholm, presented as Project 4 in this thesis. The point of departure was the assumption that social-ecological knowledge must be better integrated in urban planning and design projects in order to promote urban sustainability and resilience. However, due to gaps between the two cultures of thinking associated with the disciplines of ecology and design, such integration has proven challenging. Although collaborations between designers and ecologists have for some time been common in practice, this knowledge production (what worked, what didn’t, how the collaborative design process was set up, etc.) is seldom made available to others besides the explicitly collaborating individuals, design offices, or studios, and there is a lack of interdisciplinary engagement at academic level and in academic discourse. In this paper, the collaborative Albano Resilient Campus process is discussed with specific emphasis on how design — seen as a process and an assemblage of artifacts — can act as a framework for co-producing knowledge and operationalizing concepts of resilience and ecosystem services. In this design-based and action-oriented research approach, the authors took a double role as both problem solvers (exploring alternatives through design proposals), and as observers (evaluating and documenting the process and its results). The paper further discusses how such a collaborative design process may integrate ecological knowledge into urban design through three concrete practices: a) iterative prototyping and generative matrix models; b) designerly mediators or touchstones; and c) legible, open-ended, comprehensive narratives. In the conclusion, we sketch the contours of a social-ecological urbanism, speculating on possible broader and changed roles for ecologists, designers, and associated actors within this framework.
Fig. 6–16.
All of the four projects are idea-based proposals taking place in the early planning stages, visionary and critical rather than set within an implementation context where goals and visions have already been set. Many of the projects have in this sense been intended to create debate and spur public interest (through exhibitions, seminars, interactive web pages and also other artifacts such as articles, books and pamphlets etc.).

From left: 6) The Albano Resilient Campus collaboration resulted in the book "Principles of social-ecological Urbanism" (2013). 7) The project in Kymlinge UrbaNatur resulted in two separate publications: "Nästa Kymlinge" (2005) and "Platform Kymlinge" (2006). 8) A public exhibition relating to the Kymlinge project was held at the Marabouparken Annex in Sundbyberg. 9) The projects within this thesis have also been exhibited at the "Making Effect" exhibition at ArkDes (2017). Photo by Matti Östling / ArkDes. 10) In their proposal: "Hydrophile: Hydrodynamic Green Roof" (2010), the design collaborative SERVO used the Albano Resilient Campus plan and principles as a point of departure for their project. (Ulrika Karlsson and Marcelyn Gow, in collaboration with Jonah Frizzell and ecologist Tobias Emilsson. Published with permission from SERVO.) 11) Several seminars were organized during the Kymlinge process.
Figures 12–16

12 & 14) Photos from the Kymlinge UrbaNatur public exhibition.
13 & 15) The Albano Resilient Campus project was presented at Expo 2010 Shanghai, where resilience scholars and designers participated in workshops.
Fig 16) An interactive webpage displayed the Kymlinge project proposals, enabling public feedback.
2. THEORETICAL POSITIONS AND PRACTICAL UNDERPINNINGS

The search for more sustainable ways forward inherently calls for an integration of knowledge from different disciplines and sources of knowledge (Doucet & Janssens, 2011; Turnhout et al., 2012; Tengö et al., 2014; Hirsch Hadorn et al., 2008). Therefore, to challenge dichotomies and investigate more integrated approaches toward urban development and green structure planning, this thesis draws on multiple theoretical frameworks. Furthermore, and following Janssens (2012), the theoretical basis of this thesis has not been “applied” to the thesis questions in a traditional sense, but designs and theoretical perspectives have rather been “simultaneously built and explored” — as Janssens describes in the context of practice-based research theory and practice, “brought together and woven into a landscape of thoughts and practises” (p. 7). The following section will give a brief background to and overview of the theoretical approaches within which this thesis moves and operates. First, an outline of the paradigmatic shift that has occurred within ecological science will be given, with particular focus on the concept of resilience. Second, the challenges and opportunities that these ecological reconceptualizations within science have opened up in relation to the understandings of and projections into cities and urbanism will be described. Particular focus will be placed on the discourses and nexus of ideas gathered under the -isms of landscape urbanism and ecological urbanism, and a few projects within these wide trajectories — both realized and speculative — will be presented. This section does not intend to provide a full account of these theories and projects, but seeks rather to present some of the key positions within theory and practice that are of specific relevance to this thesis.
ECOLOGY IN SCIENCE AND THE RESILIENCE CONCEPT

Ecology, with its origin in the Greek word oikos (οἶκος) contains the meaning of “house” or “environment”, and refers to the study of interactions amongst organisms and their physical environments. As a research field, ecology developed quite late in relation to other sciences, and was slow in gaining legitimacy throughout the latter half of the nineteenth century (Lister, 2016a). Initially, the models to describe ecological structures were based on an underlying idea of “nature in balance”. This approach held theories and explanatory models centered on equilibrium where ecosystems were believed to be moving towards stable and singular “climax stages”, provided that there were no external disturbances (e.g., Clements, 1936). Populations, ecosystems and even the earth itself were considered potentially self-regulatory systems, which, if they were not disturbed by outside forces, could maintain a stable equilibrium (Wu & Loucks, 1995, drawing on e.g., Nicholson, A. J., 1933; Milne & Milne, 1960). These views have had a particular impact on applied ecology and strategies for nature conservation, and have led to the deep-rooted belief that ecological systems are self-regulating and deterministic, and that “nature knows best” (Wu & Loucks, 1995).

During the 1960s, however, in conjunction with the rise of systems-thinking, other approaches began to emerge. Within the research community, many scholars who studied ecosystems began to realize that an equilibrium approach was inconsistent with their observations (Pulliam & Jonsson, 2001). What they were seeing was instead that ecosystems seemed to go through multiple cycles of change, and that they were much more open and dynamic, inherently complex and partially unpredictable, than what was initially perceived. What previous balance-embracing theories had failed to include were, above all, the effects of temporal and spatial scales, aspects of heterogeneity in ecological processes, and the fact that variability, disturbance and unpredictable events were typical and recurrent, rather than the exception to the rule (Wu & Loucks, 1995). This new understanding of how ecological systems work was not simply a further development of an existing model — although it was of course based on previous knowledge about ecological systems in general — instead, it
marked a fundamentally different approach: a paradigmatic shift in how we consider and perceive the natural world around us (Botkin, 1990; Wu & Louck, 1995; Pulliam and Johnson, 2001; Lister, 2007a; 2016a). Ecology as a field of research thus shifted, as Reed and Lister have framed it, from “classical determinism and a reductionist Newtonian concern with stability, certainty, and order in favor of a more contemporary understanding of dynamic systematic change” (2014, p. 15).

Central to this emerging approach is the concept of resilience. In his seminal article “Resilience and Stability of Ecological Systems” from 1973, Canadian ecologist C.S. Holling challenged the previous single equilibrium approach through the demonstration of multiple stability stages, or what was later coined “basins of attraction” in ecological systems, that are in turn understood as interacting with each other through the dynamic of spatial and temporal scales (Holling 1973). Resilience, according to a later definition by ecologist Brian Walker, C.S. Holling and colleagues (2004), refers to the inherent capacity of a system to absorb disturbance and reorganize while retaining essentially the same functions, structures, identities, and feedbacks. In this ecological context, resilience is based on a dynamic ecosystem model in which ecosystems are understood as going through four adaptive cycles of change: rapid growth, conservation, release, and re-organization (see Hollings’ “lazy figure-8” re-drawn in fig. 17). These are in turn generalized in terms of a “fore loop” (rapid growth and conservation) and a “back loop” (release, and re-organization), where the latter two stages have been largely ignored by conventional natural resource management, although they are equally important in the overall dynamics (Folke, 2006). Here, and in contrast to the previous balance of nature paradigm, uncertainty and surprises are seen as an integral part of a system’s characteristics (Carpenter and Gunderson, 2001; Berkes et al., 2003), and humans are understood as forming a central part of this social-ecological systems dynamic:

The resilience perspective emerged from a stream of ecology that addressed system dynamics, in particular ecosystem dynamics, and where human actions early became a central part of understanding the capacity of ecosystems to generate natural resources and ecosystem services. The early inclusion of humans as agents of ecosystem change
8. Sweden has had a strong history in the development of resilience thinking in ecological science. In the 1990s, the "Resilience Alliance" was initiated by the Beijer International Institute of Ecological Economics in Stockholm; an association of researchers and institutions gathered to stimulate integrative and interdisciplinary science using resilience as an overarching framework (Folke, 2006, www.resalliance.org). In 2007 the "Stockholm Resilience Centre", was established, which constitutes an interdisciplinary center that aims at advancing "research on the governance of social-ecological systems with a special emphasis on resilience" (www.stockholmresilience.org) Retrieved Sept. 8, 2017.

9. It should be noted that resilience thinking and its related concepts are under development, and are therefore not always clear and generally agreed upon. One such instance is precisely the distinction between adaptation to remain in a desirable state and adaptation to respond to changes through developing "new" states (which could be seen as transformation), and which is still under debate.

distinguished this ecosystem oriented branch of ecology from the main stream ecology profession. The main stream excluded humans or treated human actions as external to the system and consequently the interdependencies and feedbacks between ecosystem development and social dynamics, and their cross scale interactions, were not on the table. (Folke, 2006, p. 262)

In recent decades, resilience has developed into a well-established concept in ecological systems research, and has also — albeit relatively recently — become increasingly valuable as an intellectual platform in green discourses and policy work (Lister, 2016b). Over the years, the understanding of resilience in the literature has become still more focused on aspects of transformation and change than it was previously. Definitions have shifted from the capacity of a system to not only "experience shocks while retaining essentially the same function, structure, feedbacks, and therefore identity" (Walker et al., 2006a; n.p.), but also to reorganize and absorb disturbances while undergoing change (e.g. Adger et al., 2011; Folke, 2006) — in other words, to also create new "stability domains" and establish new development trajectories (Folke et al., 2010). In his overview of the development of the resilience concept for understanding social-ecological systems, Folke identifies precisely this transformative aspect, “the capacity for renewal, reorganization and development”, as less in focus, although it is essential to the sustainability discourse (Folke, 2006, p. 253 drawing on Gunderson and Holling, 2002; Berkes et al., 2003).

More broadly, the use of resilience thinking has also come to extend far beyond the discipline of ecology and has been used in diverse fields with many possible interpretations. In relation to the use of resilience thinking more generally, two mainstream interpretations of the concept have been identified that Raco and Street (2012) refer to as the "conservative" respective the "radical". The radical, in their description, refers to the non-equilibrium, social-ecological understanding with emphasis on adaptation and transformation described above, whilst the conservative on the other hand is less focused on systematic change and lingers within more linear understandings of systems where resilience is used in the sense of moving back to a previously known "normal" state. Roughly put, this latter interpretation, which has also
been referred to within ecological science as “engineering resilience” (Holling, 1996), is suitable to apply to behavior in confined linear systems where the focus is on maintaining functions in a system and “resisting disturbance and change, to conserve what you have” (Folke, 2006, p. 256). Despite this rather narrow area of application that works best with a small number of well known factors, this conservative interpretation of resilience, with its focus on bouncing back to a pre-defined state of normal, has come to influence a variety of disciplines, including psychology, disaster studies, environmental planning and economic geography (Davoudi, 2012). Moreover, this conservative engineering strand of resilience is often, implicitly or explicitly, the base for governmental statements or everyday discourses (Davoudi, 2012), and it has shaped contemporary environmental and natural resource management (Folke, 2006) as well as a discourse of “recovery and bouncing back to the status quo ante” in the context of cities (Raco & Street, 2012 p.1066; original emphasis).

**Fig. 17**
Re-drawn figure of the “adaptive cycle” or Holling’s figure-8 model, illustrating how ecosystems go through four common phases: 1) The r-phase, which stands for establishment/exploitation. This can be e.g. a land cleared by fire that, with time, will be established by “generalists”, i.e. species that are good at tapping stored energy but poor at competing. Biodiversity will be highest at the end of this phase and the r-phase is the stage in which many cultural landscapes are kept through continuous management. 2) The K-phase (following the curve to upper right): biodiversity becomes lesser as the system is dominated by a few strong competitors, which renders the system vulnerable to disturbance. 3) The omega phase symbolizes the accident/disturbance and the loss of energy, e.g. through heat during a forest fire. 4) The alpha phase stands for reorganization and renewal of the system. Renewal relies to a great extent on the “ecological memory” of past phases and if these are not accessible, the system may risk tipping into a new stability domain. Illustration from the co-written “Principles of Social-Ecological Urbanism” (Barthel et al., 2013). Caption adapted from the same source and edited slightly (Barthel et al., 2013).
However, in agreement with, for example, Davoudi (2012), since cities are at the far end of the socio-ecological interaction spectrum, characterized by non-linearity, spatial and temporal heterogeneity and with humans as the main drivers of the system dynamic, the non-equilibrium, social-ecological understanding of resilience is considered the most useful for urban planning and design. This “radical” branch is also used in this thesis work, and its potential and challenges are discussed and examined specifically in relation to sustainable urban development and challenging dichotomies.

ECOLOGY AND URBANISM

The gradual, but fundamental paradigm shift within ecological science has influenced and opened up opportunities within a variety of fields, including new perspectives on urbanism. The idea of nature and city as interconnected and co-dependent has for instance been advocated by urban ecologists (e.g. Pickett et al. 2004, 2013); cultural geographers (e.g. Hinchliffe & Whatmore, 2006; Gandy, 2006); environmental historians (e.g. Merchant, 1980; Cronon, 1991; 1996); political ecologists (e.g., Heynen, Kaika, & Swyngedouw, 2006) and landscape architects and theorists (e.g. Spirn, 1984; Corner, 1997, 1999) — to mention but a few.

Looking still further back however, one person whose methods and approaches have been central to contemporary ideas of planning and design was the landscape architect Ian McHarg and his iconic work Design with Nature (1969). During the 1960s — in a time of top-down dominated planning where environmental consideration was a rarity — he developed a new way of looking at the relationship between nature, design and planning. Central to his ecological model was a map-overlay method in which analysis and mapping of natural resources could affect how land was developed. Different types of information about the site such as soil types, bedrock conditions, slopes etc. were used to classify the site in different degrees of “suitability” for the given land use. The purpose of the method was to make it possible to assess where buildings, roads and facilities could be located through overlays of inventoried data of the existing landscape, thus extracting
the most, as McHarg himself put it, “intrinsically suitable” location for development. However, despite the fact that McHarg’s pioneering vision and ecological overlay technique — what he conceptualized as “creative fitting” — formed a foundational analytical tool in landscape design and planning, it has also been criticized by many (e.g. Spirn, 2000; Hill, 2001; Herrington, 2010; Pollak, 2007). The core of the criticism lies in McHarg’s perception of and relationship with science, which is characterized by what Herrington phrases as an underlying belief that “science was a truth serum that would reveal the verifiable facts of nature to humans” (2010, p. 1) or as Anne Whiston Spirn has expressed, gave “too much weight to the insights of science as opposed to intuition” (2000, p. 108). In many ways, his method, which he himself regarded as “not only an explanation, but also a command” (McHarg 1997, p. 321) reflected a polarized, nature versus city view of the world (Waldheim, 2002; Mossop, 2006) and largely built upon the “balance of nature” paradigm discussed previously. Central was the belief that the method allowed designers to “chart future development in ways that closely adhered to nature’s intrinsic progression towards stability” (Herrington, 2010, p. 5).

Another key figure who was early to incorporate the new approaches within ecological science into planning and landscape design was Richard Forman, a contemporary of C.S. Holling. In his research in the 1980s and early 1990s, Forman developed new theories, methods and concepts that acknowledged the dynamic and changing character of ecological processes (Reed & Lister, 2014). In contrast to McHarg’s more static analyses, which had focused primarily on the overlay of physical elements frozen in time, Forman acknowledged precisely the interplay between spatial conditions and ecological processes. Through his work, which included collaboration with, for example, Michel Godron, new terminology was introduced that captured landscapes as integrated ecological units composed of, for example, “patches”, “matrices”, “corridors” and “networks” (Forman & Godron, 1981). Later in the 1990s, Forman developed these methods further to also address regions and planning, but with a predominant focus on non-urban areas (Steiner, 2011).

The emerging theories and language from Forman and others, along with the increased availability of computer-
aided geographic information systems analysis, increasingly influenced practice and critical discourse in landscape design and urbanism (e.g. Corner & MacLean, 1996). In the essay “From Object to Field” from 1997, for instance, architect Stan Allen proposes ways in which the open-ended and non-hierarchical “field condition” takes precedence over the predominant Modernist “object approach” to urbanism (Allen, 1997). Responsive to complexity and indeterminacy, field conditions could, according to Allen, include abstract strategies such as “flocks”, “swarms” and “crowds”, and more formal strategies exploring, for example “thickening”, “mats” and “moiré patterns” (Gray, 2006). These ideas, which acknowledged horizontality, process and performativity over form, had also formed the basis for the two finalist entries of the Parc de la Villette competition in Paris in 1982 — a project that has been posited as an iconic first example in which landscape served as the medium that was "uniquely suited to the open-endedness, indeterminacy, and change demanded by contemporary urban conditions" (Waldheim, 2002, p. 13). This was particularly so in the second entry by Rem Koolhaas/OMA, which suggested programmatic components distributed in horizontal strips or bands across the site, organising the surface for what Waldheim has described as "radically juxtaposed irreconcilable contents" (2006, p. 41).

Another pioneer was the landscape architect and theorist James Corner, who was early in articulating ways in which the non-linear dynamics inscribed in the new insights within ecology and landscape could function as “agents of creativity”,
offering modes of working where ecological knowledge could be integrated beyond merely “prescriptive” and “corrective” measures of restoration (Corner, 1997). In his iconic article “Ecology and Landscape as Agents of Creativity” from 1997, Corner states that:

Contemporary landscape architecture has drawn more from objectivist and instrumental models of ecology (the emotional rhetoric of some environmentalists notwithstanding), while design creativity has all too frequently been reduced to dimensions of environmental problem solving (know-how) and aesthetic appearance (scenery). This lack of inventiveness is both surprising and difficult for many landscape architects, especially those who entered the field believing that ecology and artistic creativity might together help develop new and alternative forms of landscape. This failing points to a relationship between ecology, creativity, and landscape that is either incongruous and impossible to reconcile or (and more likely) to a potential relationship that has yet not been developed—a potential that might inform more meaningful and imaginative cultural practices than the merely ameliorative, compensatory, aesthetic, or commodity oriented. (Corner, 1997, p. 82; original emphasis)

What Corner underscored throughout his writings and later also showed through his emerging practice in the field was precisely this reciprocal potential between ecology and creativity — of the “know-how” with — not against — appearance and performance. This insight in turn rested on the fundamental understanding of ecology and landscape as also “metaphorical and ideological representations; they are cultural images, or ideas” with profound agency in the world (Corner, 1997, p. 82).

In 1999, Corner began to explicate these ideas in practice to a larger extent, in particular through his proposal for the Downsview Park Competition in Toronto with Stan Allen and Canadian ecologist and researcher Nina-Marie Lister. Both the proposal “Emerging Ecologies” by Corner and his team, and the designs by the other four finalists 10 — including Bernard Tschumi’s “The Digital and the Coyote” and the winning proposal “Tree City” by a team directed by Rem Koolhaas (OMA) and Bruce Mau — would have a major influence on how parks and urban green space would be both designed and perceived for decades to come (e.g. Czerniak, 2001). Furthermore, the actual competition brief has been highlighted as unusual for its time, acknowledged by scholars for establishing a “new standard for the use of ecological

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10. In addition to the teams lead by Koolhaas, Tschumi and Corner/Allen, other finalists included a team lead by Peter Walker / Foreign Office, Brown and Storey Architects, Kuwabara Payne McKenna Blumberg
The task was to propose the development of an urban park for the Downsview area in northern suburban Toronto. The 240 ha. post-industrial site was a disused military base situated between two major ecological corridor systems (Lister, 2007b), and “in the midst of one of the city’s major potential suburban intensification areas” (Glover, 2001, p. 38). Entrants to the competition faced the challenging task of both accommodating the city’s intentions to densify and grow, as well as the will to enhance local

Emergence through adaptive management.

In their Downsview Park Competition entry, Field Operations in collaboration with Nina-Marie Lister proposed a scheme and framework of emergent ecologies that were initially “seeded” within the first five years. Published with permission from Field Operations.

Fig. 19

Emergence through adaptive management.

In their Downsview Park Competition entry, Field Operations in collaboration with Nina-Marie Lister proposed a scheme and framework of emergent ecologies that were initially “seeded” within the first five years. Published with permission from Field Operations.
ecosystems and their connections to the systems of the larger bioregion. Furthermore, the brief explicitly called for proposals that would anticipate change and growth over time, and ecological services such as biodiversity, storm water management and filtration were to be incorporated into designs while simultaneously “creating a significant cultural work in urban space” (Hill, 2001, p. 91, referring to the competition brief). The brief further encouraged the assemblage of interdisciplinary teams to solve this complex task (Pollak, 2001).
In response, the majority of the finalists, who came from various disciplines — including, for example, landscape architects, architects, ecologists, artists, design theorists, and graphic designers — came up with designs that activated strategies and concepts that resonated with emerging methods and theories in ecology regarding adaptivity, dynamism, and open-endedness. As Czerniak noted, one could detect a playfulness toward, and a challenge to, traditional nature versus culture oppositions in several of the proposals. This was reflected for instance in the OMA team’s hybridization in the title’s “Tree City”; in Corner and Allen’s rephrasings such as “culture as nature”, and in the Tschumi team’s merging of “the digital and the wild” (2001, p. 17). The proposal by the Corner, Allen and Lister team was an explicitly adaptive plan comprising a number of initial frameworks “seeded” to support and launch a series of “emergent ecologies” (Fig. 19–21). The plan also included strategies for governance through an imagined “interactive responsive network of community, stewards, and steering groups that grows as it learns” (Czerniak, 2001, p. 16). The winning proposal “Tree City” in turn embraced the notion of open-endedness to an even larger degree, presenting a formula-like strategy for how to: “grow the park + manufacture nature + curate culture + 1,000 pathways + destination and dispersal + sacrifice and safe = low-density metropolitan life” (Fig. 22). 

Fig. 20 & 21
Downsview Park Competition entry “Emergent Ecologies” by James Corner, Stan Allen and Nina-Marie Lister. The scheme for this project comprised an organizational matrix of two integrated systems: 1) “Circuits” that would accommodate event spaces, circulation and activity programs, and 2) “Through-flows” that would support ecological and hydrological dynamics of the site. This matrix would in turn potentially create opportunities for a wide range of habitat communities. Published with permission from Field Operations.

Fig. 22
OMA’s “Tree City” proposal for Downsview Park builds on the idea of a flexible patchwork of planted circular clusters covering one fourth of the site. These would be introduced over time and in relation to financial conditions as the park evolved. Published with permission from OMA © OMA.

11. In retrospect, and in light of the fact that the plan has been difficult to implement, the OMA plan has even been criticized for being too open-ended i.e. too loose in its strategies and identity for the plan to be pushed through the bureaucracy of planning practice.
In these early project proposals — such as Parc de la Villette and the Downsview Park competition, and in writings by Forman, Allen, Corner, and others — are several of the key tenets on which North American born -isms of Landscape Urbanism, and its later progression into Ecological Urbanism have been built.

Firstly, and most fundamentally, a common theme for these texts and practices is the overarching notion of landscape and ecology as organizers of space; as providers of intermediate, catalytic and dynamic strategies that can embrace complexity, multi-functionality, indeterminacy and change over time. Landscape is here understood in a sense that moves beyond the pictorial or simply ornamental (Corner, 1999), instead considered as both a model and medium for the contemporary city with the potential to replace, as architect Charles Waldheim later explicated; “architecture as the basic building block of urbanism” (2006). Post-industrial, suburban and urbanizing areas such as Parc de la Villette and Downsview Park, which are often situated within or connected to large complex hybridized natural/cultural environments and, as in the latter case, make up new types of challenges for which earlier, more object-oriented urban design strategies are considered inadequate.

Secondly, and integrated with the former, the perception of infrastructure shifted and was appropriated in new ways, moving from the more traditional understanding of infrastructure as merely technical, engineered “hard structures” to a more nuanced understanding. In this newer understanding, the term also incorporates public spaces and blue/green infrastructures, which are in turn considered organizing elements of urbanization (Bélanger, 2012) determined by underlying topographical and hydrological structures (e.g. Mossop, 2006). In his essay on public works practice from 2006, Chris Reed was early in framing this potential:

One could imagine landscape/architectural/urbanistic projects conceived as functional infrastructures, ecological machines that process and perform, public spaces that literally “work”. One might also imagine the creation of fertile testing grounds that structure or initiate an unfolding of hydrologic, ecological, social-cultural, and urbanistic processes and adaptations—earthen infrastructures available for appropriation and transformation and whose form is valued for its performative rather than sculptural characteristics. (2006, p. 282)
In this context, one important outcome of the Downsview Competition — though perhaps not from the winning “Tree City” scheme — was the demonstration of how ecological infrastructures, both local and more large-scale regional systems, could be integrated into the proposals and guide programmatic arrangements (Gray, 2006). Here, the distinction that Lister makes between “ecological design” as opposed to “designer ecology” comprises a valuable analytical instrument. Where designer ecology refers to the type of opportunities presented by smaller, isolated green spaces in cities (which indeed, as acknowledged by Lister, may for example be essential for aesthetic, educational, and spiritual reasons), more large-scale green infrastructures in turn are opportunities for “ecological design”; i.e. for an operational ecology that facilitates the emergence of “self-organizing, resilient ecological systems” (2007a, p. 35). Moreover, and depending on their design, these green infrastructures can also act as comprehensive integrators of space by creating links between disjointed urban areas (Czerniak, 2007).

Thirdly, and central to these early texts and practices, there is a hybridization and integration of boundaries on several levels, in particular related to the challenging of binary thinking such as culture/nature; art/ecology; city/country; or aesthetics/science, articulated for instance through Elisabeth Meyer’s iconic essay on “The Expanded Field of Landscape Architecture” from 1997. As mentioned previously, there was a playfulness around dichotomist terms both in terminology and program in the Downsview competition — an approach that was also reinforced by these new types of interstitial and limbic nature/culture landscapes produced in the wake of deindustrialization. Tackling complex and composite landscapes also called for the exchange of knowledge through the assemblage of interdisciplinary teams equipped with multifaceted skills (Czerniak, 2001; Pollak, 2001). Further, an additional hybridization and specific call for “collapsing the divide between planning and design” has been formulated within the tenets of Landscape Urbanism (Weller, 2006; 2008). Landscape architect and researcher Gunilla Lindholm has even pointed out how this bringing together in multiple ways — of nature/culture binaries, professions, actors and perspectives, planning and urban design, instrumentality and art — can be
seen as one of the most defining characteristics of Landscape Urbanism (Lindholm, 2011), and it has also continued to be one of the key tenets of Ecological Urbanism (Mostafavi & Doherty, 2010).

Fourthly, a conjoint theme that can be read in these early practices and theories revolves around handling and enabling complexity across scales in time and space, an approach recognizable from the previously described complex systems approach and resilience thinking within ecological science (e.g., Borgström et al., 2006). Lindholm refers to this as an ambition to “stretch the contextualization” (2011, p. 11), and states that “to grasp the complexity in a situation is another characteristic of landscape urbanism, to realize the manifoldness and to find out ways to keep the complexity throughout a project or a process” (Lindholm, n.d.). In, for instance, the Downsview Park competition, we see how several of the proposals include the ambition to address dynamics through various perspectives and through working with the whole scheme of scales — even sometimes outside the scope of the brief.

Since these first iconic works and texts, a number of different works have evolved that implicitly or explicitly deploy landscape and ecology as modifiers to urbanism. One example is the competition for Fresh Kills Park in New York, which was organized in 2001. The 890 ha. large area had served as a landfill and garbage dump for the city of New York for the previous 50 years, but was to be converted into a park. This was also a contest with five interdisciplinary composite teams, this time taken home by a team led by Corner and his Field Operations colleagues with the proposal “Lifescape”. Before Fresh Kills became a landfill, the area was a wetland, and as in the Downsview competition, the brief called for a long-term and phase-based development for the park including its ecological systems and surrounding neighborhoods. In response, Lifescape proposes four different phases extending over a period of 30 years and beyond, in which three distinct frameworks operate. These are conceptualized as: “Threads” consisting of linear flows and elements that “direct flow of water energy, and matter around the site”; “Mats” that make up surfaces and fields that create “patch-like mosaics” and “Islands/Clusters” that constitute “denser nests of protected habitats, seed source, and program activity” (Corner, 2002, p. 24).
(Fig. 23). As Pollak noted, according to these three elements, the proposal assembles, for example, activities, planting, and buildings etc., using them to "cut across categories to construct new identifications […] to support a kind of ‘precise openness,’ which offers a potential for change" (2007, p. 107). In addition, the project includes strategies aimed at anchoring the future park and making it legible to the city’s inhabitants, for example, through advertising campaigns on billboards and on the city’s waste trucks (Fig. 24 a–c).
Another pertinent project is the High Line Park in Manhattan, the first phase of which was opened to the public in 2009. Although this project — situated on a former post-industrial site and extending for 22 blocks in New York City — is not located in a large-scale ecological context like Downsview Park or Fresh Kills, it contains many similar ideas about emergence and diversification over time in both human use and biodiversity (Fig. 25 a-b & 26). In their original proposal for the site, James Corner/Field Operations with architects Diller Scofidio + Renfro and planting designer Piet Oudolf came up with a strategy according to the four design principles of “keep it simple, keep it wild, keep it slow, and keep it quiet”. The project plays with the blurring of different boundaries — between the wild and the cultivated and between soft and hard landscapes — and implements a so-called “planking system” that meshes paved routes with planted areas that in turn included some of the existing, self-sown plants from which seeds were collected, stored and later replanted in the park.
Fig. 25 a-b
what will grow here?
Chris Reed’s proposal for the Lower Don Lands in Toronto through his StossLU — here also in collaboration with ecologist Lister — is another example of a project with an ecological point of departure. The project, which is situated in a 120 ha. waterfront area that comprises post-industrial portlands, transportation infrastructures, and a channelized river, combines a series of soft ecological and hydrological infrastructures with a comprehensive urban design framework that integrates new development, transportation and civic spaces (Fig. 27 & 28).

Another example is the “Oyster-tecture” project in which Kate Orff and her landscape architecture and urban design firm SCAPE Studio explore ways of shaping urban spaces to support a larger degree of biodiversity whilst resetting the broader relationship between the inhabitants of New York and their harbor (Orff, 2016). The proposal envisions the implementation of an active oyster culture around the edges of Brooklyn’s Gowanus Canal and Red Hook, and Manhattan’s Governors Island with the aim of (re)starting a “reef culture”
Fig. 31–32
UrbaNatur Hyllie.
Published with permission
from NOD/COMBINE.
that would engage and activate issues of community-based
development, water quality and rising tides. In the project, Orff
and her colleagues worked with biologists, teachers, community
groups and high school students and organized pilot projects to
perform small-scale tests of temporary underwater habitats.

An example from a Scandinavian context is the project
“UrbaNatur Hyllie” by NOD/COMBINE, which specifically
explores the interface between food and energy production
and urban development. The plan is centered on the idea of an
“Urban Agricultural Park” that stretches into the development
like fingers on a hand and creates an elongated edge situation
of co-existence. The node in the area is conceptualized
as an “Urban Farm” which constitutes a semi-non-profit/
commercially-driven hub for the area’s cultivation, internal
production and educational activities.

In these projects and their implicit strategies are several
links back to McHarg’s ideas and methods, for example in
the representational use of overlay techniques and in the very
underlying point of departure, i.e. to “design with nature”
(Steiner, 2011; Reed; 2010). However, in several of the projects
that have emerged in recent years, it is apparent that the field
has evolved past the deterministic models proposed by McHarg
toward more non-linear, dynamic, complex and socially
entangled understandings of nature predicated on the emerging
insights in ecological science. At the core of this is also a
fundamentally different approach to design. In her analysis of
McHarg’s approach, landscape architect Elisabeth Mossop deems
his methodology not only “anti-urban” but also “anti-design”:

At its crudest, the underlying legacy is the idea that if the process is
right, the design solutions will also be right. Embodied in this is a
fundamental misunderstanding of design, of the relationship between
planning and design, and of the complexity of the design process.
(Mossop, 2006, p. 168)

The frameworks for these designs and modes of working
have thus moved beyond mere “problem solving” towards an
activation of landscape and ecology in line with the “creative
agents” that Corner was early in imagining. However, a recent
critique brought forth in response to the growing number
of projects created within these landscape- and ecological
urbanisms is that they sometimes in fact prompt a “new
In her keynote speech at the conference "Beyond ism: the landscape of landscape urbanism", organized by the Swedish University of Agricultural Sciences (SLU) in October 2016, architectural critic and urban planner Greet De Block provided sharp insights concerning the (dis)connections between ecological and social resilience and the related risks of reinforcing a new type of “bouncing back to status quo rhetoric” that obscures political and social contexts (see also De Block, 2016). In this context, it is important to incorporate different types of expertise and perspective in urban design processes and continue to explore and expand on what interdisciplinary and transdisciplinary approaches might entail. Another critique brought forth from a rather different point of view is that the -isms of landscape and ecological urbanism have lacked the ability to sufficiently incorporate advances in ecological science, in particular urban ecology (e.g. Steiner, 2011). Despite a growing number of collaborations, there are still large gaps between professions, and interdisciplinary engagement is lacking between designers and ecologists at an academic level and in academic discourse (Grose, 2014). Given this context, whilst clearly positioning this thesis within these theoretical trajectories and practical underpinnings, the aim is also to contribute to further development in the field by addressing some of these acknowledged gaps and shortcomings and pointing toward further research areas.

e.g. tentative development of social-ecological urbanism pp. 362–364
3. METHODOLOGICAL FRAMEWORK

We have now reached the point where a narrow scientific tradition is no longer appropriate to our needs. Unless we find a way of enriching our science to include practice, we will fail to create methods for coping with the environmental challenges, in all their complexity, variability and uncertainty. (Funtowicz & Ravetz, 1991, p. 151)

The kind of mechanical divisions and discrete orders of knowledge that seemed appropriate in the past no longer apply. Most of the great challenges we now face are cross-disciplinary and require a new species of designer. (Mau, 2010, p. 11–13)

As a step in the search for more integrative approaches that may help challenge current dichotomies within planning as outlined in the previous sections, two partially interlaced, methodological approaches have been utilized as the basis for this thesis: 1) a design-based research approach; and 2) a transdisciplinary methodological approach. Central to the selection and application has been a conviction that these approaches offer specific value in relation to ecological and sustainable urbanism in general and to the contested, dead-lock situations of Stockholm described in this work in particular. As highlighted by the architect and spatial planner Nel Janssens, compared with more traditional research, design-based and transdisciplinary approaches have the ability to “break free from the initially given problem and reveal unexpected potential” (Janssens, 2012, p. 184). This becomes particularly relevant in light of the contested planning situation that we currently face, where the exploration of alternatives — of novelty and change — is certainly of crucial importance. Indeed, as stated previously, if the very formulation of the “problem” is already inscribed in a dichotomous setup, the “answer” or “solution” is also likely to become bound to the very polarized terms of reference that one is trying to escape.

In a way, what is described above can be said to be the very predicament of the binary structure, or as Awan, Schneider and Till phrase it: “[t]he alternative is always caught in the
shadow of the thing that it posits itself against” (2011, p. 26). This dilemma was also expressed by several participants in the workshop series that forms the basis for Paper A of this thesis. Here, one participant captured this explicitly as follows:

If we use the analogy of [urban planning] being a type of weaving … I see how the separate threads are still coming from a polarized point of departure. In a sense, I feel trapped in this dichotomy … since one is always dependent on these threads that are attached to what we are trying to leave behind us. (Workshop participant in Paper A by Erixon, Borgström & Andersson, 2013, p. 291).

Insights are emerging within planning regarding the difficulties of detaching from our modernist legacy — how dichotomist notions have permeated not only our language and our choice of words and expressions, but have also been tightly woven into the explanatory models that form the very basis for planning. Here, we can also see how research approaches that have sprung out of more traditional, reductionist and normative scientific traditions; in fact, coming out of the same modernist legacy, may risk reinforcing, rather than challenging, current polarizations and deadlock situations within planning.

These issues become especially relevant in relation to the challenges presented within urban design, planning and environmentalism, generally described as inherently “wicked problems.” The term, which can be traced back within planning and social policy to research by Horst Rittel and Melvin Webber in their seminal text from the early 1970s, refers to the kind of complex problems that cannot be described with full accuracy and that lack the clarity that can be found in more traditional, determinate or so-called “tame” problem formulations (Rittel & Webber, 1973). Here, the environmental/human related questions that constitute the focal point of this thesis stand out as especially “wicked” or “ill-defined”: not only do the sites and situations that have been chosen for this thesis involve the multitude of differing perspectives of stakeholders, but nor is there a correct and singular “solution” to these situations. Instead, the actions that are taken can be evaluated and discussed in terms of a better or perhaps “less bad” way out. Furthermore, although many similarities and points of comparison can be found, every planning situation is essentially unique and every solution to a wicked problem is thus a “one-
“shot operation” (Rittel & Webber, 1973, p.163). As Rittel and Webber point out, attempting to tackle a wicked problem in a reductionist, classificatory way; i.e., by isolating a problem in accordance with a more scientific knowledge tradition, often results in the emergence of yet more problems. These types of ill-defined problems are thus not solvable by any known or standard method, but rather demand creative solutions where, importantly, “the information needed to understand the problem depends upon one’s idea for solving it” (Rittel & Webber, 1973, p.161).

Given this context of the inherently wicked and ill-defined, there is a need to develop and further explore concepts and methods that can reframe our thoughts and facilitate the break from habitual patterns (Janssens, 2012). In the following, the methodological frameworks that comprise the basis for this thesis will be delineated. A background to the various fields will be outlined, as well as their application to the thesis as a whole, and particular emphasis will be placed on how they can be useful to the scope of ecological and sustainable urbanism.

RESEARCH THROUGH DESIGNING

Design-based research is an emerging field and a pluralistic domain that goes by many names, such as: research-through-design and research-through-designing (RTD); research-by-design; research-as-design; practice-based-research; artistic research, and art-based research (AbR). As in all knowledge traditions, there is a fairly broad variation within the field, and the epistemological background of the design professions themselves is also based on a diverse composite of different areas of knowledge, from the natural sciences and humanities (including sociological sciences), to aesthetic and conceptualizing practices (Grillner & Ståhl, 2003). However, many scholars agree on the need to acknowledge the disciplinary specificity of design as a practice and mode of research (Grillner and Ståhl, 2003; Rendell, 2004; Cross, 2006) and in recent decades, design-based research has also gained an increasingly independent identity in which methodological approaches and theories are not only “borrowed” from other research disciplines; but the very capacity of the design project itself as a knowledge-generating phenomena has been
If by designing we mean the process of giving form to objects or space in various scales, designs at the scale and scope of urban/landscape designs — such as those in focus in this thesis — are not typically objects at a 1:1 scale, but rather the result of projected plans, diagrams, perspectives etc., also operating at a discursive level.

13 Demonstrated (see for instance Dodd 2011; Janssens, 2012; Runberger, 2012; Broms, 2014).

The notion of design sciences as different and even oppositional to more traditional scientific approaches was in fact formulated as early as 1969 by the American political scientist Herbert Simon. In his influential book The Science of the Artificial, he states that the science disciplines have primarily focused on finding out “how things are”, whilst within design there is an inherent aim and focus on finding answers to “how things ought to be” (1969, p. 5; original emphasis).

Design by professionals — and non-professionals as well, as Simon argues — involves the making of artifacts that have “desired properties;” artificial things that inherently involve the devising of “courses of action aimed at changing existing situations into preferred ones” (Simon, 1988, p. 67). In the same spirit, Lionel March notes that “[t]o base design theory on inappropriate paradigms of logic and science is to make a bad mistake. Logic has interests in abstract forms. Science investigates extant form. Design initiates novel forms.” (March, 1976, p. 15).

Design theorist Nigel Cross even goes so far as to claim that design is a “third culture” or “third area” beside the natural sciences and the humanities that needs to be treated as a more coherent discipline of study. In his article Designerly Ways of Knowing from 1982, Cross states that this third culture is “not so easily recognised, simply because it has been neglected, and has not been adequately named or articulated” (1982, p. 221, original emphasis). In later writings, Cross summarizes the differences between the three cultures, stating that while science has mainly dealt with the natural world, utilizing methods including “controlled experiments, classifications and analysis”, and the humanities represent a culture focused mainly on human experience with methodological approaches characterized by “analogy, metaphor and evaluation”, design in turn is depicted as a synthesis of the artificial world with methodological approaches characterized by “modelling, pattern formation and synthesis” (2006, p. 2). Although Cross admits that framing human knowledge production in “three cultures” represents a highly simplified view of reality, these divisions nonetheless reflect the borders that have been drawn within different educational systems, and can also be seen
as a first step in becoming more articulated around the still prevalent gaps between them, prompting questions such as: Can a design-based research approach be a way of generating knowledge? What is the disciplinary specificity of design? And how does a design-based research approach differ from other ways of doing and knowing?

Exploration of Unexpected Potential

One fundamental characteristic of design as both a practice and as a research discipline that is often brought forward is that there is an inherent combination of the critical and the suggestive; of analysis and innovation. This “double capacity” as architecture theorist Catharina Dyrssen has framed it, can be described as constituting an opportunity to simultaneously “project an alternative vision for the future and to direct this projection to present repressed conditions from a critical perspective” (Dyrssen 2011, p. 233; original emphasis). The movement between the critical and suggestive is generally not depicted as a strictly linear process; i.e. as starting with an initial analysis of the “problem” followed by an application of theory and finally arriving at concluding solutions. Rather, the analytical and suggestive often occur in what could be described as a parallel, back and forth movement, with “quick shifts” between innovation and analysis (Dyrssen, p.226). The actual “doing” thus also becomes a way of examining the “problem” at the same time as that which is being created — whether a fictional or an actual project — becomes more and more informed.

Donald Schön has conceptualized this back-and-forth movement between analysis-creation-analysis as a “reflective conversation with a situation” (1983). In this process, designers begin working with a situation that is often — at least to some extent — unknown, or ill-defined, subsequently shaping this situation given their first understandings of it. The designer then explores the implications of their constructions (of which some are accidental or unintentional) and the situation “talks back”, in turn prompting the designer to respond with new actions followed by reflection, and so forth (Schön, 1983, p. 79). In this creative process, the designer “reflects-in-action” and becomes “a researcher in the practice context” (1983, p. 68).

Viewing the design process in this way also provides a
useful perspective concerning the idea of “problem solving” and “problem setting,” which has particular bearing and relevance in relation to the aim and scope of this thesis. Schön states that within the dominant model of professional knowledge, there is an emphasis on solving problems in which the set-up is generally handled as given or predefined:

But with this emphasis on problem solving, we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, and the means that may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain. In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work. He [or she] must make sense of an uncertain situation that initially makes no sense. (Schön, 1983, p. 40)

Given the aforementioned “wicked” or “ill-defined” challenges to be addressed in environmental and urban design contexts, an important part of design work and knowledge generation in such contexts is to involve and activate problem setting rather than problem solving to a much greater extent. This is essential, since it is through the iterative process of problem setting — through framing and reframing — that what is being created becomes partially placed outside the designer and begins to generate its own questions and further topics of inquiry. Architectural theorist Michael Speaks summarizes this potential with the concept of “design intelligence”, which refers to the ability of design as a discipline to move beyond simple problem solving. Instead, he encourages designers to embrace the inherent ability of design to discover new possibilities within the framework of the given problem. In his essay Design Intelligence Speaks emphasized the difference between problem solving on the one hand and innovation and design intelligence on the other:
Problem-solving is an essentially conservative approach that accepts without question the parameters of a given problem. Design is meant to work within those parameters in linear fashion until a solution to the problem is reached; a final design. Innovation operates by an affirmative, non-linear process of continuous feedback, through which opportunities are discovered that are exploited and transformed into designs not posed or unforeseen by the problem. While problem-solving works within a given paradigm to solve known problems, innovation risks working with existent but unknown or seemingly extraneous conditions, in order to discover opportunities that could not have been predicted in advance (Speaks, 2003, p. 416).

On a similar note, Cross argues that there are forms of knowledge that are distinctive for how designers think and work; he calls these “designerly ways of knowing” or “designerly thinking”. As an early forerunner to Speaks, Cross also uses the concept of “intelligence” in relation to design and distinguishes design cognition as a particular and fundamental form of human intelligence that differs from typical scholarly and scientific activity (Cross, 2006). Drawing on, for example, Lawson’s observational studies from the late 1970s and early 1980s, Cross speculates that designers acquire knowledge mainly by exploring various solutions, in contrast to scientists who specifically set out to study the problem (Cross, 2006; Lawson, 1980). Given this context, design can be described as a special form of intelligence that also seeks synthesis instead of only analysis in relation to the problem(s) stipulated. Cross explains:

What this means is that design is not a search for the optimum solution to the given problem, but that design is exploratory (p.28, emphasis original). The creative designer interprets the design brief not as a specification for a solution, but as a kind of partial map of unknown territory [...] and the designer sets off to explore, to discover something new, rather than to return with yet another example of the already familiar. (Cross, 1999, p. 28; emphasis original)

Cross stresses the need for designers to “learn to have the self-confidence to define, redefine and change the problem-as-given in the light of the solution that emerges from their minds and hands”, in particular when dealing with ill-defined, so-called wicked problems (Cross, 2006, p. 7).
The Whole as a “Governing Principle”

As summarized by Cross, design is thus essentially a synthesizing activity where the designer is trained to seek patterns; to find systems rather than isolate individual problems. It is also this ability — i.e., the capacity in design as a way of thinking comprehensively and uncovering “underlying relationships between apparently unrelated functions” — that design theorist Fredrik Nilsson highlights (2004, p. 30). He believes that it will be particularly important in light of the increasingly complex realities regarding current societal and environmental developments, which seem ever more difficult to handle. Nilsson states:

Since design creates unified wholes — formations of contradictory elements — architectural design as a research method uses the whole as a governing principle; it is the whole (not the reduced fragment) that is the point of departure and not only the goal or material result. (Nilsson, 2004, p. 40)

Dyrssen also stresses the ability of artistic and design-based research, in comparison to more traditional research paradigms, to work in a “multi-modal” way, and as she frames it “with heterogeneity, not against it” (2011, p. 229; emphasis original). She further states that:

The architect is trained to handle a large, multifaceted material in complex spatial situations and to create meaning, through the use of mappings-modelmakings, by identifying structures, key points (locations of special interest or with a certain potential), qualities, connections and relationships between agents and agencies in these situations […]. The architect is also trained to combine several types of tools to promote thinking; to rapidly shift between physical models, computer simulations, conceptual images and words, a multi-modal way of working that unites deductive thinking with intuitive precision, to see new relationships and to develop a sense of timing for action. (Dyrssen, 2011, p. 226)

Through combining analytical and critical perspectives with the creative and suggestive, the designer thus seeks to find links between apparently unrelated elements in order to create what she conceptualizes as “new coherencies” (Dyrssen, 2011). In their positioning of “Research through designing” in landscape architecture, Lenzholzer and colleagues make a
similar observation, stating that one substantial strength of RTD methods operating within, for example, constructivist and participatory knowledge claims is precisely that the final product might be “a ‘fully’ integrated design — an example of accumulated knowledge” (2013, p. 126). However, and as also further underscored by Lenzholzer et al. (2013), there is a need for continued work to better clarify and develop the different knowledge claims that can be made under the umbrella of RTD frameworks.

A TRANSDISCIPLINARY APPROACH

As much as we need to research deeply into individual disciplines in order to add to their body of knowledge, we also need to look at combining knowledge from diverse disciplines in order to tackle the various wicked problems that beset contemporary society, and using design in a transdisciplinary framework offers an innovative platform for this new dialogue. (Burry, 2012, p.53)

The second methodological foundation that has shaped this thesis rests in a transdisciplinary knowledge tradition. This approach is closely intertwined with a design-based research approach, since — as described here previously — architecture and urbanism are fields that inherently integrate the discipline with the profession, or theory with practice. Furthermore, these “making professions” (to return to Dunin-Woyseth’s term discussed in the introduction of this thesis), are in themselves composed of a diverse and multifaceted variety of disciplines. Doucet and Janssens even claim that architecture and urban design behave par nature in a transdisciplinary fashion, further noting how architecture not only balances:

the two most extreme ends of the spectrum of knowledge production, namely arts and science; it also balances between individual agency (creativity, authorship, ideology, but also use) and work for a client (architecture is always commissioned, “on behalf of” and, certainly so in relation to urbanism, “at the service of”). (Doucet and Janssens, 2011, p. 2)

As described in Section 2 of this thesis, a transdisciplinary approach, and the integration and hybridization of boundaries on several levels, are also at the very core of landscape- and ecological urbanism.
There exist various forms of scientific collaboration, and the definitions may vary slightly depending on the context in which they are used. This thesis adopts the definition of transdisciplinary given by Hirsch Hadorn et al. (2008), and more specifically Doucet and Janssens for how the term is discussed in relation to architecture and urbanism (2011), and Tress, Tress and Fry (2005) in the context of landscape ecology. Generally, inter and transdisciplinary approaches are defined as, on the one hand, in opposition to the disciplinary, where the work takes place within the boundaries of recognized academic disciplines according to certain established criteria for truth and validity and, on the other hand, the multidisciplinary, which represents collaborative research between disciplines, but where the involved specialists do not cross subject boundaries. In multidisciplinary approaches participating parties, rather than intersecting, run in parallel, and still operate within the theoretical and methodological framework of their specific field. Interdisciplinary research, for its part, is commonly described as an approach that involves several disciplines in a way that forces them to traverse disciplinary boundaries and cross-pollinate. With a point of departure in a shared topic or a project, the different participating disciplines integrate their disciplinary-bound knowledge in order to generate new knowledge and theory. As Tress et al. note, it is important here that the outcomes of interdisciplinary research “cannot be broken down into [their] disciplinary ingredients [and the work could] not have emerged through either disciplinary or multidisciplinary efforts” (2005, p. 486). Transdisciplinary research is similar to an interdisciplinary approach, but involves both academic researchers from various disciplines as well as non-academic actors; for example, practitioners, NGOs, local user groups, land managers, the general public, etc.

In recent years, the two latter, more integrative forms of collaborations have experienced a vast upsurge and gained impact. This may be attributed in part to the growing awareness among both researchers and practitioners across the globe that the environmental, social and economic problems that we currently face are too vast and too complex to address with a specialized academic research alone, and that there is a need for joint problem solving. Here, many have come to realize that environmental problems cannot simply be added to the existing
traditions of urban design and planning, but that an integration of these aspects requires a fundamental restructuring of a new form of “knowledge production that focuses on the combination of different types of knowledge” (Doucet and Janssens, 2011, p. 1; original emphasis).

New Modes of Knowledge Production: Mode 2 and Post-Normal Science

The call to find better ways of integrating different types of knowledge is also evident through the large range of emerging frameworks of knowledge production departing from transdisciplinarity that have emerged in recent decades, see for example: Post-academic science (Ziman, 2000); Post-normal science (Funtowicz and Ravetz, 1993); Mode 2 knowledge production (Gibbons et al., 1994); Innovation Systems (Edquist, 1997); or for a more detailed overview see Hessels and van Lente, 2008). One of the most widely used frameworks is what has been dubbed “Mode 2 knowledge production”, which aims to describe an emerging type of highly integrative knowledge production.\(^{14}\) The concept, which was first introduced by Michael Gibbons and his colleagues in the now widespread The New Production of Knowledge (1994), aims to describe the new type of knowledge production that has increasingly begun to take place external to scientific disciplines and scientific institutes; and which has instead become increasingly heterogeneous, non-hierarchical and operating in a “context of application” (Gibbons et al., 1994, pp. 3). This new mode, which has been studied extensively, by for example, Halina Dunin-Woyseth and Fredrik Nilsson in relation to its relevance for design and design-based knowledge production, operates, as they state:

\[^{14}\text{Mode 2 can be contrasted to Mode 1 knowledge described by Gibbons et al. (1994) as “a form of knowledge production — a complex of ideas, methods, values, norms — that has grown up to control the diffusion of the Newtonian model to more and more fields of enquiry and ensure its compliance with what is considered sound scientific practice. Mode 1 is meant to summarise in a single phrase the cognitive and social norms which must be followed in the production, legitimation and diffusion of knowledge of this kind. For many Mode 1 is identical with what is meant by science” (Gibbons et al., 1994, p. 2).}\]
Draft of figure inter-and transdisciplinary approach. Collaborations performed within the framework of the thesis

1. Me, KTH, architect and researcher
2. Anders Mårsén, NOD, landscape architect
3. Elin Olsson, NOD, landscape architect
4. Evelina Hafvenstein Säteri, NOD, architect
5. Magnus Schön, NOD, architect
6. Petter Hauffman, NOD landscape architect
7. Johan Paju, NOD, landscape architect
8. Gert Wingårdh, Wingårdhs, architect
10. Per Söderberg, Wingårdhs, architect
11. Rasmus Waern, Wingårdhs, architect + architectural historian
12. Jacek Zalecki, Wingårdhs, architect
13. Peter Lyth, Wingårdhs, architect
14. Jonas Ekblad, Wingårdhs, architect
15. Wouter Veldhuis, MUST Urbanism, architect/urban planner
16. Pieter Jannink, MUST Urbanism, urban planner
17. Oscar Hafvenstein, The Story Lab, architect
18. Mathias Gullbrandson, The Story Lab
19. Tobias Nordström, Spacescape, planner
20. Lars Marcus, KTH and Spacescape, researcher and architect
21. James Corner, Field Operations, landscape architect
22. Chris Marcinkoski, Field Operations, architect
23. Lisa Switkin, Field Operations, landscape architect
24. Brad Goetz, Field Operations, landscape architect
25. Megan Born, Field Operations, landscape architect
26. Byron Stigge, Buro Happold, engineer
27. Andreas Zetterberg, KTH, ecologist and researcher
28. Sara Borgström, SRC, resilience scholar
29. Erik Andersson, SRC, political ecologist and researcher
30. Henrik Ernstson, SRC, political ecologist and researcher
31. Stephan Barthel, SRC, resilience scholar
32. Johan Colding, SRC, Beijer, resilience scholar
33. Jonas Torsvall, KIT, architect
34. Carl Kärsten, KIT, architect
35. Sara Grahn, KTH and White Arkitekter, architect
36. Saro Borgström, SRC, resilience scholar

Compared to Mode 1, which is not seen as being replaced by Mode 2 but rather emerging parallel to it (Gibbons et al., 1994, p. 14), Mode 2 has a capacity to incorporate multiple views and various actors, thus operating in a more reflexive and dialogic manner. According to Gibbons et al., “social accountability” thus permeates the knowledge process, and a potential result is that a greater “sensitivity to the impact of the research is built in from the start” (Gibbons et al., 1994, p. 7).

Social reflexivity is also at the core of the comparable framework of Post-Normal science (PNS), which is of particular relevance to this thesis since it is specifically aimed at, and has its roots in, environmental policy and the quest to better integrate complex natural and social systems. The term, which was coined by Silvio Funtowicz and Jerome Ravetz in the 1990s, also has its starting point in the need for transdisciplinary approaches to complex problems, and has its foundations in a criticism to the limits of rational decision making and the role of traditional scientific methods in situations where “facts are uncertain, values in dispute, stakes high, and decisions urgent” (Funtowicz & Ravetz, 1993). In these situations Funtowicz and Ravetz argue that “normal science” is no longer a sufficient way of producing knowledge since this approach “assumes that problems can be divided into minor problems that can be addressed without questioning the wider framework or paradigm” (Hessels and van Lente, 2008, p. 744). In post-normal science, they argue, uncertainty is not banished but managed, and values are not presupposed but are made explicit. The model for scientific argument is not a formalized deduction but an interactive dialogue. (Funtowicz & Ravetz, 1993, p. 740)
A post-normal science approach has been elaborated in particular in relation to the linking of social-ecological systems and how to manage for sustainability (e.g. Waltner-Toews, Kay & Lister, 2008), with particular focus on the plurality of legitimate alternative perspectives through an extended peer community (Funtowicz & Ravetz, 2008).

In various ways, these emerging transdisciplinary frameworks address and explore ways of overcoming what Hoffmann-Reim et al. describe as a mismatch between knowledge production in academia and knowledge requests for solving societal problems (2008). This becomes, in relation to the previously mentioned inherent “wickedness” and “ill-structuredness” of urbanism and environmentalism, particularly relevant; these areas undeniably involve not only a variety of disciplines and fields of competence, but also an often incoherent, diverse group of stakeholders and interests. These emergent forms of knowledge production not only become palpable through the new collaborations that we find at the interface between academia and practice and between disciplines and professions, but they also become apparent through the new ways in which various environmentalist and activist groups are starting to operate.

This in turn subverts the very idea of what knowledge (and values) “count”, but also on whose initiative knowledge production takes place. See e.g. pp. 324–329.
4. PROJECTS: THE STOCKHOLM CONTEXT

In this section I will present the context of the four design projects in which I have taken part within the framework of the dissertation: 1) Nature as an Infrastructural Potential — An Urban Strategy for JärvaFältet; 2) Kymlinge UrbanNatur; 3) Årsta Urban Natures; and 4) Albano Resilient Campus.

See pp. 145–272 for a presentation of the projects in their original format, and the introduction of this thesis for a brief synopsis (p. 30–31). Together with the papers, these design projects comprise the main building blocks of the thesis, and they have served as vehicles through which I have explored and deepened the main questions and topics of the work. The projects include both proposals for which I have been the sole author (Project 1) and co-authored projects in collaboration with multidisciplinary teams (Projects 2-4). A common feature of the four projects is that they are all idea-based proposals that take place in the early planning stages, and they are visionary and critical rather than set within an implementation context where goals and visions have already been set. None of the projects have contained specific requirements regarding, for example, a specific type of program or amount of development, and they have been relatively open in their brief, asking for visions rather than detailed plans. While Projects 2 and 3 are the result of competitions commissioned by municipalities and land-owners, Projects 1 and 4 have not been formally commissioned, but have been developed in an academic context as a critique of the prevailing planning situation.

Throughout the projects there are recurring themes and similarities where certain aspects in one project may have been reused and evolved further in the next. In this sense, the projects have functioned as meta-prototypes, where one proposal has spurred questions and solutions that have been developed further in subsequent proposals. In Projects 1 and 4 in particular, which took place outside of formal designer/
client frameworks, the tentative designs did not emerge with
the predominant aim of producing a final “solution”, but could
rather be understood as “transformative models” with the
potential to engage multiple actors, sometimes with conflicting
goals and perspectives.

In the following section, I will first provide a general
overview of the Stockholm context in which the projects are
set. A short introductory to each project will then be given
according to a thematic distinction that has been partly adapted
from Janssens’ design-based dissertation on “Utopia-driven
Projective Research” (2012). Here, she makes a distinction
between the “informal” and “formal” brief, since, as is also
the case in this thesis, these did not always coincide. The
brief is understood here as the outlined goals and desired
results in relation to the challenges and potentials that have
been identified — sometimes by a commissioner or client
(formal) and sometimes rather as an internally formulated brief
(informal) — as the “game rules” that are set up and negotiated
by the participating parties. A short account of the working
process in each project will follow, with focus on aspects
such as: how were design strategies initiated and developed in
the various projects?; what type of knowledge and expertise
informed the processes and in what stages?; were there any
specific concepts or ideas guiding the work? Each project may
have a slightly different emphasis, depending on its specific
preconditions and characteristics; for instance, the relation
between the formal and informal brief is important in the Årsta
Urban Natures project, whilst the collaborative working method
will be more in focus in the Kymlinge UrbanNatur and Albano
Resilient Campus projects.

CONTESTED LANDSCAPES IN THE STOCKHOLM CONTEXT

In many contemporary urban and urbanizing landscapes
around the world, green spaces and parks are subjected to
large development pressures. In the Stockholm context, the
pressure to expand the city is great, and the question of
how to safeguard urban natures has become a key issue. By
2020, the City of Stockholm is expected to have a total of 1
million inhabitants, which would increase the population
by approximately 100,000 people. In order to deal with this
projected population increase, the political majority’s goal for housing is to build 140,000 new homes by 2030 (City of Stockholm, 2017). In the larger Stockholm County region, the population is projected to increase by 1.2 million inhabitants, reaching 3.4 million by the year 2050 — an expansion rate that would make Stockholm one of the fastest growing regions in Europe (City of Stockholm, 2017). Today, about 40% of the city’s surface is made up of urban green spaces and parks, and as the Stockholm region is densifying and growing, it is not a question of if, but rather how these areas will be affected. Although the greater Stockholm region holds a green structure that in many instances contains a surprisingly high degree of biodiversity compared with surrounding areas (e.g. Elmqvist, 2013),¹⁶ the ecological landscape has undergone processes of homogenization in recent decades and is facing a steady decline in biodiversity (e.g. Colding, 2013). This, in turn, is likely to affect the capacity for ecological resilience in the region (Colding, 2013).

In Sweden, the planning system is characterized by a high degree of autonomy at the municipal level,¹⁷ but it is supervised by the county administrative board (Länsstyrelsen), whose areas of responsibility include monitoring and safeguarding national interests, for example, interests of nature conservation or cultural heritage (Swedish Parliament, 2017). Each municipality holds the responsibility for the formation of a comprehensive plan (översiktsplan) that sets the direction for the long-term development. This plan in turn, guide detailed plans (detaljplaner) which are legally binding (sometimes accompanied by a detailed comprehensive plan (fördjupad översiktsplan).

Fig. 34

Image from the exhibition “Stockholm at Large” at Färgfabriken in Stockholm from 2004. I participated in the exhibition in a group led by Farshid Moussavi. In her reading of Stockholm, she found it to be one of the most segregated cities in the world. The project aimed at making visible the island-like separation of various, scattered enclaves in the suburbs. The floor was covered with an enormous carpet with an aerial view of Stockholm printed on it, and we cut out large letters in form-plastic that represented predominant functions in different areas, for example, housing, commerce, industry etc. Image published with permission from Färgfabriken, courtesy of photographer Camilla Wirseen.
Many kinds of urban natures which are important for the generation and maintenance of biodiversity and ecosystem services lack official recognition in Stockholm (for overview see e.g. Colding, 2013). Most often however, when it comes to large green structures that extend across several municipal boundaries, for example, the green wedges, regional authority rather holds a coordinating function, and the implementation of plans and guidelines is then largely dependent on municipal approval. In practice, the municipal planning monopoly often results in situations where the municipalities are not synchronized across their borders with regard to, for example, the development of new neighborhoods, which makes it difficult to form a strategy that remains consistent in the planning of the green structure (Erixon et al., 2013; Colding, 2013).

Although the importance of the green structure is often acknowledged as a key element that contributes significantly to the “attractiveness of the city” (City of Stockholm, 2010; 2017), green structure is seldom integrated as an active and strategic part of planning, but delegated to regional protection of certain areas (Uggla, 2012), typically through reserves (Borgström, 2011). Furthermore, in both the current comprehensive plan (City of Stockholm, 2010) and the proposal for the forthcoming plan (City of Stockholm, 2017), a strong will has been expressed, particularly in the suburbs, to create and optimize connections between neighborhoods for the sake of improved physical and social integration. These two plans represent a strong shift compared to the comprehensive plan of 1999, which aimed to protect large-scale green structures by “building the city inward”. In contrast, the current strategy promotes an expansion toward the outer city in “strategic nodes” with the aim of creating a more connected and polycentric urban fabric. How this will affect the green structure still remains to be seen.

The four Stockholm-based projects that form the basis of this dissertation are all situated in areas of intersection for large green structures and designated areas for urban development, where central questions concerning the future of the city are brought to a head. The projects are situated either adjacent to or within the city’s large-scale green infrastructure (Fig. 33) and are characterized by what could be described as an enclave-like pattern of functionally separated neighborhoods surrounded by a fragmented, residual landscape and traversed by occasional high-speed motorways and railways (Fig. 34). Thus, although set in different contexts, all of the projects deal with the
contested and topical issue for Stockholm regarding urban development and nature conservation.

PROJECT 1: NATURE AS AN INFRASTRUCTURAL POTENTIAL — AN URBAN STRATEGY FOR JÄRVAFÄLTET

This first project constitutes my Masters diploma work in Architecture at KTH, Stockholm, from 2005. Although this project was carried out before the actual starting point of the research work, I have chosen to include it as one of the main building blocks of the work since it was through this project that I set the direction for the main research questions and themes that have been the basis of the dissertation.

I chose to work with the site Järvafältet in Stockholm, a suburban area comprising a contested and controversial site that has been the recurring subject of many urban proposals and, at times, intense debates. The area, which is part of the Järva green wedge, is situated northwest of Stockholm city and constitutes a large green space surrounded by neighborhood enclaves that were mainly planned and built between 1965 and 1975 as part of the “Million Homes Programme”. These suburban areas are among the most socio-economically deprived in Stockholm. While this project was taking form, plans were being made to transform the large green area in the valley between the areas to a cultural heritage reserve, and these plans were realized in 2006. The green space is mainly made up of groves of deciduous forests and patches of coniferous forests with fields and grazed meadows inbetween. The stream Igelbäcken runs through its center. In some of the lower parts there are wetlands that have been restored. Land uses include, for example, allotment gardens, sport fields, small-scale farming, and areas prepared for disc golf (see Florgård & Forsberg, 2006 for further details). Ecologically, this segment of the Järva wedge is pointed out as a vital link between “ecological core areas” (City of Stockholm, 2004), and in ambitions to enhance physical and social connections between the developed enclaves as expressed in ongoing policy and planning discourse, these objectives are framed as conflicting with the will to safeguard ecological and recreational values.
The formal and informal brief

Since this work took place in an academic context, there was no external client nor a formal brief to relate to, and I was free to select the site for the project and choose how to set up the working process. In the brief that I formulated for myself — the “game rules” if one likes — I took the objectives of safeguarding large-scale green structures as a point of departure, whilst concurrently accepting the politically ratified goal of achieving better contact between disjointed neighborhoods. As a Masters Thesis at the School of Architecture and the Built Environment, there was an established framework in the sense that the work should show an independence in thought, as well as relate to contemporary questions in architecture and urbanism in a reflective and inventive way.

Working method

Throughout the working process, I used and accepted existing reports and models from within regional and municipal levels, but tried to reinterpret and redefine them within their own logic. As the work progressed, I met with some of the local actors at the site and also conducted semi-structured interviews with planners, ecologists and landscape designers who knew the place well. In these meetings, I often brought my ongoing work as a basis for discussions. Later, in the transdisciplinary workshop series held in collaboration with scholars from Stockholm Resilience Centre between 2007 and 2010, the project continued to serve as a kind of touchstone for discussions, and collaboratively we also developed the project further. This work process, in turn, was set up as an interplay between workshops held in a scholarly setting, where topics were filtered through a more theoretical lens, and workshops that were conducted within comprehensive planning and policy contexts faced the practical realities of city-wide and regional planning.
Fig. 35–39
This second project took place in 2005 and consisted of a collaboration with the landscape and urban design firm NOD (later renamed COMBINE), the architecture firm Wingårdhs, the Dutch urban design office MUST, and Stockholm-based Story Lab and Space Scape. This site, Kymlinge, was adjacent to the area on which I had focused on in Project 1, and I was invited to participate since many of the challenges and potentials at the site coincided with the scope of my diploma work. The project competition was initiated by the landowner Vasakronan in collaboration with the municipality of Sundbyberg, and the format was a closed competition with three competing teams. In this sense, the project comprised a more traditional client relationship than the previous project (Project 1), which had emerged from a purely academic context.

Kymlinge is situated in the municipality of Sundbyberg and comprises a large green space that is surrounded by housing and non-housing developments that belong to different municipalities. Directly adjacent to the northwest, in the municipality of Stockholm, is Kista, which is one of Sweden’s leading IT clusters and contains university branches from both KTH and Stockholm University, as well as a mix of residential areas predominantly from the 1970s and later. To the north, in the municipality of Sollentuna, lies the area of Silverdal, which consists mainly of single-family housing, and to the south of the site are the areas Stora Ursvik (in Sundbyberg) and Västerjärva (in the municipality of Solna), which were in planning and construction stages at the time of the competition. Surrounding Kymlinge on two sides are high-speed motorways that constitute physical and experiential barriers that create high noise levels that extend far into the green space. There have been several development plans for the area over the years, but none of them have been realized as of yet. In the 1970s, a subway station was built in the area with the intention of serving a new neighborhood for mainly government agencies. The plans were never realized; however, the “ghost station”, as it is commonly referred to, remains intact but is not in use. Since then, many development proposals have
been presented, and the debate has been scorching at times, and the controversies have been many (e.g. Trottmar, 2015). In 2004, the year before the competition was organized, a nature reserve was created along the Igelbäcken stream, which in turn re-activated the possibility of developing the 55 ha. large part of the green space that had not been made part of the reserve. At present, the area is still unexploited, but Vasakronan is exploring further opportunities for development (Engström, 2015).

The formal and informal brief

An interesting aspect of this project was that its explicit objective was to stimulate visions and not tangible plans. The competition brief stated that the commission was to be seen as “unconditional ideas and vision work”, and the material developed by the participating teams was to “serve as a basis for further dialogue” (Vasakronan, 2005, p. 1). The brief centered on a few recurring themes: first, it repeatedly requested that participants focus on the site in not only its local, but also regional context, both with regards to the site’s location in “one of Europe’s top development areas” and with “consideration of the green structure” (2005, p. 1). Furthermore, emphasis was placed on finding strategies for better integrating the surrounding areas and environments. A report that accompanied the brief stated that due to the many interests engaged in the site as well as large number of municipalities surrounding Kymlinge: “what is likely to be crucial in order to reach viable ideas is the working method or process” (Vasakronan, 2004, p. 20). In this context, the proposal of multiple parallel visions or scenarios was encouraged. In the report, which had been compiled by Vasakronan prior to the competition, there was a great focus on the site’s potential from a development perspective, for example: the proximity to Kista and the international airport of Arlanda; the unopened subway station; and ongoing and planned development around the site. The mentioning of the green space in the brief, however, lacked this same strategic and visionary perspective; it was instead described as an existing resource, quantified into a list of restoration measures to be carried out by Vasakronan.  

21 These measures were, for example, “removal of reeds and brush that prevents water flow” for an amount of 5,000 SEK, or “tree planting” for the amount of 15,000 SEK” (2004, p. 9). In total, a sum of 100,000 SEK was allocated for these steps — a sum that constitutes one tenth of what was spent only on the three competing design teams.
**Working process**

In our team’s take on the project, there was a conscious focus on the process, both internally within the team and as a concept for creating public dialogue about urban space. The method, which was orchestrated by NOD in collaboration with MUST, was set up through a framework of three core workshops that alternated with smaller internal workshops, meetings and seminars in between (Fig. 40). Workshop 1 explored potentials and challenges of the site and focused on the questions “Why?” and “For whom?”. Before and during this workshop, we developed a large number of projections: what we conceptualized as an “encyclopedia of scenarios”. The goal was to open up to various opportunities and allow for complexity by producing, or even in a sense, overproducing options, making them impersonal and thus hindering individual ownership and tendencies toward participants feeling the need to “defend” their ideas too early in the process. In Workshop 2, the focus shifted further towards the question of “How?” and in this round we began exploring the many options that were on the table, discussing and “testing” them according to various criteria (Fig. 41). We also invited external actors and guests to participate in the evaluation process at this second workshop, for example, Professor Margareta Ihse from the Department of System Ecology at Stockholm University. Between workshops we also met with local organizations, such as the Nature Conservation Association, and had regular meetings with the client. In the final core workshop, which centered on the question of “What?”, three scenarios were selected through which we advanced aspects of appearance, strategy and detail. Central to the final proposal was an idea that the project would, as a next step, include an external co-creation process through what was called the “Kymlinge Process”. The method was also a strategy by NOD to try and destabilize the prevalent hierarchical relationship between architectural competence and landscape competence and to disable the role of the architect as the governing “mastermind” of the project. Although the project partially succeeded in doing this, the process was at times difficult, time-consuming and chaotic, and the different participants did not always interpret the idea of the “encyclopedia of scenarios” in the same way; instead, some saw...
The working process was set up through a framework of three core workshops. The aim of this arrangement was to create a model that could support complex thinking and that created a co-authorship where everyone participated and understood all the stages instead of sketching individually. The idea was also that these scenarios could act as a kind of tool for external players to pick up, which, in the end, did not succeed to the extent we had hoped.
Vasakronan wanted to have visions that could open up a dialogue and demonstrate potential. As a reminder of the task ahead of us, our team pinned up this motto in our workplaces: “we want visions, not plans”.

"WE WANT VISIONS NOT PLANS"
it rather as different stages in time through which the project was to be implemented. An interesting aspect here was also how Vasakronan and the municipality of Sundbyberg, which had continuous insight into the work as it proceeded, repeatedly felt the need to remind the three competing teams to keep the proposal on a conceptual and vision-based level — and contrary to what is often required by designers, not to produce concrete plans. In retrospect, one might speculate that a final outcome consisting of too concrete proposals could be provocative in relation to the contested site, where urban development interests and conservation interests were set against each other (Fig. 42).

PROJECT 3: ÅRSTA URBAN NATURES

The third project presented itself as a unique opportunity. I was to start working at James Corner Field Operations in the fall of 2008, and in the spring of the same year I learned about a competition that had just been announced for Årstafältet in the south of Stockholm. The project competition was arranged by the City of Stockholm Development Administration and the City Planning Administration and was to be preceded by an open qualification round for which architectural offices and design teams were invited to submit an indication of interest. Field Operations, in collaboration with Bruno Happold Consulting Engineers, submitted an expression of interest and were selected to participate in the competition along with six other teams. The competition site centered on the 50 ha. large Årstafältet, which has a flat topography with large open expanses of grass and a few trees scattered over the area. Besides allotment gardens, there is a multitude of coexisting land uses, such as a driving range for golf, a grass rugby pitch a small storm water pond, and a small stream runs through the area. Årstafältet, which is the largest greenfield site south of the city centre, is surrounded by enclaves of housing and non-housing developments from different periods. Directly adjoining to the south is Valla Gärde, which consists primarily of tower blocks and low-rise slab blocks built in the 1960s. Behind the site and further to the south lies the 1950s neighborhood of Årsta, which was planned as one of the first neighborhood

22. In the second phase of the project, we were commissioned to merge aspects from the different team proposals, which I have chosen not to include in this thesis.

23. The other selected teams were: 1) Archi5; Michel Devigne; Elioth/Iosis Group. 2) Gehl Architects; Behnisch Architekten; Schönherr; Transsolar; Lia Ghilardi/Noema; Pär Gustafsson. 3) Habiter Autrement; SKA; LOLA arkitektur & landskap; Transsolar; Structor Mark. 4) ONIX; KCAP Architects & Planners; Karres en Brands landschapsarchitecten; Flygfältsbyrån. 5) RADAR arkitektur och planering; Anna Arkitektur; ÄM formgivning; Melica; John Håkansson. 6) Tovatt Architects and Planners; Via Trafik; 3RW arkitekter; Wenanders låda. The winner of the competition was Archi5; Michel Devigne; Elioth/Iosis Group with their proposal “Arkipelag”.
developments with a People’s Palace and a public library. To the south of Årstafältet is Östberga, and the Östbergahöjden directly adjacent to the park, with housing enclaves from the 1960s. To the east and west of the Årstafältet are non-housing areas with Årsta Park business campus and the Årsta Partihall wholesale food market. Still further east is the renowned self-build single-family housing area Enskedefältet from the 1930s. As a whole, the area exhibits broad socio-economic and ethnic diversity, and similar to the two previous projects and the neighborhoods surrounding Järva, the individual enclaves are rather homogenous, separated by roads and green space that are a pattern typical of Stockholm.

The formal and informal brief

Three main aspects were emphasized in the formal brief of the competition: First, the brief explicitly called for proposals that would “achieve better contact between the adjoining neighborhoods, to bridge the barriers surrounding the site” (City of Stockholm, 2008, p. 11). This desire to create better “interlinks,” “green links,” or “clear connections,” as they were also termed, was well in line with the City of Stockholm’s comprehensive strategy to create a more integrated city by better “link[ing] the outer-city neighborhoods together, both socially and physically” (p. 7). Secondly, the brief was clear in its call for proposals that could create a “scope for differing lifestyles.” Mixed housing and non-housing; a varied program and “exciting juxtapositions of old and new” were some of the suggestions for achieving this objective. Throughout the brief there was also an explicit call for an “urban mix” and “urban coherence”, and it was suggested that a “functional configuration resembling that of the inner city of Stockholm” would be a step toward this goal (City of Stockholm, 2008, p. 7). The third main task specified in the brief was to propose a large park that was to be the “heart of Nya Årstafältet”. This “park in world class” was imagined in terms of a “magnet for people from all over Stockholm” and a “central gathering point”, and although the specific configuration of such a park was left open, it was stated that “[t]he new settlement will reduce the present-day parkland area, but the aim is for between 35 and 50% of it to remain parkland” (City of
Stockholm, 2008, p. 14). Participants were encouraged to “take a cue” from “the new international trend known as landscape urbanism”, and it was stated that: “The urban park can not only recover its position as a public space but can actively serve as a catalyst for the entire process of urban development” (City of Stockholm, 2008, p. 5). This composite aspect of the brief: the explicit call for interdisciplinary teams that could produce project-strategies for a park and development in accord was, and is still, rather unique in the Swedish context, where the urban design commissions are often set up according to a more hierarchical structure in which green space issues are already framed from the start as more “soft” and subordinate.

In the resulting response to the brief, the Field Operations team identified the crucial issue as the matter of how to relate to the large green space — even the main question or critical “problem setting” to be figured out. What type of “job” could it do, what type of identity and character would it have, and how would it relate to and be part of the old and new development at the site? Through various initial mapping exercises in the office regarding aspects of scale and “largeness”, a type of informal brief began to take shape in which — contrary to what the brief asked for — we formulated a goal to try to keep the actual physical size of the Årstafältet intact. If the area was to be developed into the “new hub” that the City envisioned, with its accompanying mass of buildings and infrastructure, it was argued that this progress needed to be matched by a green space of a certain dignity and proportion. The strategy was instead to activate the large amount of residual space in between the insular existing development by densifying and diversifying with new building types and uses, including commercial and cultural. These new neighborhoods would in turn be tied to new and existing mobility corridors and transit stops, “their frontages look[ing] outward rather than inward (…) activat[ing] the larger public realm” (Project 3, p. 219).

Working process

In the summer of 2008, Christopher Marcinkoski from Field Operations and Byron Stigge from Buro Happold came to the kick-off meeting in Stockholm, and we walked and
24. Nätverket Årstafältet! (The Årstafältet Network!) comprises a politically independent association operated by citizens with the aim of developing the whole of Årstafältet into a landscape park.

25. Other participants were: Andreas Zetterberg, ecologist and researcher at KTH; Anders Sandberg, former Chief City Gardener, SBK; Viktoria Walldin, social anthropologist and researcher at Stockholm University with experience in the area.

talked and bicycled together on Årstafältet and in the adjacent neighborhoods during a couple of sunny days in June. In relation to their stay, and with the aim of getting a better idea of how the project fit into the overall and long-term plan for Stockholm, a meeting was arranged with the chief officer responsible for the comprehensive plan for the City at the time. Furthermore, in order to gather a potentially more diverse picture of the area and its context than the formal brief could provide, I arranged a workshop with representatives from Nätverket Årstafältet! and other independent experts who knew the area well. Some of these experts also informed the project in later stages of the working process, for example, by providing additional material regarding various aspects, or by giving us feedback on the proposal as it evolved.

Throughout the process, a core group of five people at Field Operations, including myself, worked on the project. Initially, there was significant focus on understanding and analyzing the site and its role in the larger regional context through various exercises of mapping and model building (e.g. Fig 43–44).
PROJECT 4:
ALBANO RESILIENT CAMPUS

The transdisciplinary design process that constitutes the foundation of this project unfolded in a rather uncommon manner. The project, which was initiated in 2009, grew out of dissatisfaction with a proposed plan to extend Stockholm University at the area of Albano. Situated within the National Urban Park in Stockholm, Albano had been characterized by conflict and controversy for years (Ernstson & Sörlin, 2009). From around 2008, development interests, together with the Vice Chancellor’s Office at Stockholm University (SU), began to more firmly present the area as in-need of development, which conservation groups — quite predictably — resisted (Hagabladet, 2009). With a vision to transform it from a desolate brownfield and post-industrial site, the Vice Chancellor’s Office at SU and the land developer Akademiska Hus worked with a Danish and a Swedish architecture firm to develop an original exploitation plan. While the plan was sound in its presentation and met the demands of creating a site for research and teaching, scholars from Stockholm Resilience Centre — which was to be one of the future tenants — felt that the original plan lacked ideas in relation to how to address urban sustainability and the social-ecological complexity of the site itself. In reaction, a collaboration was initiated between four primary parts; the Stockholm Resilience Centre (SRC); the School of Architecture at the Royal Institute of Technology in Stockholm (KTH); the Beijer Institute of Ecological Economics; and the architecture and urban design firm KIT. The objective was to develop the interdisciplinary collaboration that had already been initiated between these institutions (e.g. Erixon et al., 2013), as well as to investigate how research could be integrated into a concrete proposal — a sort of shadow project — that would spark interest and hopefully encourage debate on social-ecology in general, and Albano specifically.

The Albano area captures several of the major urban challenges that developed economies are currently facing. The site is surrounded by motor and railways and constitutes a former industrial area that is now up for prospect rezoning and development into an academic hub. North of the site is Stockholm University, which is presently in need of expansion.

26. The original plan (now changed) had been developed by the Danish architecture office Christensen & Co in collaboration with the Swedish architecture office BSK.
To the south and directly adjacent to the site is the Royal Institute of Technology (KTH), and a bit further west of the area is Sweden's leading medical university, Karolinska Institutet. The area is right on the border of the inner-city fabric of Stockholm and is located within the world’s first National Urban Park and the Järva green wedge; these circumstances indeed augment the site’s complexity and bring about urgent questions of how the barrier between categories of “urban” and “nature” can be bridged. On one hand, the strategic location of the site between the three major universities offers great potential for enhancing social connections in various ways, between the academic clusters and the city fabric, between the universities themselves, and also between the city and the park. At present however, the various areas are fairly disconnected from each other, making movement for pedestrians and bicyclists difficult. On the other hand, Albano provides exceptional potential for enhancing recreational values and ecological connections and strengthening the overall ecological infrastructure of the city. With its brownfield character and the motorway that cuts through the site, Albano currently constitutes a monofunctional and degraded ecosystem, and the area is a weak link and a barrier in the ecological infrastructure. However, given the site's strategic location between two vast and biodiverse sections of the park, there is a great potential for enhancing ecological resilience by improving habitat links and dispersal routes for various organisms. In this context, even small ecological improvements could have a large impact — not just locally, but for the entire park and city.

The formal and informal brief

Since this project did not constitute a conventional commission with a client, we had no formal brief to relate to. However, in order to make the project comparable to the existing proposal for the area, we accepted certain aspects in terms of, for example, required building mass (100,000m2) and programs (teaching venues, offices, research facilities and housing for students and researchers). However, we added two specific tasks to the formal brief: first, the objective to create better links in the landscape, both between the universities in the north-south direction and between the city core and the park in a
west-eastern direction. Furthermore, we set out to explore ways in which the site could serve as a better ecological link in the large-scale green infrastructure than it presently did. Focus was thus not set solely on biodiversity conservation in a traditional sense, but rather on finding ways to safeguard and enhance ecosystem services through their integration in urban planning and design. This informal brief provided us with a kind of “problem setting” — a type of relay or frame to underpin our work.

Working process

The project was set up as a series of workshops, which were held between 2009-2013. These took place in the core PatchWork group and with other stakeholders such as local interest groups and NGOs, the land developer Akademiska Hus, Stockholm University, Stockholm Municipality, the architecture firm BSK, and the design bureau SERVO. Similar to the transdisciplinary process underpinning Paper A, the project was developed using a prototype-based approach that allowed different parts of the design process to interact through dynamic feedback loops that constantly re-informed the proposal. In contrast to the NOD/MUST/Wingårdh process described earlier (Project 2), where multiple parallel projections — the “encyclopedia of scenarios” — were produced to support an informed selection process, in this case prototyping worked in accordance with a recursive sequencing in which each new iteration was based on the earlier version (i.e., 1.1, 1.2, 1.3). In this working process, what was on the table was cumulatively informed as more and more actors participated and provided their input to the process, helping to strengthen a shared ownership and a sense of direction. However, a potential disadvantage of this way of working may be that, at a more discursive level, the quality of parallel options in which various parameters are drawn to their extreme may be lost. This has been noted, for example, by alRawaf (2017), who pointed out the missed potential of a non-development strategy for the area in his Masters work on the Albano design process.
Fig. 45–49
Kymlinge in Stockholm.
Photos by Hanna Erixon
Aalto and NOD.

Fig. 45

Fig. 46
Fig. 50–55
Årstafältet in Stockholm.
Photos by Christopher Marcinkoski.
Fig. 56–59
Albano in Stockholm.
Photos by Hanna Erixon
Aalto, Jonas Torsvall and
Carl Kärsten.
Fig. 58

Fig. 59
5. **EMERGENT THEMES**

In this section, the projects and papers included in this thesis are analyzed and discussed, and conclusions are drawn out of the work as a whole. The title “Emergent Themes” refers to the fact that in the transdisciplinary and design-based research approach which has been deployed, methodological approaches as well as theoretical positions and the development of concepts are simultaneously built and explored. Thus, some of the themes that cut across the papers and projects have been with me from the start, even as a point of departure, whilst others have emerged, transformed and “thickened” along the course of the journey; both in interaction and negotiation with the context, with the various sites, with workshop participants, actors, co-authors and co-designers. Returning to the main questions of this thesis: if we attempted to incorporate the non-equilibrium ecological systems approach into planning and urban designs, and merge the entangled social and ecological perspectives inscribed in complex systems theory — how would such a fusion look? What particular tools, techniques and strategies are necessary to engage and develop in order to design for resilience? What particular roles do we see a need to re-think (the expert or non-expert, for instance)? What might the epistemological role of design be in such processes — what agency is there in design, and what agency is there in the designer; how can the making professions contribute, and what clearly lies outside their roles and capacity? A number of emerging themes that cut across the papers and projects will be explored and discussed in the following section.

**MULTIPLE LEGITIMATE PATHS IN RESILIENCE THINKING AND DESIGN — SYNERGIES AND RISKS**

With the aim of challenging dichotomies, all projects and papers take the integration of various aspects as their point of departure, for example: integration of the social and the ecological; integration of the vernacular and the expert-driven; and integration of various temporal and spatial scales. In Paper A: Challenging Dichotomies (drawing on further development of Project 1) and in Paper C: Towards A Social-Ecological Urbanism
(drawing on Project 4) such integrative aspects are further elaborated through the framework of resilience, both as a way of analyzing the site and its wider context, and as a way to project proposals for change.

In the series of workshops described in Paper A, participants voiced how the complexity and dynamism inscribed in resilience thinking has the potential to capture and conceptualize complex urban processes more accurately by facilitating a shift from the object-fixated modern(ist) “low resolution” approach to a more “detailed one” (Erixon, Borgström & Andersson, 2013). Such a multifaceted understanding of landscapes inherent to resilience thinking that embraces multiple equilibriums allows the simultaneous incorporation and exploration of temporal aspects; from previous land uses and habitats to the present state (e.g. through experiences and inventories of socio-cultural, geological, ecological and hydrological preconditions), as well as potential trajectories and “future natures”; i.e. the “What will grow here?” question. In addition, and drawing on Borgström with colleagues (2006), resilience thinking helped set the frame for a more seamless exploration of physical scale interactions, allowing us to shift quickly between, for example, an overview at the regional scale, down to detail, and back again to a zoomed-out perspective, and so forth. As Lister underscores, this approach acknowledges how “[t]he reductionist caveat of ’scaling up’ using knowledge gained at one scale and applying it to the whole system cannot work in complex systems in which scales are nested” (2016a, p. 130). Instead, and drawing on for example, Gunderson & Holling (2002) and Levin (2000), the interaction between different scales is discussed in Paper A in terms of how the larger scale can provide buffering capacities for the area whilst smaller scales can act as “drivers for innovation”, functioning as test sites for adaptation at larger scales. This strategy was also developed further through the Albano Resilient Campus proposal (Project 4), in which the whole area was intended to function as a “big research laboratory” where different solutions could be calibrated towards the large green structure, “tested full-scale and, by involving different actors, continuously contribute with new knowledge about how social-ecological systems develop” (Barthel et al., 2013, p. 12).
Through these collaborative projects, it also became clear to us that an ecological systems approach, coupled with a design process that was deliberately set up in an iterative, prototypical and recursive way, enabled us to keep many aspects on the table simultaneously. This in turn helped us to comprehend a wider array of possible intersections that were initially imperceptible.

Consequently and as discussed further in Paper C, the framework of resilience thinking allowed us to raise the bar for what we asked the design to do, and hence facilitated the identification of points of convergence between different interests. Analyzing across the projects and papers of the thesis, a tentative finding is thus that a complexity-embracing, resilience-based approach operationalized through site-specific urban designs, may release and enable potentiality through the unveiling of multiple legitimate paths, which in turn can facilitate the search for synergies and win-win situations. Through these synergistic projections — overlaps, combinations and re-combinations — a key may also be found to challenging the dichotomies and hierarchies predicated on binary thinking and the resulting deadlock situations targeted in this thesis.

However, it is also through this diversification of choice and the recognition of multiple potential paths that are enabled and activated through resilience thinking that the challenges — or some would even say risks — lie when attempting to operationalize resilience within planning and urban design. In the workshop series that forms the basis for Paper A, several participants raised precisely this subject for discussion and underscored the importance of acknowledging that a larger “palette of options” does not automatically provide guidance in relation to the choices and combinations that are desirable in terms of resilience. In this context, some workshop participants felt that the resilience literature on the whole rendered the concept as an implicitly positive attribute, although as one participant phrased it: “several [ecological] states — just because they are stable and have a possibility to survive — are not in any way desirable” (Paper A, p. 295). Resilience is thus, as Folke (2006) states, not only about being robust or persistent to disturbance and change, but rather:

It is also about the opportunities that disturbance opens up in terms of recombination of evolved structures and processes, renewal of the system and emergence of new trajectories. In this sense,

27 Although arguably all design processes are almost always iterative and recursive to some extent, this can be encouraged or discouraged to varying degrees. In both series of collaborative workshops, which included both designers and non-designers, a central challenge was finding ways in which to turn away from the notion of design in the sense of producing a static end product, to exploring frameworks that could support integration of complex knowledge along the way, and that could in a sense “react” to this knowledge and create feedback loops informing the design. The workshops are presented in Paper A and Paper C.
The fact that opinions differ greatly concerning the use of public and open spaces in the city can be conceptualized as the very nature of the urban condition. Chantal Mouffe (e.g. 2000) has for instance conceptualized these processes with the term “agonistic politics”, referring to the fundamental understanding of urban space as the subject of continuously ongoing confrontations and negotiations without the possibility of any definitive and final agreements.

But desirability is a tricky thing. What might be considered desirable or beneficial by one segment of society might indeed be disadvantageous to others, as Walker et al. (2006b) noted — especially in an urban context where there are many co-existing interests. 28 Taken to an extreme, that which is resilient can thus presumably range from the utopic to the highly dystopic and even pathological, depending on the context (Lister, 2016a). As noted in Paper A, any operational interpretation of resilience requires that the concept be specified in relation to questions such as “resilience for whom?” and “of what?” (Carpenter et al., 2001), and the answers to these questions necessitate judgement and a desire in a certain direction. In light of the fact that resilience research has been increasingly applied in policy and planning documents, a growing criticism has been that this development has taken place in remarkable isolation from precisely such normative issues related to aspects of power and culture (Hedrén, 2014; Cote & Nightingale, 2012; De Block, 2016). Particularly in more conservative, equilibrium understandings of resilience that rely on a “bouncing back to normal” rhetoric, the term is often operationalized more in terms of a fixed framework and a checklist policy tool that disregards site specificity, which ironically often ends up concealing the explicitness of choice enabled by the framework rather than making legible and tangible. Cote and Nightingale (2012) further highlight how when used in this generalized context resilience thinking often seems to overemphasize the role of physical shocks and undertheorize the effect of political and economic factors in relation to risk and vulnerability. In relation to large urban green structures such as those explored in this thesis, we can for instance see how the ability to safeguard these structures and their inherent and future values is largely dependent on political circumstances — and these have in turn been shown to shift drastically, from, for example, the imposition of strict formal land use measures one year, to non-existent strategies the next.
Yet another concern that participants in the first workshop series expressed is that the open-endedness inscribed particularly in more recent strands of resilience thinking that emphasise transformation and change might in fact create an “alibi” or an excuse for development where resilience simply implies that an area’s social-ecological systems must be robust enough to withstand nearly any type of change. Based on such a misguided application, resilience thinking has been accused of applying consensus approaches that “conceal conflicting interests and inequalities” (Hedrén, 2014, p. 68; drawing on Hornborg, 2013) and hence hinder more radical approaches needed to shift society towards more sustainable futures. However, whilst acknowledging these relevant risks and critiques, it is also important to recognise that a theory or concept does not become useless merely because it can be misused; on the contrary. Through the lens provided by this thesis, I would instead even be inclined to suggest that resilience thinking holds the potential to provide another type of radicality that — importantly — does not originate from an either/or thinking, but rather from a both/and mind-set. Although the theory is admittedly in its infancy, resilience thinking possesses — as Cote and Nightingale have expressed — the potential to function as a “counter-narrative” to conventional human-environment analyses through its “genuine commitment to a holistic approach that integrates a diversity of scholarly disciplines and embraces complexity” (2012, p. 477). These characteristics are indeed far from, if not the opposite of, a balance-seeking consensus approach.

This ability to simultaneously consider both novelty and redundancy — or, if we return to the earlier quote by Folke, to a “dynamic adaptive interaction between sustaining and developing with change” — opens up for a forward-looking approach and projective capacity to human-environment change. By lingering in this interface, and by further or better embracing and considering the fact that questions of resilience (and likewise sustainability) are, as Lister so aptly summarized it, not only “questions of science, but questions of social, cultural, economic and political values — they are also questions of design” (2016a, p. 125), not only does the framework have potential to demonstrate the fact that we must change, but also to critically explore how to change.
Through the projects performed within the various strategies of this thesis, tools and techniques have been explored and utilized that are aimed at integrating complex systems knowledge. The use of generative prototyping methods, applied in the first workshop series (described in Paper A), and later further developed in Project 4 (Paper C), constitute one such technique that allows feedback loops and quick shifts between analysis and construction, where what is on the table can be more and more informed. Importantly, the prototype in this context is considered here not in the sense of a static forerunner or template, but as a transformative object of investigation (Floyd, 1984; Runberger, 2008; 2012) that may potentially allow for experimentation, communication and feedback. In Project 2, the encyclopedia of scenarios was utilized with similar objectives, albeit set up slightly differently. In this project, the focus was on an initial production of a large number of parallel projections or scenarios that could be “tested” according to various criteria as a next step (see previous section pp. 90–93 for more details). In both cases, the method aimed to dismantle habitual roles and positions in which participants felt that they had to defend their specific proposal or expertise.

RESILIENT DESIGNS ENABLES COMPLEXITY BUT DEMANDS LEGIBILITY

Another common theme throughout the projects and papers addresses the aspect that the integration of ecological systems thinking and complexity theory into planning and urban design calls for the development of strategies for identity and legibility, perhaps to an even greater extent than before. Landscape theorist Julia Czerniak — whose essay on “Legibility and Resilience” constitutes an important reference throughout the three papers in this study — defines the concept of “legibility” in its very basic sense, as the ability of something to be understood in its logic; to be “read or deciphered, such as handwriting” (2007, p. 215). In the context of large urban green spaces and parks, Czerniak refers to legibility as the capacity of a project to be understood in both its intentions, identity and image, and the term extends from analysis and design of a project to also include the design process that precedes it (Czerniak, 2007).

In their “Lifescape” proposal for Fresh Kills presented
earlier in this thesis (see pp. 57–59), James Corner and his Field Operations colleagues employ a range of different strategies to make the scheme legible to various users and stakeholders through what is described as a “cultivated understanding of its evolutionary logic” (Corner, 2002). Community outreach programs, graphics for billboards and posters, transformable project logos and a legible plan map figure were just some of the strategies deployed (Czerniak, 2007; see also figure 24 a–c on p. 58–59 of this book). Nina-Marie Lister, in turn, drawing on Jane Wolff’s research and design work in relation to the complex, hybridised natural/cultural systems of New Orleans (Wolff, 2014), 29 acknowledges how the emerging body of resilience-based design work:

carries with it an implicit commitment to legibility: an imperative to make visible the invisible, and to reveal essential systems phenomena, based on the premise that what we cannot see and recognize, we cannot name or value—nor ultimately understand and protect. (Lister, 2016a, p. 132-133)

In Paper A (and through the extension of Project 1), aspects of resilience and legibility are explored specifically in relation to large-scale urban green structures and to safeguarding present and potential values within their scale and scope. Through tentative designs, nested strategies for legibility are developed in which smaller areas, built around distinctive landscape characteristics, are linked together as a series of connected identities that in turn become legible as part of the larger identity of the wedge. Throughout the series of workshops, participants emphasized the importance of strengthening the wedge concept in order for places such as Järva to resist the constant development pressures and political shifts that characterize the urban landscape. It was further recognized that, given the large scale, strategies for legibility would have to operate by other principles, particularly in relation to aspects of control. One participant specifically emphasized that an important challenge was to find a concept or “vision” that can be active across the jurisdictional and administrative units of the wedge; an “underlying narrative that can take on the battle of the large scale.” (Paper A, p. 292). Present strategies for enhancing such a narrative were experienced as weak however, and green space conservation in general was often felt to focus...
30. In contemporary Swedish planning, there is still, since the time of this study in 2007–2010, a tendency to map and “inventory” green and open space values according to a generalized set of categories (e.g. “Experience values”, “Biotopes”, “Sociotopes”). Although the use of these in planning should not be underestimated, the set-up of such categorizations as seemingly neutral and universal is reminiscent of McHarg’s (1969) method for determining the “suitability” (or non-suitability) of an area for development (described in more detail pp. 46–47).

on existing values, seldom including the articulation of new ones or the incorporation of more strategic aspects. 30

Following this line of discussion invites further speculation however: Can legibility and identity be actively strengthened or even created in the context of urban natures? How might these processes occur, and with what tools? How are constituencies around an area assembled, and how might a sense of ownership be nurtured? Can constituencies and anchoring around a place be built through the articulation, and even creation, of values?

In Paper B: Of Plants, High Lines and Horses, these questions are further addressed and deepened, with specific emphasis on how values arise as part of narratives that assemble and broaden support. Through the three case studies that constitute the focus of this article, we find that successful or influential narratives with the ability to mobilize support were concurrently inclusive; open, broad and able to accommodate multiple sub-narratives, yet specific (for example, distinct and poignant), with a clear direction. As a design tool and strategy for legibility, narrative practices such as muf’s work in Tilbury could in this sense help “reboot” the value system and create a sense of ownership amongst various constituencies. Furthermore, and following Ernstson & Sörlin’s (2009) study of how the National Urban Park in Stockholm became protected, we found that influential narratives seemed able to embed places in wider geographical “wholes” so that the local scale became tied to the larger scale. Protective value is in this sense transferred, or borrowed, from surrounding, often more high-status areas, so that any intrusion of the site becomes a threat to the values of the wider area. In the context of the large-scale, often fragmented and contested, urbanizing and peri-urban landscapes that constitute the focus of this thesis — where green structures initially emerged as a result of transport infrastructure rather than being designed via a deliberate plan — strategies for legibility (and resilience) represent both challenge and potential. In these areas, where real conditions for well-functioning ecological infrastructures and ecological designs are possible, and where a multitude of stakeholder interests are concurrently at play in land management, land use and land development, design tools and strategies for legibility that are inclusive, yet directional, become particularly relevant.
Throughout all of the projects presented in this thesis, the green structure constitutes the organizing element around which the identity and internal logic of the project are built, though in slightly different ways. The main narrative, rather than being constructed solely around form (or a traditional plan-map), strives to encompass a dynamic between elements that are more fixed and elements that play more transitory or open-ended roles. In Project 1 for instance, nature is regarded as an “infrastructure potential” that both establishes the area and makes it legible by enabling a dynamic between the series of connected “identity areas” or parks, and the network of strands of varied programs and activity that extend between them. In Project 2, a similar tension exists between the actions that make up the “platform” and the possible scenarios they can produce. In “Årsta Urban Natures” (Project 3), these aspects are perhaps made most evident through the introduction of what is conceptualized as the “fourth ingredient”: the “Green Web”, which, in addition to properties, such as density, mix and connectivity, is intended to constitute an organizational and generative element of urbanism.

In Project 4, which is discussed in greater depth in Paper C, the legibility of the project is built around the idea of nature and ecology as an underlying structure — a matrix that through its very “patchiness” intends to support a myriad of activities and constituencies. As such, the patch-like structure of the proposal can be seen as a pixelated field condition where properties are projected and enabled, transformed over time, whilst intended to retain overall cohesiveness and identity. Parallel to the actual design scheme that emerged as a result of the proposal, particular attention was also dedicated to making the work legible within the design process, both between the internal PatchWork group and towards participating stakeholders. These various representational clarifications, or amplifications, of what we tried to accomplish, seemed to operate on a meta-level of the project and function as mediators between participants. Similar to the processes of value articulation depicted in Paper B, these artifacts (for example: diagrams, sketches, matrix models, comprehensive narratives, short texts and images, perspectives, models, and images etc.), helped us weave material and symbolic contexts together and to project a common narrative and a joint ownership in the
project. As the project grew, and as the Albano Resilient Campus proposal was increasingly developed with a growing number of stakeholders, the narrative was expanded and further developed to also include a larger number of perspectives.

The concepts are bound together in the understanding of resilience in relation to legibility that is brought forward and discussed in the projects and papers of this thesis, as well as through the work of scholars and practitioners such as Czerniak, Corner, Lister, Wolff and others. An area’s ability to adapt and transform in the face of fluctuating natural, social, political, and economic conditions demands that it be legible across a range of constituencies: both within and between participants of the design team, towards local users and interest organizations, as well as in relation to decision makers, developers, and those who will ultimately finance the area’s realization and management. Somewhat paradoxically perhaps, these schemes must thus be legible, with a clear identity and direction, precisely in order to encompass a large variation and diversity both ecologically, socially, and in light of shifting conditions over time. In this sense, “the interactive process of exchange, feedback, and growth between invested constituencies (and their understanding of the scheme) as well as a design’s ability to accommodate these conflicting wishes is a measure of its legibility and resilience” (Czerniak, 2007, p. 244). To continue discussing, deepening and investigating resilience thinking in relation to legibility from different perspectives and through various modes and media, is also particularly fruitful in relation to the quest to analyze the normative assumptions that underlie resilience as discussed under the previous heading, since legibility inherently presupposes both a transmitter and a receiver, and the questions “of what” and “for whom” in order to make sense.

PROTECTING THROUGH PROJECTING

— NARRATING THE FUTURE AS A TOOL

Story and storytelling is another recurrent theme throughout the papers and projects. As discussed in relation to resilience and legibility in the previously section, narratives may be “vehicles for engagement and action in a certain direction”, and they can assemble people and create spatial linkages that play into arguments of protection of urban green space. But if we
zoom in still further on narrative, can the role of stories relate to the key issue as investigated by this dissertation to unlock polarization and seek more integrated approaches that allow us to re-conceptualize how we engage with our environment? What different genres of narratives might there be, and how are these discussed throughout the papers and projects?

To begin, there is a simple, yet important assumption that is also fundamental for this thesis: how we conceptualize our world matters and has consequences in reality; that is, how we think largely determines and sets the frame for what we think (and how we may subsequently act). 31 Within planning and urban design, there is a growing body of literature on how story and storytelling are fundamental both as a model of the way planning is done or understood and a model for the way planning should (or could) be done (Throgmorton 1992; 1996; Sandercock, 2003; Childs, 2008; see also van Hulst, 2012 for an overview). Importantly though, as underscored by van Hulst: “[a]lthough storytelling can be found everywhere, not everything is a story” (van Hulst, 2012; drawing on Riessman, 2008). In comparison with pure argument or description, it can be said that stories are characterized by a weaving together of various elements placed in a sequential (often temporal) framework. As such, stories move beyond simple cataloguing or listing of different aspects stacked on top of each other, and instead hold elements of explanation, sense-making and coherence (Sandercock 2003; Uggla, 2012; van Hulst, 2012). 32

In relation to the specific agency of narrative in the urban context, theorist and planner Leonie Sandercock has stated that:

In order to imagine the ultimately unrepresentable space, life and languages of the city, to make them legible, we translate them into narratives. The way we narrate the city becomes constitutive of urban reality, affecting the choices we make, the ways we then might act. (Sandercock, 2003, p. 12)

As a concept, resilience has no inherent positive or negative connotation, as discussed previously. Similarly, story and storytelling are not “good” per se. Indeed, the false nature/culture binary in our heads can be understood as an underlying and widely shared ‘main narrative’ that not only affects the general planning discourse, as we have seen in the Stockholm context, but also official planning documents, roles of officials...
within sectored planning institutions, and management decisions on the ground (e.g. Uggla, 2010; 2012; Tunström, 2009; Dovlén & Skantze, 2005; Erixon, 2006). Narrative and narrative practices in this context can be seen as upholding and justifying the status quo, further cementing entrenched positions. 33

But stories and storytelling also hold a potential “future-directedness” that has been documented by many scholars (see e.g. van Hulst, 2012). Forester, for instance (2000; cited in Sandercock, 2003), has shown how narrative has the ability to mediate conflicts in community participation processes by shifting fixed positions into more open and receptive frames of mind. Story and storytelling can also function as catalysts for transformation and have an inherent ability to imagine futures (Childs, 2008; Sandercock, 2003, van Hulst, 2012; Goldstein et al., 2015). In this manner they can, as Sandercock put it, be “powerful agents or aids in the service of change, as shapers of a new imagination of alternatives” (2003, p.18). This specific phenomenon is investigated further in Paper B in the context of articulating (and safeguarding) values of urban natures. Narratives, it is proposed, can gradually move from being “protective” to also being “projective” when they start changing the very context on which they feed and in which they are expressed — in other words, when they move beyond mere protection of urban nature, towards the material and symbolic remaking of spaces. An illustrative example here that is raised in Paper B is the open ideas competition organized by Friends of the High Line in 2003, and the pivotal role that the competition played in re-framing the site’s protective value. The large number of submitted proposals, many of which were imaginative and visionary, seemed to shift focus away from the site as an either/or question (sacrifice or save) towards a projective capacity acknowledging that something (anything) could happen. Regardless of what one thinks of the outcome, this early initiative undoubtedly constituted an invitation to what Janssens has conceptualized as an act of “imagineering”— i.e. towards the what if and the what ought to be (2012).

Seen from the position assumed by this thesis, it is proposed that thinking in terms of protecting through projecting may be useful in the context of safeguarding urban natures, since it has the potential to derail, or at least destabilize, the underlying narratives of urban natures as victimized,

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33 Many scholars have asserted that deconstructing these often hidden or embedded stories and making them visible is a first step toward critically evaluating and possibly challenging them (Sandercock, 2003; Throgmorton, 1992; van Hulst, 2012).
passive, static, and inarticulate. The underlying assumption here is that the only way to protect urban natures in the long-term is to plot them into the concepts and structures of the city as active, strategic, articulated, dynamic and integrated elements (in which the physical landscape itself also becomes an active narrative element).

Narrative as a way of knowing and doing also has the potential to complement traditional scientific approaches within sustainable development. As we have seen, these are often based on a reductionist framework where the “problem” is externalized from the social, political and cultural world, while the story has an inherent integrating potential by internalizing various perspectives and treating them as a coherent whole (Sandercock, 2003). To connect back to aspects of problem-setting (as discussed in the Methods section (p. 72) and in Paper C, pp. 358–359), stories have the ability to simultaneously frame the what is with the what ought to be (van Hulst, 2012; drawing on Rein and Schön, 1977) so that “solutions” are not dependent on a model or structure from the outside being “applied” (such as technical or managerial models or structures), but have the potential to connect a variety of perspectives. Narratives in this sense often build and feed on existing threads but weave them together in new ways (van Hulst, 2012). In comparison with more traditionally analytical and top-down perspectives however, story and storylines in planning and urban design are often still, as Sandercock underscores, “thought of as ‘soft’, as a woman’s way of knowing, as inferior, lacking in rigor” (2003, p. 12). Based on the experience gathered in this dissertation however, particularly in relation to how narrative relates to and is an integrated part of a design-based and transdisciplinary approach, I argue that narrative as a tool in sustainable development has a central, albeit hitherto relatively unexplored, potential — both in understanding how problems have arisen and in exploring new paths. Particularly in the exploration of more adaptive and resilient approaches, which is a prerequisite for sustainability (Lister, 2007a; 2016a), narratives need to be crafted in ways that cast parts for a diverse set of actors (both human and non-human) with common threads that connect them to a shared, comprehensive vision. In line with findings in Paper B, this could imply a distinction in narratives into “sub-narratives” that can both carry and
be carried by “main narratives”, an idea reminiscent of what Sandercock, drawing on Dunstan & Sarkissian (1994), calls “core story”.

Furthermore, in the transdisciplinary processes that form the basis of this dissertation, we have seen how inclusive, iterative and recursive design processes that allow feedback loops can carry narratives that are both open and distinct, and how they can serve as invitations. The narrative thus expands to include an ever larger number of perspectives, and maintaining legibility becomes a design-challenge. Throughout the projects and papers, and in addition to story and storytelling being a way of analysing and understanding how values can be articulated and created collectively in relation to urban natures (as elaborated in Paper B), narrative was also utilized as a methodological approach, which in turn constitutes one of several components of the broader umbrella of tools and strategies of design thinking activated through research-through-design. In particular, throughout the Albano Resilient Campus process, we activated what can be conceptualized as comprehensive narratives in which abstract research concepts and scientific findings were translated into stories that were plotted into the designs. First told within the group and later retold at outreach seminars and public presentations, these created a sense of co-ownership in the project and made results legible for a wider audience.

THE EPISTEMOLOGICAL ROLE OF DESIGN

Another emerging theme embedded in the very framework of the thesis on a type of meta-level addresses the issue of how a design-based research approach may contribute to the production of new knowledge. What conclusions can be drawn about the agency of design and what kind of knowledge might it may generate in relation to the papers and projects of this thesis? How, more specifically, can a design-based approach be positioned in relation to the growing body of resilience literature, and extend beyond “blueprint” or “best practice” approaches? What tools, strategies and techniques can we see the need to develop given the demands of social-ecological complexity thinking in urbanism?

First, a recurring aspect discussed and established in
This thesis is how a design-based approach has the significant capacity to contribute to a type of knowledge production that allows a reformulation of the problem setup. In all four projects, we can see how this occurred. In Project 1 for instance, prevalent frameworks provided by City and Regional planning agencies were used as a basis for the proposal, but were also interpreted — expanded, tweaked and projected through design iterations — and often used in ways that they were perhaps not intended to be used. In the two projects with a more formal client (Projects 2 and 3), the brief was accepted with regard to scope and program, but again, expanded beyond the given boundaries (both programmatically, physically, and conceptually) and reinterpreted to encompass and connect to much larger socio-ecological infrastructural systems. In the "Årsta Urban Natures" proposal, we accepted the explicit call in the competition brief for "urban qualities" through, for example, density, diversity and connectivity, whilst concurrently reformulating and expanding the scope through the integration of an alternative or parallel sub-narrative that acknowledged potentials inherent to the suburban format — depicted, for example as something “open”, (space, light, air), “individualistic” (varied options for dwelling and lifestyle) and “green” (accessibility to nature). Also in the Albano Resilient Campus proposal, we accepted the existing brief with regards to its stated program and building mass but added an additional “job” that we wanted the site to perform, namely, both to provide a better functioning ecological link in the large-scale green infrastructure and link the city together socially, creating a more connected urban fabric.

In the context of the current binary conceptual structuring within the sustainability discourse in Stockholm, as discussed earlier, such reformulation and re-setting, becomes especially relevant. A design-based research approach may here provide opportunities to challenge the status quo in which the “problem” has already been framed, as is often the case, within a dichotomous setup, which in turn might mean that only dualistic responses can come out. Any “solutions” will thus risk merely responding to an overly simplistic, excluding and narrowly set-up frame with little room to explore alternative approaches, novelty and change. In this sense, all projects presented in the dissertation accepted, and took as their starting point, the over-arching objective of creating an interconnected urban structure whilst
strengthening and protecting large-scale green structures, but set out to discover new possibilities within this given framework. Instead of developing something from the outside — for example, a model of some kind that could be applied to the two perceived rivalling systems to force them into coexistence — there was a search for alternative conceptual frameworks and assemblages through the exploration of hidden or unnoticed potential within the systems, which at the same time could reveal misunderstandings that had led to the current situation. Through these “fictional interventions in a situation”, knowledge was thus not produced as a final or “correct” answer, but rather with the intention to explore, as Dyrssen describes: “(alternative) game rules of performance (…) hidden connections in a problem situation, to switch perspectives, formulate complexities and reach new understanding” (2011, p. 229).

Secondly, another related aspect has to do with the potential in an RTD approach to not only contribute to the production, but also more specifically to the co-production of knowledge. In both of the two sets of workshop series presented in Paper A and Paper C respectively, we see how the set-up of the process in an iterative, prototypical manner allowed feedback loops in which both expert and non-expert knowledge could inform the project on a continuous basis, helping us to cross subject boundaries in order to create new knowledge and initiate an integrative theory. Notably, and despite a growing interest in recent decades of the potential agency of design within the resilience and ecological complex systems theory literature (see e.g. Pickett et al., 2004; Felson & Pickett, 2005; Nassauer & Opdam, 2008; Childers et al., 2015), the literature still displays a rather simplified and linear understanding of what design and the design process are and could be. This is partly due to the epistemological gap between the discipline of ecology and the making professions. Although, as we have seen, resilience thinking inherently accepts and even puts forward change and transformation, it is remarkable how the projective capacity enabled by design thinking or designerly ways of knowing has hitherto been downplayed or overlooked in this literature. Drawing on Porter and Davoudi (2012), Goldstein and colleagues (2015) partly attribute this to the fact that social-ecological resilience research has so far failed
to incorporate the “value choices” that guide and motivate human agency, “downgrading the potential agency of human beings to interpret, learn and change” (2015, p. 1288). Social-ecological dynamics, they argue, has tended to be incorporated into processes as a static “natural fact”, thus becoming normalized rather than opening up for change. In this context, experimental design work with its inherent potential of combining analysis with innovation, facts with values, has an as yet largely untapped potential to, as also called for by e.g. Ernstson, “crack open” the social-ecological systems’ thinking for political and critical analysis — but crucially, without losing the generative and projective aspects of “how to manage and interact with complex ecosystems in uncertainty and change” (2013a, p. 15). 36 Knowledge claims within a RTD approach thus often comprise, as underscored by Lenzholzer et al. (2013), a qualitative and contextual potential aimed at making sense of situations rather than finding generalizable and quantitative knowledge (2013). It is not primarily geared at finding “proof” in a traditional sense, but rather offers what Dyrssen sums up as alternative perspectives, ideas, strategies and new questions, including the innovation of models and products, not as final statements but as part of a shared actions space extended over time. (Dyrssen, 2011, p. 225)

Collaborative, critical, site-specific design processes may thus become frameworks through which synergies and overlaps can be explored, concurrently working as vehicles that help, in the words of C.S. Holling, to “create excitement, identify options in the form of alternative visions of the future, and build hope” (2003, p. xxi), but also, and importantly, function as touchstones through which possible areas of conflict may be exposed and brought to the surface.

THE AGENCY OF THE DESIGNER

Although the balancing of the analytical and suggestive can be said to occur in all design processes, even as an inherent property of the design process, if you will, opportunities and latitude for criticality certainly varies depending on contextual conditions, for example, how open and permissive

36 Key here is performative design and experimentation that may bridge various types of knowledge domains and challenge the solely role of the “scientist as observer” (Grose, 2014).
a possible client or project brief in fact is. Bringing more
critical perspectives into practice can indeed be a challenge; as
Grillner & Ståhl (2003) stated, the professional identity of the
architect or designer is to a large degree connected to his or
her role as a consultant, which is in turn often intimately tied
to a commercial context (2003, p. 4). As such, architects and
design professionals throughout history have “tended to become
embedded in existing power structures, usually at the service of
those in control” (The Agency Research Group, 2009, p. 113).
Yet, on the other hand, design professions hold an agency — a
responsibility some would even argue — to “act on behalf of
others” (2009, p. 113). This statement becomes indisputably
relevant when operating in an urban or public context.
The contradiction here lies in having skills to participate
in envisioning and realizing alternative futures, while the
same skills have an integral part in reproducing urban spaces
that benefit current market-based city development. Given
this context, the space and leverage appear to be critical; to
question, and even expand, the given conditions of the brief or
commission can be seen as a constant negotiation, and it often
requires that architects and designers seek creative strategies to
address it.

In one of the case studies presented in Article B for
instance, we see how the architect and art firm muf managed
to create a separate (art) project that ran parallel to the official
commission through which they could explore alternatives to
the given — and in their eyes, unreasonable — preconditions
stated in the project brief. Aspects of this parallel project could
later be incorporated into the official commission, once the
clients and decision makers had become convinced of the
benefits of such an alternative approach (see pp. 320–324).
Here, muf used an approach that is rather representative of how
they generally work, combining art and architecture in order to
incorporate critical and investigative, yet poetic dimensions into
their projects.

In the Albano Resilient Campus project there was
also a dynamic at play between a more informal and formal
proposal, since the project began as an activist “shadow” project
borne out of a dissatisfaction and a desire to spur a debate on
alternatives, but grew into a more traditional project that was
to be taken up in the planning process through our group’s
advisory role in the detailed planning process.

Other ways to fertilize more explorative and critical approaches within a practice have been to develop a separate research department within the organization in order to stimulate development and innovation, as many contemporary firms have done. Additionally, participating in competitions, which often allows for the elaboration of more critical positions in comparison to regular commissions, is another common tactic. Here, we see how competition briefs, especially within large-scale landscape and urban design contexts, increasingly call for transdisciplinary approaches with teams that contain a diverse set of competencies. As discussed in in articular in Paper B, one key lies in opening up alternative ways for the making professions to use their skills in order to both relate to and concurrently challenge existing power structures.
6. FUTURE FORWARD FRAMEWORK

Wicked problems may serve as the basis for discussions between designers and scientists seeking collaborative solutions to complex environmental challenges. Here we see most clearly the emergence of an intellectual marriage of complexity, systems thinking, and design, and the possibilities for such an approach offering a useful interdisciplinary process for scientists, designers, planners, managers, and others concerned with environmental problems to engage diverse thinking in crafting solutions. (Westley & McGowan, 2014, p. 294)

As we have seen, the human/nature relationship in general and the role of nature in cities in particular are being reinterpreted and re-envisioned across a number of fields. Scholars are increasingly emphasizing the very interconnectedness of the social and the natural — of nature with, not against, culture — through their work, and expressing such new hybridizations through terminology such as, for example: “socionatural assemblages” (Karvonen & Yocum, 2011); “socionatures” (Gandy, 2005; Swyngedouw, 1996); or within systems ecology and resource management as “socio-ecological systems” (e.g. Waltner-Toews, Kay & Lister, 2008; Pickett et al., 2008; Elmqvist et al., 2004). Correspondingly, within branches of urban planning and design, one can observe a similar upsurge of integrative, systems-based thinking in which landscape and ecology are suggested as powerful “modifiers to urbanism” (e.g. Mostafavi & Doherty, 2010; Reed & Lister, 2014; Waldheim, 2006). Conceptual models and theories derived from ecological science — for example, resilience — are increasingly being picked up and interpreted within urban planning and design for their ability to capture and conceptualize complex processes (e.g. Corner, 2002; Czerniak, 2007; Lister, 2007a; Wilkinson, Porter, & Colding, 2010).

As of yet however, there are still limited examples of how these emerging new perspectives can be realized in mainstream practice (Childers, 2015; Steiner, 2011; Steiner
et al., 2013). Elisabeth Mossop for instance has noted that whilst there has long been “rhetoric calling for a unification of ecology and design, there have been few compelling solutions to urban problems exhibiting this fusion” (2006, p. 167). Integrating the complexity predicated on a social-ecological approach has proven challenging (Wilkinson, et al., 2010), and urban planning and design practices often seek out conclusive and simplified ecological information to incorporate into designs instead (Forman, 2002). This also became evident through the workshops series presented in Paper A, in which participating planners often felt a demand to present “simplified measurements, figures, and specifications in relation to matters of urban nature and ecology — for instance, answering the questions: How wide must a green corridor be in order to function? What ecological steady-state are we going for? Or, what specific species are we trying to save here?” (Paper A, p. 293).

Here, yet another dichotomy appears: a gap between the emerging human/nature integrative theories and concepts within academia on the one hand, and on the other hand the clearly insufficient ability to fully incorporates these thoughts toward a more sustainable direction in practice and thus a broad societal change, at least at the rate and to the extent necessary. In light of the interrelated and complex problems that the world is currently facing, and specifically in relation to the deadlocks in planning that we have seen appear throughout this thesis, researchers, practitioners and activists need to transcend disciplinary boundaries (Doucet & Janssens, 2011; Nilsson; 2004; Westeley & McGowan, 2014). This needs to, as for example Colding (2013) and Steiner et al. (2013) have also underscored, break with the general orientation centered on “protecting” nature from urban development toward more informed considerations on how to integrate social-ecological services in urban form and design and instead “invest in nature for healthy, livable, urban communities” (Steiner et al., 2013, p. 360).

Through this thesis, I have explored the particular significance in a transdisciplinary and design-based research approach for addressing these particularly “messy” and “wicked” situations in planning. As we have seen, in combination these approaches have potential to reformulate
the given problem setup and make room for new ideas and unexpected possibilities (Cross, 1999; Speaks, 2003; Janssens, 2012) it uses, as Nilsson frames it, the “whole as a governing principle” (2004). Furthermore, research through design may provide a framework for co-producing knowledge. Within the framework for what we could think of as a design research program within the scholarship of ecological urbanism — or, to use the term developed through the collaborative process of the ARC process, of social-ecological urbanism — one could imagine a future-oriented agenda including several possibilities for further explorations. Three interrelated orders of themes seem to be of particular important for this direction of research.

First, a continued exploration of the interface between ecological complex systems theory and a design-based research approach; i.e., designerly ways of knowing; design intelligence or design thinking, could be instrumental in activating the potential power of resilience thinking within urbanism beyond metaphor. Several scholars have pointed to the striking similarities between these two frameworks despite their very disparate epistemological background, and advocate for still further exploration of the “intellectual marriage” between the two (e.g. Westley & McGowan, 2014; Lister, 2016b). Creative process and ecological process both strive for what Corner has expressed as a “diversely interacting whole” (1997, p. 81); as we have seen in this thesis, they are both characterized by emergence and non-linearity, and they allow for the consideration of future potential in open ways. Furthermore, both frameworks include the notion of scale dynamics in which there is a seamless consideration of multiple nested scales that need to be regarded simultaneously. They are both about transformation and embrace aspects of experimentation, albeit in slightly different ways — designerly thinking by rapid projections and iterations that provide direct feedback loops, and ecological complex systems thinking by, for example, setting up small-scale safe-to-fail experiments that allow for adaptivity through learning-by-doing (Lister, 2007a; Felson & Pickett, 2005). Here, the further explorations of performative design strategies, techniques and methods that may enable ecological thinking and, as stated by Pollak “engage this multiplicity without containing it” (2007, p. 98) is central.

A second identified future forward framework to
explore in more detail concerns the very mechanisms behind collaborative projects, which can in turn be seen as a prerequisite for the integration of different aspects, at least if they are to accommodate a certain degree of complexity. In addition to advocacy and participatory research approaches, there is great potential in looking still further into more co-creative participatory methods, especially in an urban scale and scope (Munthe-Kaas & Hoffmann, 2016). Here, Westley and McGowan acknowledge the related and significant possibilities of “change labs” and “design labs” and point toward the specific benefits of merging design thinking, complex systems theory and research on group dynamics (2014). Design labs (e.g. Helsinki Design Lab; Mind Lab in Denmark; Stanford D-lab; Malmö Design Lab) are often set up as platforms for shared inquiries and create a setting for collaboration between various stakeholders in order to address a complex social problem (Binder & Brandt, 2008). As of yet however, design labs according to Westley & McGowan (2014) have generally been poor at integrating ecology both in relation to complex systems change and cross-scale dynamics, and this is an important research area to pursue further.

Thirdly and finally, this thesis acknowledges the need to explore future frameworks that can take better advantage of the great quantity of knowledge production that is already taking place today. Although collaborations between ecologists and designers occur regularly in practice, as noted by Grose (2014), this knowledge often remains within the limits of separate studios, within a particular project or between a number of practitioners — perhaps at best as an internal learning process within an office. Indeed, there are researchers who write about these experiences in practice or in teaching, and practitioners who conduct research, but the structural conditions for how these activities occur still, to a far too great extent, disconnect rather than guide together perspectives. Often, the different worlds in which designers and ecologists exhibit and discuss their work are separated by a great divide; academic ecologists typically publish in peer-reviewed journals with their main focus in natural science, whilst designers’ work is presented in non-academic journals or general gray literature and therefore seldom reaches the ecologists and vice versa (Grose, 2014). For both parties, publication methods “enhanc[e] the separation of
the disciplines.” (Grose, 2014, p. 72). Here, there is a clear need for future frameworks that can better encourage the crossing of disciplinary boundaries (e.g. through cross-disciplinary academic journals that welcome design-based work), and a related effort by practitioners and researchers to make their work legible to others outside their own discipline. In closing, and drawing on this work as a whole, a design scholarship of social-ecological urbanism is imagined that, by operating in the in-between spaces of fixed frameworks, might offer other perspectives, strategies, (re)solutions and yet new questions, that may hopefully serve as the basis for more resilient and sustainable futures to come.
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SYNTHESIS

The proposal is built around the idea of a synthesis between an ecological infrastructure + social infrastructure.
This project is based on the assumption that a key issue in safeguarding urban green space lies in the very exploration of alternative city/nature relationships. The project questions whether natural values must always be sacrificed when the city grows, and, concurrently, whether “nature” must be seen as an obstacle to urbanization. The aim of this work has been to explore the transformation of existing antagonistic relationships into synergistic ones, whereby they become part of the solution instead of the problem. To investigate this, an intellectual distinction was made between 1) the intrinsic value of nature (i.e., nature as a system or property that supports biodiversity) and 2) experienced values of nature (i.e., its significance for human experiences). Could these different, but intimately interconnected values interact and be strengthened, both in relation to each other and in relation to the city’s need to grow?

The project uses existing models and reports in order to try and redefine these, but within their own logic; i.e. to see if “nature” and “city” could be combined in less dualistic (and less static) ways. By identifying synergistic overlaps where “city” and “nature” coincide, an Urban Strategy for Järvafältet is proposed. This strategy constitutes an attempt to safeguard natural values by integrating them into the urban fabric. This means that instead of passively accepting the randomness of nature, we must actively and deliberately influence it.
DEAD-LOCK SITUATIONS

Stockholm wants to grow. How this will be done is not self-evident however, and opinions differ on the matter. This analysis project addresses the current situation with the aim of contributing to the on-going debate about the city’s future. The present discussion concerning the future of Stockholm can be roughly divided into two camps; the “nature lovers” and “urbanists.” This division reflects a dualistic view of the city, where the desire to protect natural values and the need to develop and expand the city have been set against each other. On the one hand, the city’s unique ecological infrastructure holds the potential for developing rich biodiversity, through which plants and animals are able to thrive. At the same time, such vast landscapes function as a form of “social insulation,” separating different suburbs and thereby reinforcing social segregation.

Whilst the two “camps” are represented via stakeholders such as e.g. environmental groups and business organizations, the positions they hold can also be detected within the planning system, where they are reinforced by architects, ecologists, politicians, and officials. They are also often entangled with competing regional and local interests, further complicating the picture. Although the “nature lovers” and “urbanists” are in many ways opposites, they share a common point of departure: where one wins, the other must automatically lose. As a result of this zero sum game, they share a common view of nature, which they both view as something separate from humans. This “either/or” reasoning places nature against the human, against culture, and against the city. In this view, nature is perceived as “natural” in the sense of something passive (untouched by man)—something which must be protected from change.

This conceptualization also forms the basis for planning in Stockholm, which exercises a kind of passive awareness with respect to nature. “Green” values are inventoried, labeled, measured and mapped...
One basis for the conflict can be found in the radial structure of Stockholm and its green wedges. Whilst the city’s radial structure contributes largely to the attractiveness of the capital by providing a dispersed green space close to where people live and work and stages a rich biological diversity (1), these vast green landscapes may also function as social insulators between the suburbs, and risk amplifying undesirable segregation (2). The urge to connect the urban fabric is thus set against the will to protect natural values (3).

JÄRVAFÄLTET — A SITE OF MANY INTERESTS

Järvafältet is part of the regional green structure and the Järva green wedge, which extends from southern Djurgården in the southeast, via Järvafältet, to Sigtuna in the northwest. As one of the city’s areas of development and expansion, this peri-urban area experiences strong development pressures, with a range of different interests and actors connected to the site and involved in its development. A desire exists to link the city in a north-south direction, which could potentially counter the isolation of existing suburban “enclaves” and counteract the physical segregation of the city. At the same time, however, the area also constitutes...
an important link in the city’s large-scale ecological infrastructure and is of crucial importance for the biodiversity of the city at large. The green space in between is characterized by a typical mosaic landscape of cultivated land, open fields, and wooded heights. The stream Igelbäcken runs through the area and together with its near surroundings it is of great importance to birds, amphibians, and reptiles.

CURRENT STRATEGIES

In current planning strategies, the value attributed to nature is foremost connected to the area of land dedicated to it—measured in terms of surface area. The protection of “natural values” is thus seen as equivalent to safeguarding physical plots of land, for instance through nature reserves, based on the logic that “the value and possible uses of an area increase according to their size.” Similarly, the desire to expand the city is foremost tied to the need for land (again measured in surface in hectares). The conflict between nature conservation and urban development is thus further sharpened by a shared reliance on quantitative measures of land area. Furthermore, the borders are not absolute — nature reserves can be torn up if

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**FOOTNOTE**

1 Report 2003:20, Stockholm County Administrative Board.
other needs are identified as more pressing, which could occur in the case of a shift in the political majority ruling of the municipality or the county, and land classified as belonging to the City’s “green structure” is already being allocated to urban development. Within this polarized framework, the passive position of “nature” in relation to development pressures results in the release of ever-more plentiful reports and planning documents whose purpose is said to be protecting “nature” and justifying its values in the city. Past experience however shows that “nature” as it is framed in this dualistic and passive manner will always be the loser in this struggle in the long term.

EXPERIENCE VALUES

The report “Experience Values — Social qualities in the regional green structure report • 4 + 2001 from the County of Stockholm’s Regional Planning Office proposes a series of “experience values” that compose the expected experience of a visit to a green space in the city and proposes seven different “experience values”. Below is a subsample.

Published with permission from Stockholm County Council.

1. PRISTINE AND ENCHANTING NATURAL ENVIRONMENTS

<table>
<thead>
<tr>
<th>High value</th>
<th>Very high value</th>
</tr>
</thead>
</table>

2. SERVICE AND TOGETHERNESS

<table>
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<tr>
<th>High value</th>
<th>Very high value</th>
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3. DIVERSITY AND PEDAGOGY

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<tr>
<th>High value</th>
<th>Very high value</th>
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</table>

4. THE SENSE OF FOREST

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<tr>
<th>High value</th>
<th>Very high value</th>
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EXISTING REPORTS WITHIN PLANNING

At the basis of the work are existing models and reports within planning. The models were developed primarily as tools for protecting green spaces against development pressures. However, at the same time, the model pinpoints “protective values,” thereby acting as a guide to future possibilities and potential and allowing win-win situations to be identified.
 STOCKHOLM’S ECOLOGICAL INFRASTRUCTURE

The City of Stockholm has developed a model in order to better understand the ecological infrastructure present within its municipal boundaries.

Top figure: Published with permission from City of Stockholm, City Planning Administration. Bottom figure: Traced by author from original map.

**LARGE CONTINUOUS CORE AREA**

A large continuous natural area that contains valuable habitat mosaics and natural values of particular importance to the long-term protection of biodiversity in the city.

**DISPERAL ZONE**

Green and urban areas located between two core areas. Biotopes in these areas help to maintain the qualities of the core areas but have less complex ecosystems than the core areas.

**CORE AREA**

Refers to the areas of distribution zones of particularly high conservation value. Values are important conditions for biodiversity and cannot be replaced in the foreseeable future.

**BUFFER ZONE**

Green and urban areas with parts of particularly valuable habitats adjacent to the core area or dispersal zones. The buffer zone is less complex and comprises more fragmented habitat mosaics than the dispersal zones.
1. USE

A. Akalla gård
B. Akalla sports field
C. Hästa gård
D. Husby gård
E. Granholmstoppen
F. Allotments
G. Eggeby gård, Folkets park
H. Sports field
I. Igelbäcken

- Frequently used places and strands
- Public buildings

2. CULTURAL-HISTORICAL RELICS

- Ancient remains
- Area of ancient remains
- Limit old village settlement site

3. BIOTOPE MAP

- Built/paved ground
- Deciduous forest
- Other deciduous forest
- Other coniferous forest
- Pinery
- Mixed deciduous /coniferous forest
- Overgrown wetlands
- Open land
- Open healthy grass
- Semi-open healthy grass
- Open land/allotments
- Open land/cultivated land
- Water (Igelbäcken)

4. GEOHYDROLOGY

Granholmstoppen is constructed of excavated material from when the neighborhoods of Rinkeby and Tensta were built.

- Moraine
- Outcrop or near the surface
- Organic soil, peat or silt
- Mud
- Infill from 1978
5. **Noise**

<table>
<thead>
<tr>
<th>Noise level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated quiet zone</td>
</tr>
<tr>
<td>Noise level below 50 dB</td>
</tr>
<tr>
<td>Noise level 50—55 dB</td>
</tr>
<tr>
<td>Noise level 55—60 dB</td>
</tr>
<tr>
<td>Noise level over 60 dB</td>
</tr>
</tbody>
</table>

6. **Barriers and Bays**

E18 and Igelbäcken constitutes a barrier for passage in the north-south direction, and contact with the field of Rinkeby and Tensta is poor. The north side has better contact with the field via “bays” in which a number of schools, kindergartens and public activities are gathered, in close proximity to the field.

7. **Less Rich Biotopes**

The biotope map shows a mosaic-like landscape where agricultural land and fresh grass-biotopes have a relatively low biological value and function as dispersal.

8. **Pedestrian Paths**

The area is an old farming landscape where parts of the field are also cultivated today. Farming requires sufficiently large patches of arable land for agriculture to function rationally. At present, this leads to limited mobility of the field.

9. **Distinct Landscape Elements**

The landscape is fragmented and difficult to grasp. The river, the hill Granholmstoppen and the valley between Kinkeby and Tensta make out the most distinct landscape elements.
STRENGTHEN THE ECOLOGICAL INFRASTRUCTURE

SAVE TIME

The project proposes taking advantage of valuable existing natural environments. In the existing situation, habitats that have been classified as “particularly valuable” in Stockholm’s Ecological Infrastructure are scattered across the site in patches or “islands” not large enough to create a continuous landscape. The remaining land in between (about 80% of the total site) has, in turn, been classified as “less biodiverse”.

The project proposes to integrate these existing “core areas” as a base in the six “nature areas”.

ADD NEW NATURE

The ecological structure may be strengthened by the addition of new natural areas that complement the existing. The choice of these “new natures” may be based on several criteria, e.g. 1) what types of natural areas/habitats have good potential to establish themselves at the site (what would grow here?); 2) what composition would match and complement the city’s large-scale green area structure in general; and 3) what types of natural areas/habitats are most likely to have synergistic effects, both in terms of attracting new plants and species and providing social and recreational values.

BRIDGE BARRIERS: OVER AND UNDER HIGHWAYS

Large roads are one of the greatest barriers in the green structure. A 200-meter-wide ecoduct is proposed for connecting Granholmen forest with the hill on the other side of the road Akallavägen. Another ecological link is proposed under the Kymlingelänken road in the east where the stream passes.

AN OPTIMIZED 400-METER BOUNDARY

The Museum of Natural History in Stockholm has proposed a 400 meter-wide protective zone along the Igelbäcken stream. This project accepts this zone, but suggests that it should be optimized in order to
include a large range of habitats that have been classified as “particularly valuable” in the ecological infrastructure. Furthermore, measures are suggested to reinstate the water flow in the stream.

II.

AMPLIFY THE EXPERIENCE OF "NATURE"

Today, we act as consumers of nature seeking out a specific area or a place to meet our expectations in terms of our experiences of nature. Ideas about “nature” are thus linked to a place or an area. An area or place might possibly be seen as a type of intensification of identity; although the experience is always personal and subjective, ideas about nature—particularly related to identity and attractiveness—can be something that many people share. These ideas are socially constructed.

While the report "Experience Values" (see page 88) demonstrates the great social value of the green structure, it also shows how these values are scattered over a large area. At Järvafältet, for example, the experience category “forest feeling” only occurs in a few designated areas that are neither too small nor disturbed by noise or visual factors in order for the feeling of being in a forest to occur, according to the report. This description raises a question: how are social experiential values constructed and can they be concentrated or amplified?

NOT VISIBLE — NON EXISTENT?
The proposal questions the current quantification of values, in particular connected to size within nature conservation. As a response, the following issues have been examined, particularly in relation to size: What is the approximate amount of time for a stroll around an area? What are the chances/likelihood of (visual) contact with other people? How resistant is the area to wear and tear? What are the possibilities for overlapping various land uses? How is the area connected (or just as important, not connected) to adjacent areas, and what is its role in a wider context?

BRANDING

The geographer William Adams argues that actual, long-term nature conservation occurs by tying nature closer to humans. It is through use that protection of nature and of the actual site, is instigated, in turn creating a mental “space” in people’s minds around what is to be protected. This project proposes that by consciously enhancing and amplifying a character and identity of green spaces, a type of “branding” is achieved (a mechanism that, in turn, according to Adams’ reasoning, ultimately leads to enhanced nature conservation).

III.

STRENGTHEN THE SOCIAL INFRASTRUCTURE

Just as the ecological infrastructure can be described as the structure that allows flows of plants and animals (energy, biomass, and genes) to move through the landscape, the social infrastructure can be seen as a structure that enables the flow of people, vehicles, culture, and information. These two types of flows share many similar characteristics and needs. “Infrastructure” here holds the potential for both movement and exchange.

Thus, social connectivity and accessibility at Järvafältet is increased by a multitude of operations that answer to shifting needs and conditions.
STRANDS OF DEVELOPMENT

Development strands across the Järvafältet in a north-south direction are proposed that link neighborhoods and create a transverse variation that is permeable.

STRANDS IN THE LANDSCAPE

Visually open strands in between the neighborhoods contribute to a sense of space, providing sightlines in the landscape and connecting areas to each other visually. These may include various programs such as sports and activity fields.

SOCIODUCTS

The strategy proposes that the major barriers, the road E18 and Akallavägen be covered in strategic sections.

NEW ROADS

The strategy proposes a new network of walking and cycling paths across the site.

A SENSE OF SPACE

Standing on the Järva field looking south toward the valley between Rinkeby and Tensta.
1. SAVE TIME
New nature areas encircle existing core areas with high biodiversity. See pages pp. 166–175 for zoom in: a) Granholmen forest; b) Eggebyhögar and c) Skogsvåktarkärret.

2. ADD NEW NATURE
The ecological structure may be strengthened by the addition of new natural areas in order to complement the existing ones.

3. ECODUCTS

4. OPTIMIZE 400 M ZONE

5. BRANDING
Areas in which the experience of "nature" is amplified

6. STRANDS OF DEVELOPMENT
Strands of permeable development link neighborhoods

7. OPEN LANDSCAPES
Strands of open land connecting areas to each other visually

8. SOCIODUCTS

9. PATHS
New walking and cycling paths

10. GROW THE CITY
VI.

GROW THE CITY

The project further asked whether development can take place in conjunction with a well-functioning and thriving ecological infrastructure? Often, our idea of “nature” and the type of nature experiences we anticipate in fact constitute the largest obstacle to integrating nature and the city. For instance, a residential area may not give us the experience of “nature” we expect, even if it may be an equally good, or even better, dispersal-biotope than for instance an open meadow. Incorporating nature into the urban structure as an integrated and inherent part of it thus becomes a way of protecting intrinsic natural values, allowing new social-ecological structures to emerge in a manner similar to the way in which a garden is grown, so that buildings and nature over time strengthen each other.
STUDY OF DISTRIBUTION
NATURAL/DEVELOPED
LAND

1. THE EXISTING SITUATION

Existing proportion of 1) natural land; and 2) developed land in what has been classified as the "dispersal zone" for Järvafältet in the Ecological Infrastructure of Stockholm.

- deciduous forest 5%
- coniferous forest 8%
- built-up/paved land 1%
- wetland
- other biotopes 81% (of which 55% less biodiverse).

2. DEVELOPMENT EVENLY DISTRIBUTED

Dispersal zone with high proportion of developed land (also paved) and high proportion of "valuable habitats," here evenly distributed (same proportions as in 3).

3. DEVELOPMENT ALONG THE EDGES

Dispersal zone with high proportion of developed land (also paved) and high proportion of "valuable habitats" but here separated from each other, which gives a narrower dispersal zone.

RATIO FOR 2 AND 3

- deciduous forest 25%
- coniferous forest 10%
- built-up/paved land 40%
- other biotopes 25%
A. **SPARSE DECIDUOUS FOREST:**

At least 70% deciduous trees of which at least 50% are tree species such as oak, linden and beech. The field layer is sparse and dominated by the grove species that demand a lot of shade.

Ecological assessment: The sparse-leaved forest generally offers very good conditions and distribution opportunities for plants and animals and accommodates a rich biodiversity.

B. **WOODED PASTURES:**

These can be either pastures with a sparse tree layer of birch, oak or other species, or groves of forest in otherwise open pastures and grazed forests. Grasslands with coarse deciduous trees and dead wood are especially valuable because the trees are species-rich in terms of lichens, fungi, and invertebrates.

Ecological assessment: as for type A.

C. **WETLAND TYPE I:**

Wetlands with free (so-called “glaze”) water surfaces, and varied aquatic plant belts and solid ground. The type has the potential to act as a local habitat for seabirds. Ecological Assessment: Very high biotope value.

D. **WETLAND TYPE 2:**

In this type one can often find damp deciduous forests that grow in narrow strands of the shorelines and follows rivers and drainage systems. Frogs and salamanders thrive in this type. Grazed in particular by cows.

Ecological Assessment: Very high biotope value. Often fulfills a function as a link between other wetlands and habitats.

E. **CONIFEROUS FOREST:**

The canopy is often patchy with an uneven structure. The land is healthy and dry, dominated by shrubs, grasses and mosses. Pine and spruce are not separated. Ecological assessment: especially older coniferous forests with elements of e.g. dead wood have high biological value.
F. SPARSE SETTLEMENTS TYPE 1:
Areas with sparse low buildings and parks surrounded by varied vegetation. Moderate to extensively managed grasslands dominate. Field and shrub layer is well developed. Ecological assessment: This type can, depending on location, size, and content of such habitats, play an important role as a dispersal area.

G. MIXED FOREST:
30-50% of deciduous trees and 50-70% component of conifers in the forest. Often mosaic-type wooded areas with mixed coniferous and deciduous trees. Ecological assessment: Mixed forest types are often good living environment and dispersal habitat for a large number of species groups.

H. ALLOTMENTS:
Small field / surfaces used for cultivation. Ecological assessment: The areas can, depending on the vegetation cover and its location relative to the environment, play a role as a dispersion biotope.

I. SPARSE SETTLEMENTS TYPE 2:
30-50% elements of vegetation with shrubs and tree stands. In this category one can find areas with low apartment blocks built with respect to the surrounding terrain and surrounded by lush gardens and parks. Ecological assessment: This type can, depending on location, size, and content of such habitats, play a role as a dispersion area.
The strategy proposes the establishment of new area that includes and encircles the existing patches of broad-leaved deciduous forest that have been described as “core value areas” in Stockholm’s Ecological Infrastructure. The area’s character is determined predominantly by the existing height of Granholmstoppen and the (in part newly established) deciduous forest that encircles the area. The contiguous wooded areas provide good conditions for a rich biodiversity. A sparse deciduous forest is planted northeast of the hill, marking the entry to the area. Visitors filter through the forest, catching a glimpse of the hill in the background. South of the hill, there is a patch of wetlands where existing swamp forests dominate. The main pedestrian path runs around the area and offers a woodland walk of about an hour. The route marks the boundary of the area and, as the forest develops and matures, it will create a natural border against exploitation. Towards the E18 highway in the south and Akallavägen in the west, noise barriers are to be constructed. Visual barriers are to take the form of dense woodland, made up of mostly conifers that provide protection year round.

Entering from the north visitors are filtered through the sparse deciduous forest and can glimpse the hill in the background.
ILLUSTRATIVE PLAN

1. Igelbäcken. The edges of the stream are beveled in order to make it start meandering.
2. Glades and brows are created.
3. Large open area that allows for the dimensions of a football field.
4. Ancient remains (red dotted outline).
5. Glades and brows are created.
7. Ancient remains.
8. Limit of ancient village settlement site.
9. Entrance following the stream.
10. Existing coniferous forest.
11. Ancient burial mounds.
12. Main entrance through the valley.

DIAGRAMS

A. Establishment of the border; approximately 40 min walk around the area.
B. Main entrances.
C. Branding.
Glades and brows.
D. Predominant habitats. Type E: Coniferous forest.
Type A: Sparse deciduous forest.
Type B: Wooded pastures. Type G: Mixed forest.

EGGEBYHÖGAR

The dominant characteristics to be “amplified” in this proposal are related to the stream Igelbäcken, which winds through the site in combination with a series of glades and brows that create attractive spatial features while at the same time providing potential for edge conditions with biological variation and diversity in the area. As in the proposal for Granholmskogen, the area includes the existing patches of broad-leaved deciduous forest that have been described as “core value areas” in the document Stockholm’s Ecological Infrastructure. Alternating small glades and larger open meadows create a variety in the landscape, instigating a rhythm made up of more intimate meeting places and larger spaces for overview and activity. Today’s mosaic-like ground-biotopes of alternating open/semi-open land with fresh/dry soil are proposed to be maintained and, in selected areas, combined with the creation of new meadow and pasture biotopes. The area also includes several ancient monuments (i.e., burial mounds that are situated in the coniferous forests, and a rune stone near the Eggeby Farm). The valley between the farm and the dense tree-covered height is to be amplified visually so that it creates a natural entrance to the area from the south.
SKOGSVÄKTARKÄRRET

The desired dominant characteristics of this area will be built upon movement around the wetland, in combination with a series of lookouts and opportunities to observe the rich plant and animal life that the new area will, hopefully, attract. The main promenade will consist of wide planks, leading visitors into a loop-like movement around the area. A dense swamp forest will be planted between the wetland and the walkway, also providing a buffer for some of the more sensitive inhabitants of the wetlands. The area is to be made up of two main types of wetland: one that is more suitable for frogs and reptiles and another type with more open water that is likely to attract a rich birdlife.

ILLUSTRATIVE PLAN
1. Igelbäcken
2. Observation point
3. Islands of vegetation
4. Wetland type 2
5. Bridge
6. Main pedestrian and cycle path
7. Planks
8. Observation point
9. Wetland type 1
10. Observation point
11. Damp deciduous forest
12. Existing coniferous forest
13. Damp deciduous forest
14. Existing coniferous forest
15. Main pedestrian and cycle path
16. Planks

DIAGRAMS
A. Establishment of the border; approximately 55 min walk around the area.
B. Main entrances
C. Buffer
D. Predominant habitats (Wetland type 1 and type 2).
E. Branding: wildlife observation

NEXT SPREAD
At various places along the path, the vegetation will open up, thereby creating informal stations for observation. In other places, narrow paths of planks will lead the visitor towards the inner parts of the wetland, and at a few designated places, the paths will continue over to the other side of the area.
KYMLINGE URBANATUR

Only through a living and dynamic relationship to nature, to people, and to the region’s needs at large can Kymlinge develop into something that benefits the whole city of Stockholm. A network of small, yet important, measures lay the foundation for the proposed Platform. From this point of departure, a variety of cities may be developed in line with the needs of future populations.

Nature was first. And this is precisely why it has so often suffered when the city has grown. But we are convinced that it is possible to create a new kind of urbanity which co-exists with nature. The production of such a “Nature City,” however, calls for developers and conservationists to realize that everyone can actually win if a common vision can be agreed upon. We have an idea of how this might look.

Kymlinge holds many opportunities: It is directly adjacent to the center of the neighboring area of Kista, and is easy to reach by car, subway, and commuter train. It also constitutes a valuable natural area. There are also a number of obstacles to the area’s development: road widening may inhibit connections with Kista, noise from existing roads disturb the peace, and the natural environment is under severe pressure. All this must be resolved before Kymlinge can be built.

While it seems impossible at first, after some consideration a strategy becomes self-evident. Firstly, it is clear that the area’s intrinsic ecological, recreational, and accessibility values must be strengthened. Only then can conditions for urban development of the area be met. Secondly,
the area’s main focal points need to be identified. The subway station is such a point, and as such the station must be given a form that captures and expresses its unique siting, on the border of a nature reserve. The place where Kymlinge meets Kista is also important—this occurs below the Kymlingelänken highway, on the extension of Grönlandsgången. With shops and sports facilities placed in an attractive space, the highway will not become a border, but rather the glue that binds Kista and Kymlinge together. A third focal point presents itself at the place where Kymlinge faces the high-speed traffic of the E4 motorway. It is in this place that we propose a landmark building to mark the area’s connection to nature and leisure: a large swimming and outdoor recreation facility (something that Stockholm lacks today). This would also form the gateway and starting point for all the tracks and paths that bind Kymlinge with the rest of Järva. Between these two focal points, a system of roads and walkways form a future backbone for the Kymlinge process.

**Scenarios**

- **Platform**
- **Synergy**
- **Full-scale simulations**
- **Strengthening personal relationships to the area**
- **The Kymlinge spirit: establish a story about Kymlinge Urbanatur**
- **Dialogue with stakeholders and local groups**

**The Kymlinge Process**

**Urbanatur** is an open system that, through the Platform, works to reinforce a story about what Kymlinge can be. The scenarios presented are only a few examples of the possible outcomes given; certain activations and combinations of the Platform’s various parts, which can be used as tools in the discussion of Kymlinge’s future.

WHERE WOULD YOU LIKE TO BE?

- **More people**
- **Nature city**
- **More public**
- **Less noise**

**Synergy**

- **Economy**
- **Sociocultural**
- **Ecology**

**More**

- **Noise**
- **Public**
- **Nature**
- **City**
- **People**
- **Economy**
- **Sociocultural**
- **Ecology**

**Less**

- **Noise**
- **Public**
- **Nature**
- **City**
- **People**
- **Economy**
- **Sociocultural**
- **Ecology**
area. Once the foundation is laid, the pattern can be filled out in different ways: With a noise protective shield against the roads, with new buildings that adapt to the terrain, or if the future allows, with a fairly dense city.

THE KYMLINGE PROCESS

Kymlinge’s hills and valleys are nestled between a network of noisy roads. What is your vision for Kymlinge? An oasis in a growing metropolis? Or land that awaits the construction of housing? Conflicting perspectives exist in relation to the development of Kymlinge. But instead of setting interests against each other, a set-up in which someone must lose for the other to win, we see opportunities for Kymlinge in which ecological, socio-cultural, and economic aspects can be integrated. Turning the “either-or” into a “both-and.”

For this to be possible, an open dialogue about the future of Kymlinge is necessary. A vibrant area needs many different committed actors. Both from the top-down; the big players, and from the
“bottom-up,” where many actors exist. Kymlinge engages people. That the area is used by so many people today is a great asset for planning. A precondition for developing the qualities of Kymlinge is that these engaged people continue to be involved. Then both nature, outdoor recreation, entrepreneurship, and the Stockholm region at large can win. Such a discussion is the basis for what we call the Kymlinge process.
Both city and nature can win. We propose a model in which nature and city develop together. The foundation of this model lies in a number of landscape improvement measures that will be valuable regardless of the specific way in which Kymlinge develops. Based on this platform, several possible scenarios may be explored.

From top to bottom – bottom to top

The aim is to produce an open dialogue concerning the future of Kymlinge and gather everyone around a common vision and a narrative. We call this URBANATUR. As the term suggests, URBANATUR integrates urbanism and landscape, not only requiring a new way of planning but also a new way of thinking about nature, culture, and their interrelations.

Gathering stakeholders

Urban planning and urban design must include a range of different perspectives. URBANATUR aims at gathering stakeholders around a common vision and narrative.
THE SYNERGY EFFECT

The foundation of our vision is the idea of a synergy between economic, ecological, and socio-cultural aspects as well as the people who will be using the area in the future. These powerful fields determine the development of “urban natures.” Here, it is essential that they work together instead of against each other. When all of the parts are active, 1 + 1 + 1 equals more than 3. All three fields at present maintain a strong presence in Kymlinge and its surroundings, and opportunities exist to develop the area in ways that benefit everyone.

MUTUAL INTERACTION

URBANATUR pursues a holistic approach to the landscape. For there to be a truly dynamic exchange, the city’s ideas must be allowed to engage with “nature,” and natural processes must in turn be present in the city. The combination should not take the form of a contrast, but rather take place in mutual interaction. URBANATUR develops the interface between humans and nature. How we treat nature is connected to our perceptions of it, which are not static but constantly evolving.
The suburbs of Stockholm have large protected green areas of importance for ecology and recreation. Simultaneously, these vast green spaces may isolate the suburbs and enhance segregation. We need a new strategy to address "suburban natures," including more clear connections.

The discussion about the future of Stockholm has been roughly divided into two camps: conservationists and developers. The need to safeguard natural values and the need to develop and expand the city have been set against each other. The argument is strongly polarized; where one wins, the other must automatically lose. The deadlock has its basis in a mutual understanding of nature as a passive entity in an urban design context. Nature values are investigated and mapped based on an approach where nature and city are regarded as separate entities; as oil and water. This makes a dynamic discourse regarding the future of Stockholm difficult—and green areas are being eaten away bit by bit by new developments in the meantime.

We live to an increasing extent in towns and cities. Our need for access to natural environments will only increase. To meet this challenge, we need to bypass the inner-city perception of what a city is and how it looks — and let the concept of the urban also include the notion of nature.

A recent survey from Helsinki shows that 92% of that city's residents feel that access to "urban nature" is important. We can assume that a similar survey in Stockholm would produce comparable results. However, there is a lack — both in available planning instruments but also in the culture of planning practice — that needs to be addressed before we can work with the urban within nature or (perhaps even more so) with nature as part of the urban. Here, the preconditions and needs in Kymlinge call for alternative approaches.
THE VALUE OF NATURE

Nature conservation is at present largely about preserving and restoring natural values, where both concepts suggest that “nature” represents a kind of ideal state (either as it was before or as it is now). Nature, however, is constantly changing and has no plan. Instead humans ascribe “nature” a value.

The landscape of Kymlinge is shaped by previous agricultural and forestry use, where typical habitats—forests, meadows, glades and brows—form both a basis for species composition and the image of nature in
Kymlinge. Today, it is not economically rational to engage in agriculture or in forestry at any large scale in the city and green space is instead used for what can be conceptualized as a type of nature consumption.

In order to understand the current situation, we see natural values as presenting two main aspects:

1) Ecological values (nature for nature’s sake)
2) Experienced values (nature for human’s sake)

Upon the basis of this division, we can consider the roles and functions that “nature” plays today—both ecologically and experientially—and the functions that it might fulfill in the future.

**KYMLINGE’S ECOLOGICAL NATURAL VALUES**

Kymlinge is part of Järvakilen, one of Stockholm’s green wedges, and is thus an important link in the city’s ecological infrastructure that allows for dispersal of animals and plants. The Kymlinge area, including the valley of Igelbäcken with its nature reserve, thus rather surprisingly has quite low “core areas” values—that is, species-rich habitats—today. Kymlinge must therefore strengthen its value as an ecological core area by enhancing existing habitats and actively building new natures.

**KYMLINGE’S EXPERIENTIAL NATURAL VALUES**

Whilst Kymlinge offers good nature experiences at present, its potential is much greater. With relatively modest means, a wide range of interests (for instance, those relating to outdoor recreation and exercise) could be strengthened and their exploration made richer. Actions performed in order to enhance ecological values can often interact successfully with measures taken to strengthen the experience values, even if they require different points of departure. Platform Kymlinge denotes a series of small but strategically decisive actions both within the buildable area and within the nature reserve. Temporal aspects work
in our favor; a number of enhancements in the landscape are thus proposed to be instigated in order to strengthen the area over time. These are not dependent on one single future trajectory, but can become valuable in relation to the multiple possible futures of Kymlinge.

Kymlinge holds many opportunities: It is directly adjacent to the center of the neighboring area of Kista, and is easy to reach by car, subway, and commuter train. It also constitutes a valuable natural area. A number of obstacles to the area’s development also exist: road widening may inhibit connections with Kista, noise from existing roads disturb the peace, and the natural environment is under severe pressure.

The platform proposed through this project operates within the given conditions of the landscape. Its base is the connection between Kymlinge and Kista, surrounding neighborhoods, and existing and planned infrastructure. The platform incorporates and responds to sightlines in the landscape, topography, and spatial character. It safeguards and nurtures important habitats and significant landscape features.

INCREASED ACCESSIBILITY

Thriving neighborhoods require good accessibility at various scales. In the suburbs, accessibility is often neglected at a local scale. Here, Kymlinge may serve as a catalyst for the area at large. Kista and Kymlinge also need to be linked more strongly to the global scale: through better connections to the airports of Arlanda and Bromma, and to the center of Stockholm.

STRONGER ECOLOGY

A key aspect of the strategy lies in actively nurturing the ecological infrastructure of the area. In order to strengthen both the ecological infrastructure and experiential values, the re-creation and development of natural areas and key habitats will take place.
IMPROVED RECREATION

Kymlinge is already a well-used area and it is important to take care of existing initiatives and uses. Great potential also exists with respect to increasing the attractiveness and use of the area. Improved recreation goes hand in hand with better accessibility and improved natural conditions.
INCREASED ACCESSIBILITY
The Kymlinge subway station leads directly out into the nature reserve.

BETTER RECREATION
Improved recreation goes hand in hand with better accessibility and improved natural conditions.
THE BLOB

The intersection between E4 and E18 is the location of a proposed landmark building, the Blob, that marks the area’s connection to nature and leisure as well as the high-tech activity of Kista Science City.

EXOTIC BIOTOPES

Inside and around the Blob more exotic environments with exhibition qualities will be created.

MORE PEOPLE

In the scenario “More people” the whole network is to be fully developed. The grid follows, and is shaped by, the topography of the area. The connection to Kista is to be manifested through physical links and paths that bind the areas together.
1. EXISTING AND PLANNED INFRASTRUCTURE

MAIN ROAD

RAILWAY

SUBWAY

KYMLINGE SUBWAY STATION

The location and design of the Kymlinge subway station can be said to symbolize the entire project: one exit leads toward the built-up part of Kymlinge and the other leads directly out into the nature reserve. Having a subway station that takes Stockholmers straight out of a natural reserve in this way is rather unique. The southern parts of Kista will be closer to the Kymlinge station than the subway station in Kista.

TRAIN STATION HELENELUND

In the perspective of an expanding Kista, the station at Helenelund and a potential stop for the Arlanda Express here can very well come to be the area’s fast-speed connection to the world.

SILVERDALSVÄGEN

A future low-speed road, 50 km/h into Kymlinge. On this path, most motorist visitors will have their first meeting with Kymlinge and Kista. Here, one can establish gateway to the Chest / Kymlinge.

2. NEW CONNECTIONS AND ROADS

CONNECTIONS PUBLIC TRANSPORT

Connection to Grönlandsängen (under the new E18). Will be the main link to Kista for cycling and walking.

MOUNTAIN

When connecting to Grönlandsängen the hill is a problematic point and a subject for further study. First, you need to pass under Kymlingelänken, then over the mountain, which is a significant height difference.

THE RING ROAD – KISTA- KYMLINGE

A ring road is proposed to connect Kymlinge to both the western and eastern parts of Kista. In the east, the road links to Torshammargatan. Through Kymlinge, the road passes the small hill at the subway station and connects to western Kista, where it merges with Hanstavägen. The ring road adapts to the landscape and topography and roughly follows the current road. In a first stage the road will not be public.

MAIN NATURE PATHS

Five-meter wide graveled paths for pedestrian and cycle traffic lead to focal points and destinations outside the nature reserve; residential areas and subway stations such as Hallonbergen, Rissne, Rinkeby, Sundbyberg and Solna. The new residential areas in Ursvik and Västerjärva are connected as well. A planned pedestrian and cycle bridge connects to Silverdal and Sollentuna. At night, the nature paths and the surrounding areas are well-lit for orientation and safety.

EKODUCT SÖRENTORP

Banverket and Vägverket have listed Sörentorp as the most problematic barrier in the region and made it the highest priority area to address. We see how this could be a co-financed, symbolic — if not even heroic — project to take on, with a large impact on the connectivity of the green wedge at large (today, both railway tracks and a high speed motorway, E4, need to be passed). This connection can also be
part of a bicycle highway that leads to the city center of Stockholm and to Danderyd via Ulriksdal.

3. focal points

THE BLOB
The intersection between E4 and E18 is the location of a proposed landmark building, the Blob, that marks the area’s connection to nature and leisure as well as the high-tech activity of Kista Science City. Here, north of Stockholm, we see the potential for a large bath–and outdoor recreation facility that Stockholm lacks today. It is from here that all the pathways and running tracks originate that link Kymlinge with the rest of Järva.

THE KISTA-KYMLINGE ENTRANCE
In this important link the urban landscape truly demonstrates its qualities. From this very spot, one not only glimpses the Kymlinge subway station, but also gazes far down in the open landscape of the Igelbäcken valley. In the other direction it is possible to look under the Kymlingelänken, along Torshammarsgatan, and see some of the built-up areas of Kista. This entrance is marked by a tall and slim signal building that houses a hotel and conference center which may co-share the functions of the Blob.

THE KYMLINGE SQUARE
The square adjacent to the subway has a size comparable to Nytorget in Stockholm.

THE PASSAGE UNDER THE MOTORWAY E18
An important focal point is the place where Kymlinge meets Kista in the extension of Grönlandsgången. With shops and sports facilities placed in a beautiful space under the new Kymlingelänken, the highway will not become a border, but rather the glue that binds Kista and Kymlinge together.

THE WESTERN LINK UNDER THE E18
Here, there are great opportunities to build a new strong urban front of Kista/ Kymlinge.

NATURE SQUARES
Nature squares are meeting places in nature. These are pleasant and cozy; places for meetings, relaxation or rest; stretching or play. Here one can find information about the surrounding nature as well as tips for small excursions. Nature squares are created in strategic locations and provide help for orientation in the nature reserve. The squares comprise nodes where wider paths connect to each other and to a more fine-meshed network of pathways. By working with lighting strategies both at and around the squares and paths, we see a more multifunctional use both during the day and in the evening.

4. the network

THE NETWORK STRUCTURE FOR POTENTIAL FUTURE DEVELOPMENT
The network structure indicates potential for future development. It structures the area into plots and lays the foundation for a future grid and street network. It is a general solution that sets the stage for possible future development. The direction of the grid is pivoted in relation to the structure of Kista. This is done to better adapt to landscape structures such as the topography, the ring road, various connections and key points and directions. How much of the network structure ends up being built depends on decisions made regarding the current stages of the area. The structure can be fully developed and saturated, not developed at all, or end up somewhere in between.
5. NATURE ENHANCEMENT MEASURES

IGELBÄCKEN
Igelbäcken’s previous meandering course will be restored. This involves both a slight change in route at some points; new profiles on shorelines, new plantings of shrubs and trees in narrow borders along the shorelines.

IDENTITY AREAS
Identity areas can be described as natural areas with strong characteristics that contain important key habitats. The areas must have a certain critical size and the structure is adapted to both the ecological infrastructure and experience values. There are different ways to create these areas, for example improving existing structures, restoration of lost habitat or creation of entirely new habitats.

A new WETLAND is reconstructed on the low-lying areas that were once drained. The wetland can contain both open water and more marshy areas. A wetland with free water surfaces and varied aquatic plant belts and firm land has the potential to act as a habitat for seabirds. The selected areas, damp deciduous forests may grow in narrow strands along the shores and follow the rivers and drainage areas. Frogs and salamanders thrive in these types of habitats. The land will be grazed by cows. These environments have very high biotope qualities. Planked walkways, bridges and observation towers will increase the chances for great experiences.

SPARSE BROAD-LEAVED DECIDUOUS FORESTS will be planted such as oak, lime and beech trees. The field layer is sparse and dominated by the grove species that demand shade. This type of forest generally offers excellent conditions for dispersal of plants and animals and they also commonly house a rich biodiversity.

MEADOWS AND PASTURES. Cultural habitats with high biotope qualities. Grazing animals could constitute a fine element in the environment. Meadows will be cut regularly and can be used as meeting places for parts of the year.

HAZEL MEADOWS
An existing biotope to protect. Spatially interesting habitat with good biotope qualities.

EXOTIC BIOTOPES
Inside and around the Blob more exotic environments with exhibition qualities will be created.

GLADES AND BROWS
In the existing forests different types of glades and brows can be constructed. A brow is a border zone with a rich diversity of species. The glades can also include butterfly beds.

WILD FOREST BIOTOPES
Seemingly untouched mystique; coniferous forest that is partially left to develop in an unmaintained manner. Down toward the stream, the vegetation shifts into wetland forest types with alder, birch and bushes.

COHERENT CONIFEROUS FORESTS

NATURE TRAIL
Between the identity areas is a path which provides an alternating nature experience.
SECONDARY PATHS
Small roads and paths are important elements. Not everything has to be completely accessible but rather a "dynamic use of accessibility" is sought. For example:

1. Good accessibility: Wide and well-lit nature paths that provide clear connections.
2. Less accessible: More secluded paths and places, a chance for solitude.
3. Not accessible: Dense forest and edges that are not accessible to humans where wildlife can thrive.

OPEN LANDSCAPES
Large open landscapes comprise an important characteristic of Kymlinge. They create a sense of space and provide a good orientation and an overview of the landscape. Several of the important habitats for Kymlinge are found, or can be created, in these open landscapes — such as meadows, pastures and wetlands. Room for outdoor theater or other public events can also be integrated with the landscape’s open space.

EXERCISE TRACKS
Paths and tracks of different lengths originate from the Blob. These include pedestrian trails; ski trails; equestrian trails; dogsled trails; inline trails and roller-ski trails.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 KM</td>
<td>Blue</td>
</tr>
<tr>
<td>5 KM</td>
<td>Red</td>
</tr>
<tr>
<td>7.5 KM</td>
<td>Yellow</td>
</tr>
<tr>
<td>10 KM</td>
<td>Purple</td>
</tr>
</tbody>
</table>

6. DEVELOPING REGULATIONS

URBANATUR needs to be formulated both as a vision and as a framework for regulation. New planning instruments will need to be developed for our proposal for Kymlinge. To ensure the fundamental qualities in the development of the area, we suggest the use of district regulations (områdesbestämmelser). District regulations are an instrument that operates in between the comprehensive plan and detail plan. In Denmark, there are good examples of how district regulations can create good guidance for urban development without being too controlling.

Compensation rules for lost natural values can also be designed, as is done in Germany. The aim here must be to focus on quality instead of quantity. By linking new development to new landscape improvements in the nature reserve we can create synergies between the economy – nature – socio-cultural aspects. Funding is needed to improve nature. Our proposal is based on mutual interest and quality-improving measures rather than quality comparisons.
I. LESS NOISE: SMALL STEPS, BIG EFFECTS

At the edge of the area a ring of buildings will serve as a noise barrier in order to improve the sound environment within the nature reserve. At present, noise levels at Järvaället reach a troubling level and addressing this issue is a necessary first step in strengthening both ecological and recreational values at Kymlinge. A rim of office buildings facing the high-speed roads will create conditions for additional nature enhancement measures in the area.

One possible program we see that would be an attractive addition to the entire site is a Kymlinge Science Center: an international, educational meeting place and public building with interactive spaces for exhibits that is accessed directly from the subway. Programs for the center, we imagine, could include important themes regarding, for instance, the relationship between humans and nature, climatic changes, and how to deal with future environmental problems, and even direct and tactile points of entry into the natural environments present at Kymlinge.
2. NATURE CITY:
   EVERY OTHER
   DANCE TO NATURE

The Nature City invites nature into its built structures. Distinct landscape features, large-scale connections, and natural links in the landscape are to be kept within this proposal, as they provide important coherence and bring the qualities of the reserve into neighborhoods and buildings, thereby decreasing the negative effect of human environments as ecological barriers.

The existing proximity to nature, and the proposal to extend this interface between nature and city will provide added value to the people living and working here. Pedestrian paths between the green spaces and the built environment will extend out into the nature reserve via the “Nature Squares,” propelling and intensifying publicness.

3. MORE PEOPLE:
   THE WHOLE PLATFORM

In this scenario, the network is to be fully developed. The grid follows, and is shaped by, the topography of the area. The connection to Kista is to be manifested through physical links and paths that bind the areas together. The strongest axis will be precision-tunneled out of the solid rock and lined with a mixture of public and commercial functions and entrances to dwellings.

Strategically placed buildings such as the so called “Blob” and other landmark buildings contain programs that provide additional service to culture and recreation in the area. Maintenance of tracks and roads, equipment rental and indoor activities increase the opportunities and availability to use the area throughout the year. Activities attract neighbors from surrounding areas as well as visitors from the region at large.
SCENARIOS – WHERE DO YOU SEE YOURSELF?

When the network structure and the very foundation of the landscape is laid for “Platform Kymlinge,” it will be used in multiple ways. URBANATUR is an open system that, through the Platform, works to reinforce a story about what Kymlinge can be. The scenarios presented are only a few examples of the possible outcomes given certain activations and combinations of the Platform’s various parts, which can be used as tools in the discussion of Kymlinge’s future.

Perhaps you would also like to be part of creating your own scenario?
ÅRSTA
URBAN NATURES

THE PROGRAM

There is an acute need to meet the increasing urban development pressure in Stockholm. Presently comprising 2 million people, the Metropolitan region is expected to grow by an additional 600,000 people over the next 30 years. As the city core is close to being fully built and occupied, much of the future growth will occur in the near suburbs of the city, especially those tied to transit and mobility corridors. ÅrstaFältet is one such “hub,” slated to become a new urban neighborhood, with mixed-uses, a variety of public amenities and a distinctive urban ambience.

THE EXISTING SITUATION

From a local perspective, people generally appreciate the Årsta area for its family-friendly neighborliness, its connection to nature and open space, and its proximity to the city core. On the other hand, there is often a strange sense of disconnection and isolation, with many of the development clusters lacking sufficient density, compactness and quality of place. What evolves is a sea of independent development, isolated clusters set within fragments of residual nature.
An interconnected green web of nature, open space and leisure -
Distinct, dense, compact urban neighborhoods

NEXT SPREAD

Early winter morning stroll on nature mound.
THE HALF-SOLUTION
OF DENSITY + MIX +
CONNECTIVITY

A popular urban planning principle today is the belief that density, mix, and connectivity will accommodate demands for growth while creating vibrant urban neighborhoods that overcome disconnection. In this vein, one approach at Årsta might be to extend street grids, define blocks and urban fabric, and create a “town,” with mixed uses, a center—a park—and a hierarchy of urban public spaces.

But this model fails to recognize a very important potential that is inherent to the suburban format: that is the fact that these places are inherently NOT “urban” places in a traditional sense, but more open, individualistic and green. People choose to live in places like Årsta because of space, light, air, varied options for dwelling and lifestyle, and accessibility to nature. Clearly the solution to fragmentation and disconnection in the suburbs is not necessarily the imposition of a planning grid.

THE ADDITIONAL INGREDIENT
— THE GREEN WEB

Density, mix and connectivity are still fundamentally three excellent principles for attaining the development of robust neighborhoods and strong urban form. But in places like Årsta, where there is already an existing network of development clusters, residents, constituency groups and natural resources, a fourth ingredient needs to come into play. We call this ingredient “the green web”—the tissue of open space and nature that permeates the various settlements and offers them the most unique resource and amenity. Present development patterns concentrate only on the development, and the green space is left as residual space, increasingly fragmented and irrelevant. The carefully designed inter-connection of these green resources into a singular, tissue-like fabric that becomes integral to shaping urban form is the necessary complement to urbanization.
A DESIGN STRATEGY FOR ÅRSTA

The Green Web is prioritized as the designed matrix within which all is set and framed. We create new green connections and pathways to tie all the various parts together; we maximize the amount of space available to create a new 50ha “central park,” and we densify the surrounding development clusters, with distinctive built frontages and mixed-use programs to activate the edges.

Instead of a polarity between green and built, we create a new model for urban development where the green is interwoven, interconnected and fundamental to the shaping and character of the urban form. Here, we see vibrant urban neighborhoods, dense and compact with mixed programs and amenities, set within varied landscapes – landscapes of active recreation and leisure, landscapes of wild nature, landscapes of habitat and wildlife, landscapes of health and fitness, landscapes of great scenic beauty, and landscapes of play, childhood and maturation.
THE EXISTING SITUATION
is fragmented and broken. Development is insular and nature is residual, leftover space.

OUR PROPOSAL
interconnects and ties parts together. First, a continuous green ribbon, a loop corridor of public pathways and nature.

THE NEW HUB
Public transportation and mobility corridors activate the new hub of Årsta. Other centers are tied to transit systems.
Preserve the large-scale open space / create a 50ha central park

By concentrating compact urban development around the edges, a large area of open space can be conserved in the center of the site for the creation of a new central park – a place that can bring unique identity, amenity, use and vibrancy to Årsta. This strategy protects the scale of the landscape and avoids small-scale fragmentation.

Create a green web of interconnected corridors and pathways

Presently fragmented areas of nature are connected and designed as an activated system of meaningful public landscapes, with pathways, play areas, open spaces and large-scale natural areas. This designed system supports extensive path trails for long-distance cycling, walking, jogging and experiencing the out-of-doors.

Concentrate and densify development neighborhoods

Existing development clusters are added to, densified and diversified with new building types and uses, including commercial and cultural. These new neighborhoods are tied to mobility corridors and transit stops as well as to public open space and parks. Their frontages look outward rather than inward, and they activate the larger public realm.
1. Urban Corridor to Årsta
2. Valla Light Rail Station
3. Valla Square
4. Allotment Gardens
5. Playground
6. Display Gardens
7. Wildflower Gardens
8. Bägersta Village Site
9. Urban Corridor to Enskedefältet
10. Årsta Park Business Campus
11. New Light Rail Station
12. Area B-1 Development
13. Tunnel Connection to South Link
14. Östberga Bosque
15. Wild-Nature Habitat Mound
16. Central Event Area
17. Årsta Lakes
18. Wild-Nature Habitat Mound
19. Urban Plaza
20. Playfields + Meadows
21. Wild-Nature Habitat Mound
22. Outdoor Culture Gallery
23. Public Market Plaza
24. Wetland Filtration Pond
25. Allotment Gardens
26. Outdoor Classroom
27. Årstafältet Light Rail Station
28. Urban Corridor to Årstaberg
29. Area D Development
30. New Årsta Partihall
31. Logistics Center + Market
32. Östbergahöjden
33. Urban Corridor to Light Rail Extension
34. New Light Rail Station
35. Östbergabackarna
36. Area C Development
37. New Light Rail Station
38. Urban Corridor to Ålvsjö
39. Gamla Östberga
40. Hemskogen
41. Enskedefältet
42. Linde Light Rail Station.

NEXT SPREAD

Årstafältet lakes + event core.
ALTERNATIVE 1
URBAN INFILL + CENTRAL PARK

Not chosen because of small-scale park and centralized superimposed plan. Filling in the area disregards the potential to give the south of Stockholm the large civic park that it lacks today.

ALTERNATIVE 2
URBAN ISLAND + RING PARK

Not chosen because of isolation of development and fragmentation.

ALTERNATIVE 3
DISTINCT URBAN NEIGHBORHOOD + WEB PARK CHOSEN!

Because of web-like interaction + largest possible configuration of landscape.
SPRING WILDFLOWER
picking on nature mound.

PARK EDGE
Unique relationship between residential fabric and Årstafältet park edge.

URBAN PLAZA
Active urban plaza at slope wedge near Östberga.

NEXT SPREADS
Page 228–229. Årstafältet park + development at night looking west.
PROPOSED PHASING:

**Phase One (0–5 Years)**
- Define Local Urban Mobility Corridors
- Infill Existing Adjacent Fabrics + Edges
- Build Wild-Nature Habitat Mounds

**Phase Two (6–10 Years)**
- Cut + Cover Roadway (Huddingevägen)
- Develop New Mixed-Use District
- Construct Secondary Mounds and Ecological Linkages
- Complete New Light Rail Spur to Älvsjö

**Phase Three (11–15 Years)**
- Reconfigure and expand Årsta Partihall Logistics Area
- Develop Second Major Mixed-Use District
- Complete Park and Ecological Linkages

**Next Spreads**
The development structure proposed for Nya Årstafallet utilizes a collection of building typologies including both common Stockholm types – such as courtyard blocks, mid-rise towers and slab bars – and new or hybrid building types such as the slope wedge or the iconic tower. Each component is able to accommodate a mix of programs in varying ratios calibrated to its specific location and context. Groupings of these types can be composed to create compact, dense urban form in any number of configurations.

0–15% COMMERCIAL-OFFICE-RETAIL / 85–100% RESIDENTIAL
1. bar
2. folded bar
3. mid-rise tower
4. terraced housing

10–35% COMMERCIAL-OFFICE-RETAIL / 65–90% RESIDENTIAL
5. courtyard blocks
6. slope wedge
7. midrise block

75–100% COMMERCIAL-OFFICE-RETAIL-MANUFACTURING / 0–25% RESIDENTIAL
8. iconic tower
9. industrial ‘big-box’
In lieu of defining specific locations and relationships for each type, we have outlined five primary design guidelines that steer the placement and configuration of individual buildings within the larger block and development structure. Varying configuration and modification of these types allow for maximization of sunlight; optimization of views; and minimization of wind and weather according to specific siting and programming.

Sustainable building principles such as passive cooling; geothermal heating; grey water recycling; and closed loop resource management will allow the entirety of the development to achieve zero emission levels for all new building construction.

1. Robust block structure accommodate various typologies.
3. New development creates clearly defined street edges.
4. Building typologies mediate existing site and adjacent fabrics.
5. All building typologies use a range of performative sustainable systems.

- a. Inverted airfoil roof increases wind velocity to add passive ventilation
- b. Green wall provides shade in the summer while allowing passive heating through daylight penetration in winter
- c. Green roofs reduces water runoff and promotes biodiversity
- d. Geothermal heating
- e. Photovoltaic panels for electricity generation
- f. Street trees provide shade in the summer
- g. High-albedo and open grid paving to reflect solar gain
- h. Porous paving to reduce storm water runoff
PLAN/SECTION DETAIL

Top:
Looking northeast at development area B1.

1. Mixed species forest mass on crown of habitat mound
2. Årsta lakes
3. Subgrade district waste-to-energy generation facility
4. Waste-energy generation vents
5. Årsta central civic space
6. Mixed species forest mass on crown of habitat mound
7. Events plaza
8. Green roofs and cooling gardens
9. Mixed use courtyard typology
10. Huddingevägen — cut + cover tunnel with development above
11. New road + light rail extension to Älvsjö — shared-lane street trolley in both directions

EXISTING URBAN FABRIC

NEW DEVELOPMENT AREA D

EVENT EDGE

NEW ÅRSTA PARTYHALL LOGISTICS CENTER AND MARKET

WILD-NATURE HABITAT MOUND

ÅRSTAPARKENS CENTRAL CIVIC SPACE AND EVENT AREA

MEADOWS AND LAWNS

EXISTING URBAN FABRIC
1. Existing warehouses and industrial facilities
2. New Årsta partyhall – logistics center and market
3. Åbyvägen (connection to south link)
4. Photovoltaic panels and wind turbines
5. Green roof and cooling gardens
6. Mixed use mid-rise blocks (commercial/office/retail)
7. Market and event plaza
8. Birch, beech, and aspen bosque
9. Rock outcropping and habitat area
10. Wild-nature habitat mound
11. Constructed wetland for storm water collection and treatment
12. Infill throughout Valla gärde to increase density and programmatic mix
PATCHWORK — ALBANO RESILIENT CAMPUS

This project demonstrates how Albano could become a unique example of sustainable urbanization: Albano Resilient Campus. Sustainability is a broad term and can mean almost anything. Our take on sustainability focuses on social-ecological design aspects and is founded on the resilience theory, which in essence deals with how buffering capacity and potential for renewal in relation to internal and external disturbances can be built on a system level.

One central concept is ecosystem services, i.e. the goods or processes that the living ecosystems generate and that are used directly or indirectly by people, but which are often neglected in the economic system. These services contribute to better living conditions; trees and other plants absorb pollutants and regulate light and wind conditions; wetlands purify water; flowers promote pollination which in turn contributes to food production etc. If such ecosystem services could be built into the urban environment, much would be gained.

The primary approach has been to argue for urban design that transcends the old dichotomy between ecological and social systems. This is not just about including the ecological systems alongside the more traditional urban systems, but also understanding their linkages and interplay, making all systems a natural and integrated part of future urban design. Can we preserve, or even strengthen, locally generated ecosystem services at the same time as

FOOTNOTE

1 Bolund and Hunhammar 1999; Barthel et al. 2005; Millennium Ecosystem Assessment 2005.
The figure illustrates how different spatial and institutional components support a subsample of ecosystem—and urban services we have identified as relevant for Albano Resilient Campus.
we develop new, modern urban environments? We propose a number of different measures. Importantly, these include design of both spatial and institutional components, so-called critical social-ecological design components. The objective is to make the whole area work as one big research laboratory for sustainable urban development where different solutions can be tested full-scale and, by involving different actors, continuously contribute with new knowledge of how social-ecological systems develop. In this way, Albano Resilient Campus can highlight and elaborate an approach to urban planning where change is normal and the key to the success of a city lies in how well it can adapt to changing conditions and engage a multitude of actors in a continuously ongoing development.

THE EXISTING SITUATION

Albano is located in the middle of an urban–rural gradient and is part of the National Urban Park of Stockholm. The area is part of the Gustavian Palace project surrounding Brunsviken, with sight lines and ideals stemming from the 18th century. In the park, a millennium of co-evolution between humans and nature has resulted in a cultural landscape rich in biodiversity and acknowledged ecosystem services. The Albano site, however, is presently a degraded ecosystem and a brownfield located in one of the most sensitive areas of the park, where the road Roslagsvägen separates Hagaparken from Norra Djurgården. The site is also part of a string of university facilities and departments lining the National Urban Park, but the transportation passages traversing the area today isolate Albano from the rest of the city.

Large transformations are taking place in the border zone between the northern part of central Stockholm and adjacent areas. In the new development plan for the city, the area is divided into three parts:

FOOTNOTE

2 Of all the plants and animals in the province of Uppland, approximately two thirds can be found in the park, including some 800 vascular plant species and close to 250 bird species. Among the insects we find as many as 60 red-listed species, of which 29 are critically endangered and 27 vulnerable. Furthermore, 32 red-listed species of fungi, about 20 red-listed vascular plants as well as red-listed mammals (including several species of bats), amphibians, reptiles, fish and birds are noted. The by far most important substrate for insects are the old, hollow oaks. As much as 80% of the red-listed insects are associated with old oaks and lindens. Thus, the oak is a “keystone species” for the park, i.e. a species contributing with critical resources to a number of other organisms, which would not be able to survive without it.
Norra Stationsområdet, Albano and Norra Djurgårdsstaden, all three described as strategically important for the city center. The shared vision for all three areas is to integrate them with the central city and what it has to offer in terms of urban lifestyle, while at the same time maintaining and strengthening the high cultural and natural values present in the areas.

We have made a distinction between ecosystem services and urban services to gain precision in our analysis and to understand how we may best support them through urban design, though we emphasize how tightly interwoven the social and ecological systems are. One important objective has been to step away from urban design where sustainability is limited to “green” applications, or seen as an addition through technological systems, and instead embrace performative urban design, i.e. a series of overlapping systems and conditions generating different services. Below, we state the objectives for ecological and urban services followed by a subsample of services we have found particularly relevant for Albano.

**Critical Position**

Albano is located in a critical position within the National Urban Park, right where the park is crossed by a highway. The park is part of the regional green structure and the Järva green wedge, which extends from southern Djurgården in southeast to Sigtuna in the northwest.

**Footnote**

³ Development plan of Stockholm 2010, City Planning Office, Stockholm.
A GATEWAY

Albano Resilient Campus has potential to become one of several gateways between the city and the National Urban Park.

EDUCATION CENTERS

Albano is situated centrally in relation to several important education centers.

SOCIAL-ECOLOGICAL LINK

Albano has potential to strengthen important social and ecological linkages.
I. OBJECTIVES FOR THE ECOLOGICAL SYSTEMS

Albano Resilient Campus has the potential to function both as a habitat and a dispersal route for organisms living in semi-urban areas, also known in the literature as urban adapters. This group includes many organisms that we associate with gardens and small-scale farming, i.e. landscapes where humans and ecosystems have co-existed for a long time. It is here, at the interface between urban and rural, that these organisms are found in the greatest numbers. However, these habitats need to be connected in green networks at the regional scale to ensure exchange between populations and thus long-term survival. Another important point is that these small areas support similar biotopes in the surrounding landscape. The greatest obstacles for preserving biodiversity in such areas are ecological barriers isolating populations and poor quality of the local habitat, which depends on local management. The most important ecological objectives for Albano Resilient Campus are to give room for continuous management of high quality habitats for a variety of organisms and to shape buildings, land use and roads so that they form corridors connecting Brunnsviken and Norra Djurgården. If these two primary objectives are heeded, Albano Resilient Campus should strengthen the ecosystem services generated in the National Urban Park today, rather than weakening them. Three ecosystem services have been chosen to illustrate the value of following these ecological objectives:

POLLINATION

Worldwide, pollination is currently seeing a decline caused by changes in land use and habitat loss. When pollinators are lost, biodiversity suffers. Albano Resilient Campus should be designed to counteract this trend. The ecosystem service of pollination has higher resilience in urban landscapes, even though land use changes could alter this very quickly.
WATER SERVICES

Amphibians are under considerable threat from the current urbanization, and Albano together with the road Roslagsvägen constitutes a movement barrier and a source of pollutants. New wetlands should be established to support a bundle of ecosystem services that we have chosen to call water services. Albano Resilient Campus should contribute to alleviating the isolation of populations of amphibians and be designed so that water is purified at the site before reaching the surrounding landscape.

SEED DISPERSAL

The oak is a keystone species at this latitude with approx. 1500 species depending on it for habitat, food or shelter. Natural regeneration of oak populations is in turn dependent on the Eurasian jay for dispersal. This bird hides acorns for later, and as some of them are forgotten, new oaks appear far from the seed trees. To strengthen oak regeneration, Albano Resilient Campus should be designed to support seed dispersal in the landscape.

2. OBJECTIVES FOR THE SOCIAL SYSTEMS

Today the Albano area and adjacent parts of the city are characterized by low accessibility and are therefore less utilized than they could be. This also means that many of the knowledge institutes have a poor supply of goods and services and the premises are occasionally felt to be unsafe. Moreover, the area has surprisingly weak links between the major institutes: the Karolinska Institutet, Stockholm University and the KTH Royal Institute of Technology. Among all the potential services that could be made available through new development and design, we have chosen to highlight a few that we see as particularly important for Albano:
Ecological and Social Services

A key in our vision are ecosystem services, opening our eyes to how very dependent on and connected to nature we still are. It opens up for a public welfare perspective on ecosystems, facilitating their integration on equal footing with different social systems. The interplay between all these systems must be managed in urban development and be more clearly formulated as practical solutions.

The figure on this page shows ecological processes and the figure on the right page shows social processes on Albano Resilient Campus (conceptualized here as "urban" services). At the bottom in both figures are the spatial components we put in to create conditions for certain actors and processes in the area, shown in the middle. These, in turn, generate a number of services listed at the top.
The Railway park
- Park
- Bike-/walkway
- Railway line

Dr. Kristinas väg
- Small commercial spaces
- Entrances

Roslagsvägen
- Bike-/walkway
- Riding path
- Event space

Performative Buildings
- Research institutes
- Housing
- Conference center
- Visitor center

Active Ground
- Allotment gardens
- Climate change gardens
- Test bed gardens

**Green arteries**

**Design Components**

**Urbane Accessibility**

**Publicness**

**Diversity**
- Users
- Activities
- Experiences

**Safety**
- A place for everyone
- Co-presence
- Overview

**International Competitiveness**
- Identity
- Competence

**Exchange of Knowledge**
- Pedagogical activities
- Innovation
- Experiments
- Business creation

**Ecosystem Services**

**Increased Social Resilience**
EXCHANGE OF KNOWLEDGE

Albano Resilient Campus has potential to become the hub for knowledge exchange between many different university departments and institutes. Here we see two fundamental prerequisites. First, conditions promoting differences must be created. We need a diversity of knowledge environments where differences are found and supported at many different levels; between individuals, between research labs, between departments, and between universities and the rest of the society. Without differences there is no reason for exchange. Second, conditions promoting meetings and encounters where the exchange can take place must be created. These could be formal meetings, which are often planned and located to squares or meetinghalls. The true challenge for urban design is however to create conditions for informal meetings — those that are not planned in advance.

PUBLICNESS

To make Albano Resilient Campus an attractive knowledge environment, it is crucial to ensure that the area does not develop into a monoculture but truly becomes a public space in which in which people from outside academia also reasons to spend time. With the new development, Albano Resilient Campus could become a new hub and destination, especially if connected to public transportation through new tram or metro stations.

RECREATION

There is a strong potential for developing the great experiential values offered by high quality natural and cultural environments into recreational destinations. Albano Resilient Campus could become a node with a rich supply of recreational environments dedicated to social exchange, nature and culture experiences interlinked with learning, and exercise- and health related activities.
The figure illustrates how spatial morphology can be designed to create high quality urban areas and services while at the same time supporting local ecosystem services. Green arteries, for example, will promote services such as urban accessibility, attractiveness, recreation and publicness as well as supporting ecosystem services such as biological pest control, seed dispersal, and air- and water treatment. At the bottom are the spatial components we put in to create conditions for certain actors and processes in the area, shown in the middle. These, in turn, generate a number of services listed at the top.
We propose a strategy consisting of six key components. Three are spatial and three are institutional. The intention is to see how they may offer spatial and institutional support and thus help with the long-term achievement of the objectives set for the area. In the following, these design components will be presented briefly.

1. **GREEN ARTERIES**

   Green arteries are spaces managing flows and access between people, activities and places as much as between animals, plants and different biotopes. Apart from the structure itself, it is important to consider the capacity of such an artery to carry different sizes and kinds of flows. There is a difference in how mice, jays, and people use a green artery as well, as there is a difference between people on bicycles and in cars. A long-term structuring green artery should be capable of handling a great variety of different flows. Such arteries should also be established on different scale levels, for example between an area and its surroundings, within the area, within different parts of the area, and within buildings.

2. **ACTIVE GROUND**

   Active ground in this context refers to the division of land, buildings or rooms into several parts, which makes it possible for a diverse set of actors, users and biotopes to exist side by side. Having many managers tending the Albano property together but with different objectives strengthens the potential for a more heterogeneous landscape. Diversity creates opportunities for a multitude of different habitats. Access to suitable habitats does not necessarily mean that an organism will be present, but it increases the probability.

3. **PERFORMATIVE BUILDINGS**

   Performative buildings can be seen as a tool used to intensify or condense a public or ecological service that in itself interacts with the technical, programmatic and aesthetic functions of a building.
4. PROPERTY RIGHTS/RULES
Property rights are a kind of social institution that governs management of natural resources and ecosystems. Albano is located in an area owned by the state, but as the area has a well-developed hierarchy of management responsibilities we have chosen to utilize user rights rather than ownership rights. User rights are tightly connected to specific management units or properties and thus to what we call active ground. Diversification leads to a multifunctional land-use that can, potentially, promote biodiversity.

5. SOCIAL NETWORKS
Social networks are the patterns of stable relations between actors in and around Albano. Social networks are more than just short, occasional encounters—they require people to meet regularly and form some kind of mutual relationship, which allows transfer of information, shared understanding and knowledge building.

6. LOCAL TRADITIONS
Local traditions are about establishing norms and practices that support social networks between the groups interacting with the social and ecological systems of an area. It also concerns how decisions at different levels may be reached. To achieve this, we suggest a long-term strategy for developing a “culture of collaboration,” i.e. to make management decisions through discussions between stakeholder groups habitual.
Green arteries should be designed to facilitate movement and dispersal between different areas and thus serve as “habitats” (Forman 1995) connecting green areas on greater spatial scales. To promote insect- and seed-eating birds’ habitats should be structurally diverse. Wetland passages could serve as habitat and migration routes for amphibians and other freshwater organisms.

Active ground presupposes that the land is managed actively by one or several actors or groups. Having many managers with different objectives tending the Albano property together strengthens the potential for a more heterogeneous landscape. Diversity creates opportunities for a multitude of different habitats.

The combination of structures in our suggestion for development – i.e. allotment gardens, park trees, green roofs and walls – could work both as foraging and nesting habitats, as well as stepping stones promoting animal movement through the area and surroundings. Ecological designs could strengthen the currently weak ecological processes connecting NUP and the green wedges of Stockholm.

Biodiversity is managed and maintained through active practice. Studies have shown that biodiversity in the Stockholm region is strongly dependent on a number of different user groups and actors and that locally managed green areas (e.g. allotment gardens, golf courses, gardens and backyards) interact functionally with nature reserves and parks managed by the municipalities. We want to establish a “system of sponsors” for the different nature areas created at the Albano Resilient Campus, from sponsors of “climate change gardens” and allotment gardens to “teeming” wetlands. Through the sponsor system, different actors and user groups are given a clear management responsibility – an “adopt-a-plot” strategy to strengthen public participation.

Collectively held property rights to active grounds supporting pollination should be time-limited in the same way allotment gardening is today and should in this context be held by a well-defined group (Ostrom 1990; Wenger 1998; Barthel et al. 2010; Krasny and Tidball 2009), supported by the national Allotment Garden Association and the landowner. A constant “monitoring-improvement” of management and design as above contributes to an adaptive management. This should be linked to on-going educational activities, engaging students in investigations of how well active grounds perform with respect to the maintenance of pollination at Albano Resilient Campus and the larger landscape.

Stockholm City is responsible for managing run-off water from the road today. We propose that the wetlands established on the Albano property are instead managed by a cooperative – a water association. The wetlands could become part of the identity and story of the area. An important prerequisite for continuous monitoring, and in extension an adaptive management, is that sampling and evaluations are planned from the start. For example, tests could be used to determine the most effective plants and how the capacity could be increased during winter. Through constant monitoring, feedback on the different methods will be more or less immediate, allowing for quick adaptation to test new solutions for improving the performance.
TEN COMPOSITIONS

We have continuously worked with design outlines for the area in order to test the applicability of different ideas and to deepen our understanding of the different parts. The compositions deal with several levels: from large-scale plans to local solutions to specific problems. The compositions may be seen as examples of how the physical reality of Albano Resilient Campus might look. This should, however, not be seen as a final proposal, but rather as a basis for continued development of the project.

1. GREEN ARTERIES

Connect the transportation networks of the city. Clear passages and sight lines through the area. Open public passage of parkland along the valley.

2. PERFORMATIVE BUILDINGS

Make use of aspects of the cultural history. Clear passages and sight lines through the area.

3. ACTIVE GROUND

The property is split up to ensure the diversity of actors.

4. RESEARCH AND EDUCATION

Research and education buildings and yards. Vast, connected floors. Flexible premises. Assembly halls and conferences at ground level. Good communications.

POTENTIAL ACTORS

— Stockholm City
— Swedish Transport Administration
— Akademiska Hus

POTENTIAL SERVICES

— Publicness
— Urban accessibility
— Diversity
— Security
— Attractiveness
— International competitiveness

POTENTIAL ACTORS

— Stockholm City
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POTENTIAL SERVICES

— Publicness
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— Attractiveness
— International competitiveness

POTENTIAL ACTORS

— Akademiska Hus
— Stockholm University
— Tenants
— Research institutes
— Stockholm Vatten
— The Natural History Museum
— The Swedish Association for Allotment Gardens
— Söderbrunn Allotment Garden Association
— Bergius Botanic Garden
— Residents

POTENTIAL SERVICES:

— Diversity
— Publicness
— Attractiveness
— International competitiveness

POTENTIAL ACTORS

— Stockholm University
— KTH Royal Institute of Technology
— Karolinska Institutet
— Swedish University of Agricultural Sciences
— Stockholm School of Economics

SERVICES

— Exchange of knowledge
— Publicness
— Microclimate
— Attractiveness
— International competitiveness
— Water treatment
— International competitiveness
— Water treatment
5. PUBLIC ACTIVITIES
Preferably at ground level. Facing the central passages. Educational functions.

6. HOUSING
The upper floors. Attractive, good light conditions. Accessibility.

7. GREEN ROOFS
Stepping stones for birds. South facing terraces for the residents. Some roofs connect directly with the ground.

8. WATER ASSOCIATION
Connects Brunnsviken with the areas east of Albano. A system of wetlands, ditches and ponds. Public, educational functions.
9. ALLOTMENT GARDENS

Söderbrunn expands. Creates a corridor for pollinators. Units of at least ten plots. Sunny sites.

10. EXPERIMENTAL GARDENS

Good growing conditions. Public, educational functions, e.g. a climate change garden.

SYNTHESIS

The synthesis leads to a diverse blend of functions, actors and activities in the area.

POTENTIAL ACTORS

- The Swedish Association for Allotment Gardening
- Söderbrunn allotment garden association

POTENTIAL SERVICES:
- Exchange of knowledge
- Publicness
- Diversity
- Security
- Air treatment
- Pollination
- Microclimate
- Recreation
- Attractiveness

POTENTIAL ACTORS

- The Natural History Museum
- Research institutes
- Bergius Botanic Garden
- Stockholm University

POTENTIAL SERVICES:
- Exchange of knowledge
- Diversity
- Publicness
- Air treatment
- Pollination
- Microclimate
- Recreation
- Attractiveness
Meetings
Time
National/international
Stockholm
NUP
Albano
Local Level
Actors

The area has a number of actors active at different levels. Several meetings are held during the year where the actors can interact.

The social network

The figure illustrates an idealized picture of the social network that could be established at the site. Local groups are the foundation, with linkages to each other and to actors at higher societal levels. An important position within such a network is filled by the scale-crossing broker charged with the coordination of the management (Ernstson et al. 2010). This position could be held by a foundation. The ideal network facilitates processes for continuous and place-based learning and mobilization of the resources needed for collective action in times of crises or opportunities, i.e., adaptive governance of local resilience.

Spatial context
Social link
Scale-crossing link
Scale-crossing broker

Stepping Stones

Unbroken urban in one direction and unbroken park-like feeling in the other. Green roofs function as stepping stones for birds and other flying organisms, connecting Norra Djurgården and Hagaparken. The program is organized spatially so that each actor gets the best opportunities. Public activities on the ground floor with entrances facing the street. Institutions occupy the main body of the buildings. Housing for students and researchers is located on top of the institutions. Green roofs become part of the landscape to the north/east or private and public terraces to the south/west.
This speculative proposal by SERVO for a 4000 sqm bioscience innovation center took the Albano Resilient Campus proposal as its starting point. The project reconsiders the extensive green roof typology to produce an occupiable roofscape characterized by immersive depth. The primary performative aspect of the Hydrophile is the cultivation of biotopes on and through a variegated roofscape augmented with systems for percolating water through soil substrates. The material properties of ceramics with varying degrees of porosity and surface treatments are coupled with a morphology of protuberant forms in order to perform as hydrophilic and hydrophobic agents. The protuberant morphology of the roofscape directs the flow of water to irrigate organic matter—soil. The main driving factors for the design of the Hydrophile building and its plant communities are the substrate thicknesses, substrate design, and the roof topography and geometry. The roof topography is used to direct water to depressions where large amounts can be stored to support wet meadows or fens. Substrate thickness is used to create vegetational gradients ranging from shrublands and meadows on thicker substrates, to dry meadows and heathland on thin substrate layers. The roofscape is incorporated into a system of urban green surfaces that provide important links for the migration of species, possibly supporting existing biotope structures and habitat networks and promoting biodiversity in the local environment.
The green roof is designed to be experienced from several vantage points: from above—walking amidst a dense landscape of indigenous vegetation intertwined with protuberant forms that emit water, air or light; from below—as the underside of the roof pulls down to close proximity with the floor; or from within—in the interior of the auditorium space and specialized laboratory areas designed for the cultivation of vegetation in semi climatically-controlled microclimates.

Plan of hydrophile hydrodynamic green roof indicating location of protuberances for irrigation and ventilation, hydrodynamic flow diagram, contours, distribution of dry and wet systems and plant communities.
The thinnest vegetation systems will be dominated by drought tolerant grasses, herb and succulents on the thicker sections, and by bryophytes/moss and lichen on thinner sites and on edges towards bare roofing material. These thin vegetation systems will in many cases look similar to constructed traditional green roof systems or mimic more naturally occurring alvar systems. The substrate layers will have a neutral to alkaline reaction and range from 0 cm depth up to 7 cm. The vegetation will be established using cuttings succulents and seeds (grasses and herbs). Planting will be made in certain spots. Bryophytes will be left for spontaneous colonisation.

**Dry meadow on bedrock**

**Intermediate rich meadow**

**False Oatgrass meadow**

This vegetation system is comprised of a rather low meadow type with high herb diversity. It is maintained through cutting but also through careful plant selection. This vegetation type will also include hemiparasitic plants that have been shown to influence plant dynamics and dominance between species.

Increasing substrate layers will allow higher and more dominant vegetation as compared to the drier areas. This will allow a larger range of plants. These systems will have supplementary irrigation with recycled water.

**False Oatgrass meadow**

**Intermediate rich meadow**

**Flower meadow**

This vegetation system is comprised of a rather low meadow type with high herb diversity. It is maintained through cutting but also through careful plant selection. This vegetation type will also include hemiparasitic plants that have been shown to influence plant dynamics and dominance between species.
Water is a key element in the roof design of the Albano building. The building is located in the western fringes of the Nationalstadspark, a short distance from the Brunnsviken bay in the east. A thoughtful design of the water system on the roof and on the lot could increase available wet habitats in the area and support movement of amphibians from the west areas in the west and towards the protected areas in the east.

### Plant Communities

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>PLANT COMMUNITIES</th>
</tr>
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<tbody>
<tr>
<td>Achillea millefolium</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
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<tr>
<td>Agrostis capillaris</td>
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<td>Anthericum sylvestris</td>
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<tr>
<td>Scleria antidotalis</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
</tr>
<tr>
<td>Typha angustifolia</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
</tr>
<tr>
<td>Typha latifolia</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
</tr>
<tr>
<td>Viola epipsila</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
</tr>
<tr>
<td>Viola palustris</td>
<td>Wet Deschampsia (Tall grass meadow)</td>
</tr>
</tbody>
</table>

### NEXT SPREAD

Panoramic view of the new parkland passage with the Hydrophile project by SERVO in the background.
**Drottning Kristinas Väg**

Outline of street section. We propose an extension crossing Albano Resilient Campus and connecting the area with Kräftriket and Stockholm University. The surface will be interrupted by a scatter of vegetated plots or ditches/small ponds further facilitating water infiltration. The façades facing the passage should be designed to let vegetation continue vertically. This could be achieved either through espaliers, terraces or layered plantings.

**Railway Park 1 and 2**

Outline of the Railway Park: Above: Conifers, exposed bedrock, Salix species, flowers and fruit trees. Below: Nest boxes for bees, vegetated protective barrier, colour coded flower beds. The Railway Park is a linear passage along the industrial railway running east–west through the property. To support many different species the passage should contain many different biotopes; not only suitable habitats for wild bees and butterflies but also rock outcrops, coppices with conifers and other trees.
A very sensitive area is where the Railway Park crosses Roslagsvägen. This would be a suitable place for an ecoduct connecting Albano Resilient Campus to Bellevue and Hagaparken. Large ecoducts unfortunately have boring, shaded underpasses. We propose a different design that could have additional symbolic value. A two-layered shell of metal mesh functions as a vegetated tube enclosing the railway. The space between the two shells can be filled with soil, making the tube both a plantation and an espalier. The cylindrical shape provides structural stability. We suggest planting the tube with flowering plants to attract butterflies and other pollinators, like a meadow folding on itself. This would provide a new entrance to the area and a manifestation of the new development.

ROSLAGSVÄGEN

Outline of street section; Roslagsvägen. A system of ponds, ditches and wetlands passes under Roslagsvägen on its way to Brunnsviken. Finally, it passes under a boardwalk along the inlet. Thus we want to demonstrate how ecological features can be made visible and become experiences for visitors.
CHALLENGING DICHOTOMIES
— EXPLORING RESILIENCE AS AN INTEGRATIVE AND
OPERATIVE CONCEPTUAL FRAMEWORK FOR LARGE-SCALE
URBAN GREEN STRUCTURES

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ABSTRACT

Urban planners and urban planning as a field face a major challenge in balancing urban development interests against the need to safeguard socially equitable and ecologically functional green space. This need is still commonly seen through a modernist lens, whereby large-scale green areas are viewed as an antithesis to the city, creating a polarised landscape seemingly free from cross-scale social and ecological interactions. This study reports on a transdisciplinary work process that aimed to challenge this polarisation by exploring more integrative and operative planning approaches to large-scale urban green structures, using the concept of resilience, both as a theoretical umbrella and in relation to a case study in Stockholm, Sweden. The exploration took the form of a series of workshops in which professionals from the fields of planning, urban design, ecology, landscape architecture, and environmental history, as well as city-wide and regional planning, took part. Throughout the process, tentative designs served as “touchstones”, bringing questions from a theoretical level to a hands-on, specific, local context. This paper identifies three ways that resilience science can be useful in the planning and management of large urban green structures. Firstly, resilience can introduce complexity and thus make visible synergies and “win–win” situations within planning. Secondly, in highlighting change, resilience can offer alternatives to present conservationist perspectives on green space planning and thus offer constructive ways out of planning-related deadlocks. Thirdly, resilience can be advantageously combined with the concept of “legibility” in clarifying common goals and thus helping to build a constituency which will sustain large-scale green structures over time.

Keywords: urban development; nature conservation; resilience; integrative and operative approaches; transdisciplinary; green wedges; Stockholm; Sweden
INTRODUCTION

Balancing urban growth and development interests against the need to safeguard natural resources and socially equitable open space – forests, fields, allotment gardens and parks – constitutes a classic urban planning issue. Throughout the twentieth century, planners, urban designers, and nature conservationists in Europe, North America, and (more recently) Asia have applied a palette of large-scale green structure concepts such as green belts, green fingers, green hearts, and green wedges in order to balance interests of urban expansion and open space conservation (Amati, 2008; Amati & Taylor, 2010; Bengston & Young, 2006). However, both planning research and practice have increasingly come to question whether such large-scale green structure concepts are in fact capable of meeting contemporary and future urban challenges, and calls for reassessment and redefinition can be heard (e.g. Amati, 2008; Buxton & Goodman, 2008; Kuhn & Gailing, 2008; Lloyd & Peel, 2007; Watanabe, Amati, Endo, & Yokohari, 2008).

As products of modernist perceptions of the world, large-scale green structure concepts are often characterised by top-down strategies, and framed by normative goals and preservationist ideals, as well as by a strong belief in scientific analysis coupled with the assumption that planning can be based on “universal truths” (Amati, 2008). These concepts have been distinguished by the imposition of an urban/rural polarity, and one of the major challenges in current green structure planning is to overcome the prevailing idea of green space as an antithesis to the city (Frey, 2000; Jorgensen, 2005). Indeed, the opposition of concepts such as “city versus nature”, or “urban versus rural” is deeply embedded in Western minds and still prominently influences planning and urban design as well as distinctions between professions (Corner, 2006; Frey, 2000; Löffenhaft & Ihse, 1998; Lundgren Alm, 2001; Tjallingii, 2005).

The dichotomy is also enhanced by conventional practices of nature conservation, e.g. setting aside land from human disturbances for protection of identified nature values; practices which originate from the awakening of environmental concerns triggered by the unprecedented environmental impact by early industrialisation (Fritiofson, 2002; Kingsland, 2002; Lundgren, 2005; Nordiska ministerrådet, 2003; Sundin, 1989). Such views have fostered a strong belief in the effectiveness of protected areas where biological values can be preserved if functionally separated from intensive land uses such as agriculture, forestry and cities. This view also implies that optimisation is possible and order is static, originating from an understanding of nature as consisting of closed, linear and rather predictable systems, enabling physical delimitations (Holling & Meffe, 1996). As a result, future potentials for novelty and change are rarely recognised in urban green spaces (Asikainen & Jokinen, 2009; Lundgren Alm, 2001) and instead focus is very much on the current state of those spaces and threats to identified values (e.g. Emneborg & Götmark, 2000). Assuming opposition of built-up areas and
green space, competition for space means that trade-offs must be made, and currently green spaces often weigh lighter in that balance (Tjallingii, 2005).

In this study, we challenge the polarised mindsets currently evidenced within planning by hypothesising that it is not the large-scale green structure concepts as such that are problematic (Ahern, 1995; Selman, 2006), but rather the dichotomising framework and modernist legacy that characterise the concepts. The main objective of the study is to explore and discuss more operative and integrative approaches in relation to large-scale urban green structures. In addressing this task, we use the concept of “resilience” (Folke, 2006; Holling, 1973, 2001; Lister, 2007; Pickett, Cadenasso, & Grove, 2004), both as a theoretical umbrella and by applying it to the case study of Järva – a suburban section of the large-scale regional green structure in Stockholm, Sweden. Järva is a site that exemplifies a contested planning situation, in which the seemingly incompatible endeavours of, on the one hand, protecting and maintaining green and open space values in the regional green structure (conceptualised as the “ten green wedges”), and on the other creating a polycentric, dense and more connected urban fabric across the current radial configuration, are set in opposition to one another (Figure 1). Controversy here does not only occur in the general urban planning debate but is also clearly expressed in current planning documents (Uggla, 2010).

The paper is divided into four parts. The first part depicts core aspects of present resilience theory that are considered especially pertinent in addressing the challenges facing contemporary urban planning; furthermore, this section also briefly presents the transdisciplinary and design-based work process that forms the basis for the study. The second part of the paper introduces the Järva area in Stockholm and sets out a description of the tentative designs produced within the study. The third part reviews the discussions held and the insights that emerged during a series of workshops on green structure and resilience as a platform. Finally, the paper concludes by reflecting on the use of a resilience framework in relation to large-scale urban green structures, summarising three guiding principles that may prove useful for planning and urban design.

Figure 1. The Stockholm metropolitan region. The case study area of Järva is marked with a black rectangle. (a) The urban development of Stockholm has been strongly directed by the transportation infrastructure, where different routes spread in a radial manner from the city centre. (b) Leaving unexploited land in between – later articulated as the ten green wedges of Stockholm. The Järva green wedge (black) stretches from the outer parts of the region into central Stockholm. The idea of green wedges can be traced back to the general plan of the 1950s (City of Stockholm, 1946), although it was a mere ad hoc identification of an emerging structure from the radial urban development of Stockholm. The large tracts of land were often seen as land for future development, rather than open space of social and ecological value. It was not until 1996 that the notion of green wedges was conceptualised and geographically outlined within planning (Regional Planning Office, 1996). (Original maps from the Stockholm Office of Regional Growth, Environment and Planning (TMR), modified by the authors).
Applying resilience thinking in order to build a collaborative platform

Three core aspects

Resilience thinking stems from ecology and has radically shifted the way ecosystem dynamics and socio-ecological interactions are understood and studied. In recent decades, the concept has come to be used as a broad policy tool in understanding complex systems and challenging linear thinking applied in fields as diverse as environmental psychology, cultural theory, human geography, economics, and property research. In this study we have focused on the strain of resilience discourse that has its origin in Holling’s research on ecological resilience from the 1970s (for a detailed historical overview, see Folke, 2006).

The concept as it is used here builds on the insight that ecosystems, instead of following linear paths towards a single equilibrium – “nature in balance”, are complex systems, with multiple alternative equilibriums. As such, they are prone to non-linear behaviour where change is seen as an inherent part of the dynamics. In this context, resilience is defined as the capacity of a system to regenerate and adapt in the face of changing conditions and disturbance, while retaining essentially the same function, structure, identity, and feedbacks (Folke et al., 2004; Walker & Salt, 2006). “Resilience”, in this sense, refers to how
much disturbance a system can handle before it “flips” into a new regime or a new behaviour – such as, for instance, from a clear-water lake to a turbid one.

Early resilience science focused primarily on a system's ability to absorb shocks and recover from crises such as fires, storms, and pest outbreaks. However, more recent research has highlighted the generative aspects of the resilience concept and the capacities for renewal, re-organisation, and innovation (Folke, Hahn, Olsson & Norberg, 2005). These generative aspects are especially relevant for planning and urban design, as they open up for human agency and involvement and hence hold a potential to provide more integrative and operative approaches that would make resilience thinking a useful tool in addressing the urban dichotomies. For this study we selected the following core aspects of resilience theory as being especially pertinent for the urban context: (1) integrated socioecological systems; (2) cross-scale interactions; and (3) change and adaptive capacity.

The first aspect of resilience we use lies in an acknowledgement of “socio-ecological integration”. Where earlier ecological approaches tried to separate ecological systems from human influences (viewing the latter as “disturbance”) resilience thinking emphasises the connectedness and interdependence at play between humans and nature. Cities are at the far end of the socioecological interaction spectrum; landscape formation in cities is driven by human action. Despite this, in order to ease the ecological footprint of cities and mitigate the local and regional environmental problems that arise in cities, it is essential to harness the linkages between the social and ecological aspects of the urban landscape.

The second core aspect is the acknowledgement of “cross-scale interactions” (Gunderson & Holling, 2002), stressing the need to understand how processes and features at different scales in time and space affect each other. Given the size and nested character of the urban green areas addressed in this study, we see this aspect as essential. Using an urban green area as an example, this concept can be explained through the way in which the larger green structure could provide buffering capacities for that area, by offering additional resources such as being a source for replenishing locally extinct organisms. In turn, the smaller scales in such a scenario would act as drivers for innovation, and thus for slow change and adaptation at larger scales (Gunderson & Holling, 2002; Levin, 2000). The key is therefore small-scale diversity and the ability to learn from experiences; local experiments can either proliferate if they are successful, or be reformulated or rejected if they do not meet with set objectives. Aligning scales and making them work together is key for building resilience (Cumming, Cumming, & Redman, 2006; Gunderson & Holling, 2002). Furthermore, it has been argued that addressing scale issues is especially critical in cities where the ecological scales are effectively hidden by human dominance of the landscape (Borgström, Elmqvist, Angelstam, & Alfsen-Norodom, 2006).

The third aspect of resilience that we use is the notion of
change as inherently embedded in the complex system dynamic – highlighting the need for “adaptive capacity” in order to handle these changes. A prerequisite for such adaptation is diversity. High diversity, for example an environment rich in flora and fauna, will increase the range of possibilities that the system has in order to maintain functions and its appearance in the face of changing conditions. Thus, such diversity provides insurance against falling out of the game and “flipping” into another, perhaps less desirable, stage. However, diversity does not only constitute a form of insurance, it can also be a source for transformation and for finding new trajectories (Folke, 2006; Folke, Colding, & Berkes, 2002; Olsson, Folke, & Berkes, 2004) – for example, in the wake of renegotiated development targets. The interplay between diversity, transformation and stability stems from the understanding of socio-ecological dynamics as unpredictable and chaotic, through which no trajectory of system change is more “correct” or more “given”, but perhaps is more or less feasible. The urban landscape is characterised by frequent changes, both planned and non-planned, hence diversity and adaptive capacity are essential to urban sustainable development.

Despite recent progress in the field (Pickett et al., 2004; Wilkinson, 2012; Wilkinson, Porter, & Colding, 2010), the challenge of building resilience and making resilience theory operational for truly interlinked socio-ecological systems remains largely unmet. In particular, few examples of resilience being explicitly applied in hands-on planning and urban design contexts exist in literature on the subject. One exception, however, is a recent practice-based collection of writings that uses resilience in planning, designing and managing large, contemporary urban parks and green spaces (Corner, 2002; Czerniak, 2007; Lister, 2007). In this context, “resilience” is addressed in relation to intentions – i.e. to guiding planners, urban designers, and decision makers – and understood as a generative and positive attribute. In this study, we have found landscape theorist Julia Czerniak’s perspective particularly useful since she highlights not only the capacity for resilience in relation to an area’s socio-ecological characteristics, but also points to the importance of perceived identity and legibility for how people connect to an area and thus in extension also to its long-term existence and resilience. Czerniak defines legibility, in the context of large parks, as the capacity of an area or a project to be understood in its “intentions (its evolution and goals), identity (its distinguishing character and organisation), and image (both its appearance, whether pastoral or post-industrial, and its marketing strategies)” (Czerniak, 2007, p. 215). Relevant questions to test the relative legibility of a site are then: “Where is the park [or green space]”, “How does it look” And “what can it do” (Czerniak, 2007, p. 220).

A transdisciplinary and design-based work process

The present study was structured as a sequence of six transdisciplinary workshops which were run by the authors and held in Stockholm between
2007 and 2010. The invited participants, totalling 16 individuals, were selected for their expertise in relation to green planning issues. Participants represented a range of different perspectives, including scholars and practitioners from the fields of: architecture, urban design, landscape architecture, ecology, and environmental history, as well as city-wide and regional planning.\(^2\)

The work process can be described as a “hermeneutic interplay” between workshops that were held in a scholarly setting and workshops that were conducted within comprehensive planning and policy contexts. Thus, the various topics were filtered either through a more theoretical lens, or alternatively through the practical realities of city-wide and regional planning. As the workshop also coincided with the development of both a new comprehensive plan for the municipality of Stockholm and a new development plan for the region, both the project core-group and the planning officials had a reciprocal interest in participating in the discussions.\(^3\)

We (the authors) had several roles in the process: collecting and analysing case specific data, arranging and leading the workshops – thereby also identifying key questions for discussion, and collectively and systematically reflecting upon the outcomes of the different workshops. Both our analysis of the case study area and the discourse-based and transdisciplinary work process was guided by resilience thinking, with a specific focus on the three aspects of resilience highlighted in the previous section. The resilience framework thus formed a collaborative platform, which was promoted as a way to integrate ecological processes into urban planning and design (Pickett et al., 2004). Because our approach was discourse-based, our understanding of resilience evolved (Gustavsson, 2003); as such, the design models and strategies that we developed in the case study area also influenced our definitions of resilience and thus altered our common understandings (Figure 2).

It should also be emphasised that the study specifically took the politically ratified objective of creating a more connected urban structure, while safeguarding large-scale green structures, as a point of departure. By accepting this as our frame, our goal was not to apply resilience as a general policy tool within urban planning, but rather to explore whether and how resilience theory could bring alternative perspectives to a typical, recurring and conflicted urban planning situation.

Prior to each workshop, participants were sent material consisting of an introduction and analysis of the study area and a brief review of resilience theory.\(^4\) In order to make the issues dealt with more tangible, we used what can be generalised as “design experiments” – i.e. tentative proposals for the case study area (plans, diagrams, network analysis, images and various visualisation tools).\(^5\) These served as touchstones that were specific enough to move the discussion forward (Felson & Pickett, 2005; Runberger, 2012) and aimed at testing the resilience-guided approach in relation to a local context. The purpose with utilising such a design-based research method was not primarily to provide a solution or a final proposal for the case study area, but to
produce a transformative model that would allow for multiple, sometimes conflicting actors, to identify and expose points of conflict and possible convergence. The case study was further informed by a series of field visits, analyses of planning documents (comprehensive plans and pre-plan inquiries), green space management documents (park programmes, nature reserve plans), ecological analyses, photographic analyses of site conditions, and interviews with planning officials at regional and municipal levels.

Figure 2. From metaphor to design model. A schematic illustration of translating the metaphor of resilience to generate urban designs and the loop where the design models inform the metaphor, adapted and further developed from Pickett et al. (2004), with our addition to the figure in dashed line. According to Pickett et al. (2004), this process first involves an imaginative act where the meaning and definition of resilience is calibrated among professions. Second, from this common understanding of resilience, modelling strategies emerge that translate the core meaning to a real or proposed situation. In our study this corresponds to our explorations of the resilience concept by designing models depicting alternative strategies to handle the urban challenges in the Järva green wedge.
THE JÄRVA AREA AND STOCKHOLM’S GREEN WEDGES

Short background

The selected case, the Järva area, is located in the north-western part of Stockholm. The site centres on the Igelhöcken stream (Figure 3) and includes a section of the Järva green wedge and parts of surrounding housing areas that are located to the north and south (for details, see Florgård & Forsberg, 2006). These neighbourhoods accommodate approximately 60,000 inhabitants (8% of the population of the municipality of Stockholm) and the majority of the land is owned by the municipality and the state. Similar to what is typically found in Swedish cities, the landscape can be characterised as primarily consisting of extensive, cultivated, open areas. About half of the green wedge consists of fields and grazed meadows, which are partly dedicated to active, small-scale agricultural land uses, and partly constitute abandoned and overgrown former agricultural areas. The elevated parts of the landscape support groves of deciduous forests and patches of coniferous forests, and in some lower parts, wetlands have been restored.

Figure 3. A satellite image of the north-western part of Stockholm, with the Järva area marked with a dashed white outline and including both green space and housing areas. The Järva green wedge is marked with a solid outline. Background map received from Swedish Lantmäteriet open map systems access and published with their agreement. Copyright: CNES©Distribution SpotImage 2011, Landsat Imagery, ©ESA/Eurimage, 2011.

Beside small-scale agriculture, the major land use, a multitude of activities occur there in relation to the allotment gardens, motocross fairway, small-scale airfield, castle, market garden, on-going nature restoration projects and sports fields that can be found on the site. A
business park and a large shopping mall are both located in the north of the site. The main housing areas surrounding the wedge were planned and built in the 1960s, 1970s, and 1980s, in the spirit of modernist “neighbourhood units” and in response to the ideals of traffic and functional separation. These areas are today characterised by a very high proportion of recent immigrants and considered among the most socially segregated suburbs of Stockholm. Middle-class residential areas characterised predominantly by single-family houses are located at the edge of the study area. Given these conditions, the study area at large can be said to exhibit socioeconomic and ethnic diversity, but the individual neighbourhoods are rather homogenous enclaves, separated by roads and green space – a typical pattern in the suburbs of Stockholm (Figure 4 and Figure 6(a), (b)).

Figure 4. Housing areas of the Järva area: view of Rinkeby, the southern housing area, seen from the green wedge. Photo by authors.

Connected green structure versus connected urban fabric

In recent years the City of Stockholm has expressed a strong ambition to promote social and physical integration by improving and establishing connections between the neighbourhoods in a north–south direction (City of Stockholm, 2010). Presently, the green wedge – which is located between the housing neighbourhoods discussed above – lacks both clear entrances and lengthwise paths, making interconnections for pedestrians difficult. Due to the partial lack of maintenance, many inhabitants also perceive the green wedge as an unsafe and unattractive barrier. Further, in the on-going policy discourse the City’s ambitions to enhance social connections are held to conflict with the objective of protecting ecological and recreational values, a task which is tied to the unbroken continuation of the green wedge in an east–west direction. The Järva section of this green structure has been classified as an important link between ecological core areas and thus it is argued that any change in land use, albeit at a local level, may risk jeopardising the values of the wedge.
structure at large (City of Stockholm, 2004).

The dualism presented in relation to Järva – which juxtaposes connected, large-scale green structures against a connected urban fabric (Figure 5) – is typical of the Stockholm context and is reflected in both the general planning discourse and in planning practice. On one hand, the green wedge concept has gained increased recognition through its articulation in terms of its social and ecological values within expert studies (e.g. Mörtberg, Zetterberg, & Gontier, 2007; Regional Planning Office Stockholm County, 2007; Regional Planning Office Stockholm County, 2008). The concept also formed a “precondition” for planning within the 2001 regional plan (Regional Planning Office, 2001) and has also been used extensively by a network of environmental and recreational NGOs arguing for enhanced formal protection of the green wedges (Swedish Society for Nature Conservation, 2010). On the other hand, the Stockholm region is expected to grow by more than 640,000 inhabitants over the next thirty years (Office of Regional Planning, Stockholm County Council, 2012), inevitably increasing pressure on undeveloped land. Previous urban development strategies expressed aims to keep the green structure as continuous as possible, by “building the city inwards” and creating a more dense urban core (City of Stockholm, 1999). This has, however, recently shifted towards a desire to expand the city outwards, towards the suburbs, creating a denser, polycentric, locally connected urban fabric – i.e. across the green wedges. These new visions evidence a modernist legacy in their use of polarising binary terms, setting the goal of achieving a contiguous urban fabric against the goal of achieving a contiguous urban green structure. This tendency is exemplified by the new comprehensive plan for Stockholm which states that:

The radial city structure shaped by the rail transport network served its purpose well for much of the twentieth century, but it has become increasingly clear that this structure does not meet all of today’s needs. The band of urban districts in the outer city are often separated by major infrastructure and green areas of various kinds. Poor transverse connections and weak physical links fail to support people’s patterns of movement or integration between the areas. The general focus of the City Plan 1999 was to retain these parts of the contiguous [large scale] green structure. However, there are strong arguments in favour of abandoning this principle as the city grows and the needs of Stockholmers change. The ambition in this City Plan is to bring a modern urban layout to postwar Stockholm. (City of Stockholm, 2010, p. 34).

Green spaces are thus viewed as a problem as they are believed to isolate the city’s suburbs from one another. Whilst the direction set out in the new comprehensive plan certainly implies a rethinking of both the green areas and the physical structure of the suburbs, what this new approach actually might mean remains unclear, and issues are often framed in terms of the need to either “sacrifice” or “save” urban green space. From a user’s viewpoint, it has been argued that large-scale green structures may function as connectors and organise scattered landscapes, especially in suburban areas (Lundgren Alm, 2001). Czerniak suggests that large urban green spaces may function as “social catalysts” by
providing “contact and exchange for people in otherwise disjointed urban environments” (Czerniak, 2007, p. 241). However, in several cases – including the Järva area – such structures may in fact have the opposite effect, separating rather than unifying (Kuhn & Gailing, 2008).

![Figure 5](image)

Figure 5. The dualistic set-up in Järva area. (a) Improving and establishing connections between the neighbourhoods in the north–south direction for social and physical integration, are set against (b), the will to safeguard biodiversity and ecological connections in the east–west direction. The roads (c) make out challenging barriers in the landscape. Further keys: (d) railways and subways, (e) the Järva green wedge, (f) borders of cultural and nature reserves, (g) built up areas, (h) some of the housing areas that are planned or currently under development and (i) lakes.

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**Seventy-one new nature reserves**

In the past decade, extensive parts of the large-scale green structure of Stockholm have become formally protected through reserves. In 2003, the Stockholm County Administrative Board suggested the establishment of 71 new nature reserves in Stockholm County over a ten-year period, the main bulk of these being located within the regional green wedges (Stockholm County Administrative Board, 2003). Progress in meeting this directive has, however, shown to be largely dependent on local political will. For example, during a shift of political majority in the City of Stockholm in 2006, the establishment of any further reserves was completely halted, with no alternative strategies for safeguarding large-scale green structure presented.
Figure 6. The differing interfaces of the Järva green wedge and the housing areas: (a) the freeway as an effective barrier in the interface between the green wedge and the southern housing areas in contrast to (b) the northern interface with more connections through bays of mixed urban–green space, in this case private gardens. Photo by authors.

Three new reserves were established in the Järva area in the period 2004–2006, which together constitute more than 650 ha of protected land. The establishment of formal protected areas such as these reserves is, however, likely to increase the urban/landscape dichotomy raised earlier in this paper. To exemplify: during the planning of one of the Järva area reserves, municipal and state planning authorities discussed locating “nature profiled” schools and day-care centres within the borders of the reserve. All parties agreed that this was a good idea, which would fit well with the overall character of the area and would provide positive links between the green space and housing areas. Despite this agreement, the suggestion brought about a debate on whether such
activities (and the resulting degree of urbanisation) would risk eroding
the very idea of a reserve. If these programmes were allowed, how would
future limitations on other interests and activities be set? In the end it
was decided that it was too big a risk to take, and the plans were never
approved (interview with a planning officer at the City of Stockholm,
2006).

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**Exploring alternatives through tentative designs**

Set to the background of on-going policy discussions, as outlined above,
and in preparation for the workshop series, a number of design exercises
were undertaken to illustrate potential alternatives for Järva. These
tentative designs for Järva served as a basis for workshop discussions
about how contested situations in urban green space can be handled
within planning. Here follows an excerpt of the most central parts of this
material:

**Socio-ecological integration**

The first series of designs departed from the polemic demand to either
safeguard biodiversity and ecological connections in the Järva wedge, or
the request to establish north–south connections between the suburban
enclaves (both found in the policy discourse outlined above). In response,
a series of alternative strategies were explored, by overlaying various
present and prospective ecological and social characteristics onto the case
site (Figures 8 and 9). Ecological aspects were analysed using a network-
based modelling approach (Andersson & Bodin, 2008), which, based
on the habitat demands of different target species, allows assessment of
the connectedness of patches that support a certain ecological function.
The analysis shows whether a network of small patches in the landscape
may fulfil the same function as a larger green structure, based on relative
location (Andersson & Bodin, 2008). This (and similar) landscape
ecology methodology (see, for instance, Zetterberg, 2009; Zetterberg,
Mörterb & Balfors, 2010) can – if performed at a range of scales and
for a range of different habitats – identify key locations in a landscape,
either for conservation or new establishment, or where development has
least impact. In Järva, we found that biotopes outside of the border of the
green wedge played a significant role for such connections but also that
large tracts of land described as “ecological dispersal zones” (City of
Stockholm, 2004) consisted of a “healthy grass biotope”, which does not
in itself provide much potential for high biodiversity at present.

In parallel to this analysis we explored how the green wedge
could function in a more socially integrative way, by suggesting
connections between the neighbouring areas (Figure 9). In this exercise,
diverse strategies were proposed – such as new entrances, bridges over
the freeway and the stream, additional pedestrian pathways, visual
connections between the neighbourhoods, various public amenities, and
new areas of attraction – that could potentially link the neighbourhoods.
As an important next step, these interventions were superimposed on the
previous ecological analysis in various constellations, in order to form the outline for a more integrated programmatic agenda for the site.

Figure 7. Attempts to increase the legibility of the greenwedge concept has so far operated with rather mild tools. Here is an example from a recent pilot project “Järva kilstråk” that aims to develop a platform for collaboration in management and marketing among the green wedge stakeholders. From left to right: logotype, signpost, and map with pedestrian path marked with dashed line. Source: Images from the City of Stockholm, 2011.

Figure 8. Potential for ecological connectivity. A modelling approach developed by Andersson and Bodin (2008) shows how the patches, the nodes in the landscape networks, indicate potential for movement for certain species. This excerpt from workshop material is based on existing biotope maps of the Järva area (Löfvenhaft, 1999), and shows (a) potential links within a range of 300m between (b) patches of pine forest (coniferous) and (c) the Igelbäcken stream. Note that the network illustrated here only captures one aspect of ecological connection, – i.e. linkages between forest patches – while there are many others in the area.
Figure 9. Potential for social connections. Excerpts from workshop material and discussions: (a) bridges over the Igelbäcken stream and roads, (b) points of attraction, (c) ecoducts over roads and railways, (d) main bridges, (e) open cross-section strands with public amenities and sport fields, (f) allotment gardens and small scale residential areas, (g) public and accessible stretch along the stream, and (h) additional pedestrian pathways.

A series of connected identities

The second set of designs took the challenges of making the large-scale structure legible as a point of departure. The Järva wedge was scaled down into smaller areas with distinct characters that in turn would be linked together and made legible as part of the larger identity of the wedge. These series of connected identities would then be tied together as a sequence of parks connected by a public passage along the whole stretch of the Igelbäcken stream (Figure 10). The dominant narratives of each section would be built around distinctive landscape characteristics, popular points of attraction, or already existing social narratives and artefacts (see Figure 11 for a further zoom-in). This strategy built upon the assumption that to sustain a multitude of programmes, ecological variation, and changing uses and functions over time in the green space, a set of clear main narratives were needed that could promote an essential identity (Czerniak, 2007). Furthermore, we hypothesised that areas which become more legible – that is, increasingly more anchored, used, and part of people’s perceptions – become more resistant to development pressures. Such strategies could, at a local scale, potentially complement more formal conservation strategies for safeguarding large urban green structures in cities (e.g., the protection areas mentioned earlier). The suggested designs were also calibrated against the ecological preconditions and potentials of the site, so that the small-scale areas could be matched with the regional structure at large.
Figure 10. Legibility at different scales. An example of how small-scale environments with clear identity, when taken together, have the potential to provide legibility at a larger scale. (a) Small-scale areas with distinct characters such as a wetland, educational farming with fields and grazed areas, deciduous forests with glades and wide ecotones and (b) these series of connected identities are tied together as a sequence of parks connected by a public passage along the stretch of the Igelbäcken stream. (c) Outline of one area (described in detail in Figure 11).

Figure 11. Zooming in on one small-scale area (see Figure 10): (a) and (b) the suggested strategy for legibility is based on the distinct feature of the hill in combination with a contiguous forest encircling the area, (c) entrances, and (d) new biotopes are established that strengthen the large-scale structure. In the east and west, a dense, mixed deciduous forest is established as an extension of existing forest patches. To the northeast, a more sparse forest is planted as an entrance where visitors are filtered into the area while catching a glimpse of the distant hill. (e) Towards the freeway in the south and west, noise reductions are established and the area is visually enclosed by a thick pine forest. (f) The main
pedestrian circulation establishes and marks the area’s border and provides a walk of approximately one hour. Furthermore, the approach may also include means of enhancing the sense of the area’s edge by naming and providing distinct and recognisable shapes.

Workshop discussions and insights

The following section reports on the outcomes of the transdisciplinary workshops that were conducted by the authors between 2007 and 2010, following the formulation of the tentative designs discussed in the previous section. All participants were familiar with the resilience concept prior to the study, although to varying degrees. While the majority of participating scholars had been invited especially for their knowledge of the field, resilience was not a concept used within the everyday practices of the practitioners and planning professionals who were invited. The initial response to using the term in relation to green space planning therefore varied, but there was a consensus amongst participants regarding the need to introduce approaches that could challenge the prevailing polarisation – both in relation to planning practice in general and to the case of Stockholm and Järva in particular. As one participating urban designer put it: “In many senses, we are still working within this dichotomy. The question is how we can find a new type of logic – a new system and line of reasoning.” Another participant expressed a similar view, but also highlighted the difficulties in breaking free from the dualistic approaches that are embedded in planning conceptions and praxis, stating:

I see how this concept [resilience] has a huge potential when attempting to undermine and destabilise the dichotomy and retain a new, how shall I say, a new place from which to look at the city. And here is also where the challenge lies – if we use the analogy of [urban planning] being a type of weaving . . . I see how the separate threads are still coming from a polarised point of departure. In a sense, I feel trapped in this dichotomy . . . since one is always dependent on these threads that are attached to what we are trying to leave behind us. (Sociologist and ecologist)

Yet another participant argued that it was precisely the introduction of alternative conceptions of nature and ecology within planning – adding new threads to the “fabric” – that was the key in unlocking nature/culture-oriented conflicts:

The “ecologisation” of the urban landscape has contributed, just as exploitation and development, to the dichotomy. And then one can say that there are new ecological concepts that are, so to speak, more elastic and pliable; that can create new, constructive ways out of this situation and that resilience can be such a concept. (Environmental historian)

In this context, the green wedge concept was recognised both as a useful and necessary tool for safeguarding green values, but participants also highlighted the ambiguity that is built into the concept. One city-wide strategic planner expressed how the “vast green structures that the wedges comprise often implied challenges in our attempts to strengthen
social connections between the neighbourhoods,” and continued that, given this context, the green wedges could easily be associated with something that “drives in a wedge, creating division and disruption.” From a different perspective, however, the wedge concept was ascribed affirmative implications and its distinctiveness was considered necessary for withstanding development pressures within the urban fabric:

There’s an implied positive activity in the very image of a wedge, that it . . . , so to speak, wedges itself straight in between the development. I think this is a bit intriguing – that it’s not only a geometrical form, but that the concept entails a strong symbolism in itself. (Regional planner)

I think it is vital that there is a type of concept that is active across the municipal borders – a vision, if you want, that exceeds the separate planning units. A key challenge here is the large size and to find an underlying narrative that can take on the battle of the large scale. (Urban designer)

From a low-resolution approach to a more detailed one

The first topic for discussion took its point of departure in the acknowledgement of socio-ecological integration as encoded in resilience science. The tentative designs formed a basis for discussion; they explored ways to tackle the seemingly conflicting desires present in Järva to both strengthen social connections in a north–south direction and safeguard biodiversity and ecological connections in an east–west direction. Whilst (as several participants noted) the call for a more integrated view of human-nature-coupled systems is hardly new to planning, many felt that there was a lack of frameworks that could transfer such views into praxis. Resilience was, in this context, framed as a potentially useful concept in facilitating what was by one participant described as a shift from a “low-resolution” approach to a more “detailed one”:

In many places [in the green wedges] elements emerge that can be understood as immense problems associated with modernist ways to understand the relationship between the city and the surrounding environment and nature – a kind of lack of articulation . . . . If we compare these [previous] approaches with what you are doing here, what you presented today and what I know about research in the various fields represented here – there is now an incredible resolution and level of detail going on in only one single wedge. A great number of various instruments have been highlighted: how to draw people across the area, how entrances become inviting, signs, fish in streams, and so forth. Here, there is a type of language for all of this, a heck of a lot of detail. Previous views, however, framing these neighbourhoods as “islands in an ocean of green” indeed lacked this type of resolution. (Environmental historian)

Participants identified two specific sources of potential value with the tentative designs. First, the benefits of using an ecological underlay that did not only show “what is there today” but that could also indicate gaps and potentials within the green structure was highlighted. For planners and urban designers this could be helpful in guiding where it would be favourable to support a certain ecological trajectory and thus in considering prospect-oriented and dynamic aspects of urban nature:
what by Adams has been conceptualised as “future nature” (Adams, 1996). Likewise, such approaches could act as a tool for identifying areas that would be more likely to withstand a higher intensity of human activities and land-use changes without significantly impacting upon the ecological functions of the landscape at large. Second, the importance of the order in which data and requirements entered the process was emphasised by participants. Here, it was argued that using the ecological underlay as a starting point would potentially make it easier to “mould” social conditions in response to a set of possible ecological scenarios or potentials, rather than performing this operation the other way around, not least since natural processes typically are relatively slow compared to other urban processes.

Many participants also pointed towards the difficulties brought about by an increased complexity and level of detail when dealing with ecological aspects. Particularly within city-wide planning, professionals often instead experienced a demand for presenting simplified measurements, figures, and specifications in relation to matters of urban nature and ecology – for instance, answering the questions: How wide must a green corridor be in order to function? What ecological steady-state are we going for? Or, what specific species are we trying to save here? When attempting to bring in more open-ended data and socio-ecological overlays of information, there seemed to be tangible limits to how many layers of dynamics current planning praxis could handle, as the following quote illustrates:

It can be problematic to handle new [ecological] knowledge and data that comes in to the planning process as you go along, for example new migration paths for animals and plants. The importance of these can be a real challenge to communicate to developers, landowners, consultants and other stakeholders. (City-wide planner and ecologist).

Large-scale green structures — opportunities and challenges

The second item for discussion revolved around the notion of cross-scale interaction as being central to resilience science. Here, the very largeness of the green wedge structure was identified a one of the main challenges – and simultaneously one of the main opportunities – in relation to this theme. On the one hand, the participants emphasised that the “large scale” creates the conditions for the biological diversity that Stockholm is renowned for – in fact, ecological research can confirm that large-scale green structures increase the chance of high species diversity (e.g. Fischer & Stöckling, 1997), which in turn is of importance for an area’s ability to withstand or adapt to changes, thus making it potentially more resilient (e.g. Elmqvist et al., 2003). On the other hand, many participants had experienced that the large size of the green wedges, and the fact that they spanned multiple jurisdictional and administrative units, made it difficult to maintain a consistent interpretation of the green structure amongst stakeholders. Despite enhanced cooperation among municipalities in recent years, the large scale and municipal near-autonomy in land-use planning has made cross-scale interactions difficult. One participating planning professional
described how situations often arose in which one municipality appointed “their” part of the wedge as a valuable green space that formed a link in the green wedge structure, while a neighbouring municipality might be planning for a new neighbourhood in a corresponding part of that wedge, thus fracturing the ecological continuity at large. At present, the common response to these types of situations was often, as one participant phrased it, “guided by a sacrifice or save mindset” in which the green space in conflict either became formally protected as a nature reserve or was “given up for development”.

In relation to these discussions, the framework offered by resilience was acknowledged as being potentially valuable in providing explanatory models that highlight the interconnectedness and interdependency of scales in the urban landscape. One participating urban designer called for less linear methods within planning. This, it was argued, would allow practitioners to juggle various scales more seamlessly:

I think there is an advantage with this new type of approach and how one thinks about these areas – this planning tool or model that can handle multiple scales simultaneously . . . not just going from the large scale to the local scale but that the vision can embody . . . a more non-hierarchical concept, (Urban designer)

On the same note, one city-wide senior planning officer also called for less linear methods within planning in which tentative designs and scenarios could function as an “important underlay, a sort of collection of examples and a palette of approaches in guiding urban planning.”

Another regional planner participating in the workshops highlighted the potential of utilising collaborative and design-based processes, such as the one that forms the basis for this paper, to build up what was described as a “library of examples of how to handle typical and recurring situations in the green wedges”, a move which could facilitate and encourage increased cooperation across administrative borders.

Planning for change

The third topic centred on the notion of change and adaptive capacity as inscribed in resilience science. Here, several participants agreed that strategic dimensions were generally lacking when making ecological decisions, admitting that, “In the built up areas, future requirements form a key planning issue. However, when it comes to green space preservation, the existing is in focus.” They also raised the need to change this passive approach to a more creative one, where the green space planning process is not only about calibration of different interests but also about experimentation and the addition of new values. However, there were diverging views among planners and ecologists regarding the role of planning professionals in relation to enhancing strategies for legibility and identity. Many saw identity as something dynamic that emerges by itself over time and where “values cannot be created directly
through design and planning.” One participant highlighted the constant normative process:

There is a type of succession and evolution in the way that people start using the green space, through which a real story that is tested on reality emerges. You need to create margins for adaptation in development when you plan. (Ecologist).

In contrast to the above position, several planners and urban designers instead expressed how they often worked actively to build community support and identity in relation to large-scale urban green structures. This group of participants argued that urban design practice needed to move away from the strong focus on an “end product” and “aesthetic whole” and instead recognise more generative and adaptive processes. Along the same lines, the same individuals also emphasised the need to puncture the image of planning and urban design as practices that arbitrarily select a desirable ecological state, which they then seek to maintain. Instead, it was suggested that practitioners develop planning strategies that may include the qualities of change, dynamism, and the possibilities of adaptation within natural systems – characteristics that are highlighted within resilience thinking.

Another related discussion that emerged among workshop participants concerned the amount of control required for and by planning. Due to the large size of the Järva green area, several participants highlighted that strategies for legibility would need to operate in ways that differed greatly from those applied through the design and management of more traditional parks and urban green spaces:

When dealing with the Järva green space, the goal can never be to gain complete control. And in this context, – how does one work [as a planner] when one doesn’t have control? How is this new approach transferred into urban planning? (Urban designer)

Further discussions — resilience “to what” and “of what”

One recurring comment from participants was that a larger “palette of options” of socio-ecological alternatives and overlays does not automatically give guidance in relation to the choices and combinations that would be most resilient. If an area would transform from one state to another, favouring a different set of habitats, both states may be resilient, but neither state would per se be more correct. As one participant put it:

It is unspoken and implicit in this literature that resilience is better than non-resilience – there is something advantageous with that which is resilient. . . . Several [ecological] states – just because they are stable and have a possibility to survive – are not in any way desirable. The whole idea of what is desirable is a completely human invention. (Resilience scholar).
One suggestion for guidance was to utilise the concept of “ecosystem services” (Daily et al., 1997; Millennium Ecosystem Assessment, 2005). Urban green areas could be identified as taking on a role within cities as providers of services such as noise reduction, environments for recreation and education, local run-off water management, absorption of pollutants and provision of biodiversity (e.g. Chiesura, 2004; Tratalos et al., 2007; Tzoulas et al., 2007). Resilience can then be discussed in terms of the underlying capacity of an ecosystem to maintain the flow of desired ecosystem services in the face of a fluctuating environment and human use (Carpenter, Walker, Anderies & Abel, 2001; Folke et al., 2002). Another approach that was brought forward was to define certain “limits” and “thresholds” that could guide planning. This approach has, for instance, been related to urban environments by Pickett et al., who advocate the definition of “changes that exceed the evolutionary, physiological, or migratory capacities of crucial components of ecosystems” (Pickett et al., 2004, p. 380). However, such ecological “services” and “crucial components” still need to be outlined in relation to the specific local context, and thus highlighting – as noted by Carpenter, Walker, Anderies, and Abel (2001) – that any operational interpretation of resilience requires that resilience be specified in relation “to what” and “of what” as a first step. This placed focus upon a very real problem that is often brought forward by critics of the notion of resilience (e.g. Brand & Jax, 2007; Hornborg, 2009): how can we deal with the open-endedness that is built into the concept? Juxtaposing the ecological with the social inevitably involves normative judgements and the recognition of subjective, ethical, and ultimately political aspects, something that has perhaps not been emphasised enough in present resilience science. In a worst-case scenario, as one participant highlighted, the concept could be misused as an “alibi” for irresponsible development, through which the use of the term “resilience” simply implies that urban nature must be plastic or robust enough to withstand nearly any type of change. These are key aspects that need to be taken into consideration when operationalising resilience within planning practice.

CONCLUSIONS

Within urban planning there will always be tensions between past and present, between protection and accessibility, and between categorisations of “green space” and “built-up areas” (Pollak, 2007). These balancing acts become particularly evident in suburban and urbanising settings, and are often characterised by conflicts and polarisation. However, as this study indicates, there might be more constructive ways of handling such tensions that do not lead to deadlocks and further dichotomies, but might instead demonstrate trajectories towards more integrated approaches to green space issues and urban planning practice in general.

In this study we have specifically explored how the introduction
of the concept of “resilience” may prove helpful in both shifting perspectives in relation to green space and ecology, and challenging nature/culture-oriented conflicts within planning. Rather than being used to measure how resilient something actually is, or to formulate policy documents or reductionist check lists, we see a great potential in letting resilience frameworks guide discursive, collaborative processes that involve a broad range of expertise, and that preferably occur in early and strategic planning stages. Based on the tentative designs and discussions that emerged during the workshops, we here finally summarise three aspects in which a resilience-guided approach may serve planners and urban designers.

First, we suggest that by offering more complex and dynamic conceptualisations of urban nature processes, resilience thinking increases the possibilities of finding synergies within planning. Naturally, complexity and uncertainty are not aspects to strive for in a typical planning situation and could in fact, as Wilkinson and colleagues have highlighted, be depicted as a double-edged sword: on the one hand offering a more “realistic conceptualisation of urban processes”, but on the other hand further weakening what is described as the “already fragile illusion of certainty upon which decisionmakers rely” (Wilkinson et al., 2010, p. 32). Despite this critique, through the lens afforded by this study, we suggest that the systematic explanatory models offered by a resilience framework can help guide planners in finding points of convergence between different interests. A more multifaceted image of the landscape – as well as the possible future trajectories inscribed in it – is essential in identifying win–win situations. Such a view is, we argue, made possible through explanatory models that embrace future-oriented perspectives on urban nature and offer integrated approaches to scale dynamics and socio-ecological interactions. One direct implication for planning therefore lies in the recasting of planning methods so that more detailed and scenario-based ecological information can be accommodated in earlier and more strategic phases of the process.

Second, resilience thinking acknowledges change as an inherent part of natural systems, and thus paves the way for more active and creative (and seemingly welcome) approaches to issues of urban green space conservation. Viewing landscapes as impermanent and dynamic is both liberating and challenging for designers, planners, and managers who in the words of Lister “have been trained to ‘choose’ a future and design for it, with an implicit expectation of permanence” (Lister, 2007, p. 41). Nature protection is thus not necessarily best achieved through the setting aside of “frozen time” (e.g. Bengtsson et al., 2003). In this context, an aspect worth considering is how resilience thinking offers a slightly different perspective in comparison to the concept of sustainability when operationalised within planning. Where the latter talks about a balance between the three legs of economic, social and ecological sustainability, resilience theory is instead illustrated through a pyramid-shaped diagram, in which the ecosystems providing goods and services make out the foundation and precondition for
socio-cultural aspects that in turn form the foundation for a functioning economy (Berkes, Colding, & Folke, 2003; Berkes & Folke, 1998). Nature is thus not placed in a separate compartment that is weighed equally against other interests, but is rather seen as a prerequisite and a base for society. This distinction is an important normative difference when nature conservation issues and development targets are discussed.

Third, in operationalising resilience thinking within planning, we wish to emphasise the merits of using the concept of “legibility” (Czerniak, 2007) in clarifying common goals and thus helping to build a constituency willing to sustain large-scale green structures over time. This implies recognising the importance of stakeholders involved in green structures. Planners, urban designers, ecologists, landowners, and financiers, as well as users of the green spaces and the politicians that represent them, all need to share a consistent, or at least a not totally contradictory understanding of how large-scale urban green structure concepts are to be interpreted and implemented in practice. Otherwise, such concepts risk becoming empty and unable to resist the political shifts and constant development pressures that characterise the urban landscape (Amati & Taylor, 2010; Kühn, 2003). As such, and as underscored by Czerniak, enhancing a strong design logic and legibility that can “sustain a dialog with multiple contexts, accommodating and growing from the pressures put upon it” (Czerniak, 2007, p. 230) can be seen as a prerequisite for the long-term continuity, flexibility, and adaptability that characterises resilience. A cross-fertilisation and integration of the thinking behind legibility and resilience could potentially remedy the perceived lack of directionality offered by the resilience framework. We argue that this direction should be identified and decided on through public, transdisciplinary, and trans-sectoral processes, which can, as we have shown, be facilitated by scenarios and tentative designs that can embody the idea of resilience.
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3. The initial dialogue between authors of this paper became formalised through a commission by the Regional Planning Office of Stockholm (RTK), the major authority for large-scale urban planning in Stockholm where they asked for an extensive inquiry into the future role of the regional green structure in the growing Stockholm region (as part of the work for the forthcoming regional plan, see Erixon et al., 2008; Regional Planning Office Stockholm County, 2010). Formally responsible for the commission were Hanna Erixon and Alexander Stähle. Please note that the Office of Regional Planning and Urban Transportation (RTK) has changed its name to Regional Growth, Environment and Planning (TMF) since the time of the study.

4. The material included (1) a revised section of the commission report for RTK (please see previous note) describing the scientific framing and excerpts of the design models. Note that this material had been prepared by the authors together with fellow scholars Henrik Ernström and Andreas Zetterberg (2) an agenda of discussion points based on the core aspects of resilience thinking set in the context of the case study area. Each workshop was opened with a detailed presentation of the material and the most recent version of tentative designs.

5. The designs were partly based on previous studies by Erixon (2005).

6. The areas surrounding the Järva green space demonstrate significant socio-economic variations. In Rinkeby and Tensta the unemployment is more than three times higher than in the adjacent areas of Spånga and Kista and the numbers of individuals in need of financial support are four times higher. The proportions of first and second generation immigrants also vary noticeably between the areas. For example, in Kista, north of Järva green space, 60% of the population are foreign-born. In Rinkeby, south of the green space, the same group represents 89%. Still farther south, in the adjacent detached housing area Flysta in Spånga, fewer than 20% of inhabitants are foreign-born or have foreign-born parents. All figures are from Stockholms Stads Utdräntnings-och Statistikkontor (USK).

NOTES

1. The use of the term transdisciplinary is in accordance with the definition given by Tress, Tress and Fry (2005).

2. Workshop participants included (1) leading ecological researchers specialising in socio-ecological systems, network analysis and resilience research from the following institutions: the Department of Systems Ecology and Stockholm Resilience Centre at Stockholm University, the Department of Land and Water Resources Engineering at KTH and Beijer Institute at the Royal Swedish Academy of sciences, (2) scholars within environmental history, planning and urban design from the Department of History of Science and Technology and the Department of Architecture and Critical Theory of Design at KTH (several of these participants also have practice-based expertise within the field), (3) practitioners from the Swedish Museum of Natural History in Stockholm (an ecologist) and from the landscape/urban design firm COMBINE in Stockholm (an urban designer) – both with specific experience of working in the Järva area, (4) key planning officers, including the head of Regional Green Structure Planning in Stockholm, a planning officer responsible for developing scenario techniques within regional planning and consultants responsible for developing the green wedge concept at Office of Regional Planning and Urban Transportation (RTK). The head of strategic planning in the City of Stockholm (SBK) responsible for Stockholm Comprehensive Plan (Vision 2030), the head ecologist within strategic planning in Stockholm municipality, and planning officers involved in comprehensive planning.

3. The initial dialogue between authors of this paper became formalised through a commission by the Regional Planning Office of Stockholm (RTK), the major authority for large-scale urban planning in Stockholm where they asked for an extensive inquiry into the future role of the regional green structure in the growing Stockholm region (as part of the work for the forthcoming regional plan, see Erixon et al., 2008; Regional Planning Office Stockholm County, 2010). Formally responsible for the commission were Hanna Erixon and Alexander Stähle. Please note that the Office of Regional Planning and Urban Transportation (RTK) has changed its name to Regional Growth, Environment and Planning (TMF) since the time of the study.

REFERENCES


OF PLANTS, HIGH LINES AND HORSES: CIVIC GROUPS AND DESIGNERS IN THE RELATIONAL ARTICULATION OF VALUES OF URBAN NATURES

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ABSTRACT

This paper addresses three interventions into urban green spaces—a wetland in Cape Town, a post-industrial site in New York, and a park outside London. Through their different contexts, they help to grasp a wider phenomenon: the protection of urban nature through the development of protective narratives. We analyze these interventions as examples of “value articulation”, which we view as a relational and sociomaterial practice that requires the enrolment of people, plants, and things that together perform, spread, and deploy stories about why given places need protection. For each case study, we also highlight the moments when narrative practices move beyond mere protection and start to change the very context in which they were developed. We refer to these as projective narratives, emphasizing how novel values and uses are projected onto these spaces, opening them up for reworking. Our analyses of these successful attempts to protect land demonstrate how values emerge as part of inclusive, yet specific, narratives that mobilize and broaden support and constituencies. By constructing spatial linkages, such narratives embed places in wider geographical ‘wholes’ and we observe how the physical landscape itself becomes an active narrative element. In contrast to rationalist and external frameworks for analyzing values in relation to urban natures (e.g., ecosystem services), our ‘bottom-up’ mode situates urban nature in specific contexts, helping us to profoundly rethink planning and practice in order to (i) challenge expert categories and city/nature dichotomies; (ii) provide vernacular ways of knowing/understanding; and (iii) rethink the role of urban designers.

Keywords: Protective narratives; Value articulation; Expertise and design professions; Ecosystem services; Urban nature conservation; Cape Town, New York, London; High Line

HIGHLIGHTS

• Civic groups articulate values in urban nature via sociomaterial narrative practices.
• Vernacular narratives help challenge expert categories and city/nature dichotomies.
• Designers can ‘co-author’ new configurations of urban nature with civic groups.
• Inclusive yet specific narratives make linkages to articulate holistic values.
• Narrative value articulations are open, creative, and never neutral—but political.
I. INTRODUCTION

Urban green space planning and nature conservation has in Western societies been dominated by expert-driven approaches and prescriptive policy (Lachmund, 2013). With a strong modernist legacy, urban planning has been organized in dichotomist terms such as city versus nature, urban versus rural, and built versus unbuilt (Jørgensen, 2005 and Tjallingii, 2005). However, given current rates of urbanization and unprecedented ecological crises, a body of work is developing across several disciplines that emphasizes the interconnectedness of the social and the natural, including cultural geography (e.g., Hinchliffe & Whatmore, 2006); environmental history (e.g., Cronon, 1991); urban political ecology (e.g., Heynen, Kaika, & Swyngedouw, 2006); natural resource management and urban ecology (e.g., Niemelä et al., 2011 and Pickett et al., 2008); and planning and urban design (e.g., Mostafavi and Doherty, 2010, Reed and Lister, 2014 and Walheim, 2006). Even across such different ideological departure points as systems ecology and critical geography there is a general agreement that urban nature is part-cultural and part-biophysical; the former field emphasizing cities as ecosystems or “social-ecological systems” (e.g. Barthel et al., 2013 and Elmqvist et al., 2004; Erixon, Borgström, & Andersson, 2013; Pickett et al., 2008); the latter speaking of “socionatures” and “cyborgs” to emphasize the impurity of nature produced by capitalist accumulation processes (Gandy, 2005 and Swyngedouw, 1996; both drawing on Haraway, 1991).

One important strand within these integrative approaches addresses the central role of how community and civil society groups reshape, protect and sustain urban nature (e.g., Ernstson, Barthel, Andersson, & Borgström, 2010; Karvonen and Yocom, 2011, Lister, 2000, Spirn, 1984 and Svendsen, 2013). These groups and the spaces they engage become key arenas for contesting dichotomist views about urban nature and they provide case studies for understanding how collaborative relations between civic groups, design professionals and government authorities concretely rework urban nature in its material and symbolic manifestations. In this aspect, community groups are seen as alternatives to conventional, top-down forms of urban green space production and management. In particular, it is argued that local residents can bring their extensive social, ecological, and cultural knowledge of particular places to the planning process and create a constituency to manage and sustain local urban environments in the long term (Ernstson and Sörlin, 2009, Ernstson et al., 2010 and Grillner, 2013). Several authors have indeed argued that one of the most durable ways to sustain specific urban environments – from large urban green structures to intimate neighborhood parks – is to ensure that they are cared for and used by surrounding residents (Adams, 1996, Erixon et al., 2013 and Kühn, 2003). More theoretically, Karvonen and Yocom (2011, p. 1306) have linked studies of community groups and urban nature to explore
what Gandy (2006, p. 72) has called a “new kind of environmental politics” based on a relational ontology that makes relations between people and nature explicit and tangible. The situated and specific ways by which community groups rework urban nature and fuse popular and vernacular narratives with landscapes, can be explored for how they undermine dichotomist and top-down ideas of “managing nature” as a stable entity neatly separated from culture. Case studies of community activism or “civic environmentalism” (as used by Karvonen & Yocom (2011), with reference to John, 2004) can help to understand what this muddling of binaries might mean in practice. In parallel, design disciplines have addressed the role of designers as co-authors where “the architect becomes not the agent of change, but one among many agents” (Schneider & Till, 2009, p. 97, emphasis in original). This plays into the idea of civic environmentalism where designers can participate as co-authors to envision and create new uses of urban space without giving up their expert skills of projecting possible futures.

In this paper we contribute a cross-cultural comparative analysis of how citizen groups have, with differing degrees of cooperation with professional designers, successfully campaigned for nature protection in the city, and how they have thereby blurred conventional distinctions between city and nature. Conceptually, we advance the notion of “value articulation” to refer to the sociomaterial practices through which hitherto neglected spaces become imbued with new meaning and value. We draw upon three case studies (in Cape Town, New York, and Essex/London) to examine how such value articulation proceeds through the creation of politically performative narratives that align artifacts, actors, and social arenas, and that thereby create “spatial linkages” between contested sites and their wider geographical context. In line with Karvonen and Yocom’s (2011) search for a new kind of politics enacted through “socionatural assemblages”, we view such practices as necessarily cultural since they redefine meaning and symbolic content of urban nature, but also material, as the narratives draw upon biophysical entities and their relationships, including vegetation, animals, wetlands and other non-humans. As a novel contribution, we discuss how such protective narratives move beyond mere protection and start changing the very context in which they are developed. We refer to these as projective narratives to emphasize how novel values and uses are projected onto these spaces, opening them for re-signification and material reworking.

In our discussion about design professionals, we explore their varying degrees of involvement across the studies. In the first case, “Dressing the Princess,” we analyze a grassroots rehabilitation project in a historically marginalized area of Cape Town where design professionals had little involvement. The second case, “The High Line” in New York, was a product of a civic and governmental partnership in which design and avant-garde design professionals played a key role. The last case “A Horse’s Tale,” in Tilbury, Essex, just east of London, demonstrates how design professionals employed similar methods used by citizen groups in the two previous case studies in order to collaborate closely with
local residents to transform a green space considered “worthless” into something worth protecting and re-working. Our aim is not primarily to analyze the case studies in terms of power, class or exclusion, nor if they are “good” or “bad” in relation to urban sustainability. While we recognize these dimensions, and develop them to some extent, our focus is to understand the articulation of value of urban nature as a sociomaterial practice.

To this end we will first outline our theoretical framework of value articulation as sociomaterial practice and then describe our fieldwork methods. Based on an analysis of each case study’s protective narrative, our discussion develops comparative themes: how each narrative undermines dichotomies in planning and provides alternative ways to think about urban nature; the shift between protective and projective narratives; and the role of design professionals.

1.1. Theoretical framework: value articulation as sociomaterial practice

That a part of nature (or culture) is preserved demonstrates only that it has acquired significant value in a particular society at a particular time (Ernstson and Sörlin, 2009 and Sörlin, 1998). Value is thus socially conditioned and here we elaborate a theoretical framework of “value articulation” that has been developed by Ernstson and Sörlin in urban contexts (Ernstson and Sörlin, 2009 and Ernstson and Sörlin, 2013). The framework is based on a longer tradition of studying nature protection in Western societies (Sörlin, 1998 and Urry, 1995) and emphasizes that the mere idea of separating particular aspects of nature—to even talk about a “part of nature” and judge it as valuable—requires sociomaterial practices, which in turn are influenced by class, race, gender and historical and ideological factors (Pyne, 1998 and Sörlin, 1998). Value articulation processes are thus active, creative, selective, and ultimately political.

In Ernstson and Sörlin’s (2009) study of how a large park in Stockholm became protected in the early 1990s, we learn how people mobilized to fight back against motorway and housing projects. This included “picking up” and re-using artifacts and bringing them into different social arenas such as exhibitions, public meetings and media outlets. Across social arenas, an increasingly coherent narrative emerged of a landscape under threat and in need of protection. For instance, a landscape architect’s map from the 1700s, and a GIS-based spatial analysis of species distribution from the 1990s, was linked to articulate how cultural/royal heritage and biodiversity values reinforced one another. Their analysis shows how different constituencies and legal frameworks of protection were mobilized, but also how physical landscapes and non-humans were involved in shaping values and collective action; here, the movement of birds influenced how “spatial linkages” could be articulated to weave together a wider park system to articulate holistic values (Ernstson & Sörlin, 2009). Importantly, this
framework pays attention to how professionals such as artists, scientists, designers and journalists knowingly or unknowingly provide artifacts that can be used selectively by others. Artifacts function as mediators which, being material and movable, can connect social arenas and help bring constituencies together.

Value must here be seen as performative and as emerging from narrative. Mattingly (1998; drawing on Ricoeur, 1984) views narrative as a fundamental human activity that connects motives, acts, and consequences to build causal chains to explain what is of value in political and moral terms. On a fundamental level, storytelling is a tool to bring forth memories and experiences in order “to understand and critique [social and political] contexts” (Alsaker & Josephsson, 2011, p. 55). Values thus need a symbolic context in order to make sense; they are not atomistic, nor derived from intrinsic or essentialist properties but emerge from acts of storytelling where things, events and places are placed in relation to each other (see e.g. Cameron, 2012, Ernstson, 2013b and Hajer, 1995).

There is a wide use of narrative for analysis in environmental studies. They all emphasize its collective form, or “[t]he capacity for stories to trace relations between people, places, and things, as part of a situated practice of transformative change” (Cameron 2012, p. 575). The notion of “story-line” has been used in (rural) nature conservation research (Pyne, 1998, Sörlin, 1998 and Urry, 1995), and more recently in urban contexts. Van Herzele (2006) applied “story-line” (from Hajer, 1995) to urban forest activism in Flanders and showed how “appealing” narratives were used to mobilize policy action. Ernstson and Sörlin (2009) developed their “protective narrative” framework in Stockholm (see above); and Svendsen, 2010 and Svendsen, 2013 examined how US civic groups used discursive techniques and “nature narratives” for political mobilization and alliance-building (see Cameron, 2012 for a wider review).

Our article expands three areas of narrative analysis in urban nature studies. First, we follow Karvonen and Yocom (2011) and Svendsen (2013) to better understand the ways in which urban design, mediated through both non-professionals and professionals, becomes part of narrative practices. Second, we emphasize the shift from protective to projective narrative, when the imagined or ‘what if’ changes what could be done at particular sites. Third, we emphasize the sociomaterial aspect of value articulation and narrative, i.e. how materials and materiality participate in collective action and social life, which follows Karvonen and Yocom (2011) and Ernstson, 2013a and Ernstson, 2013b, and more generally the “material turn” in the social sciences (e.g. Fenwick & Edwards, 2013; Hinchliffe & Whatmore, 2006). As we will illustrate, when landscape ‘objects’ are engaged, or when artifacts are “picked up”, their own materiality—not in any determinate form, but as participants—influences how people and things are brought together (Latour, 2005), what acts of storytelling can be done, and how people and authorities come to (re-)think the meaning of these landscapes (Law, 2009). Taken
together, we view value articulation as a relational and sociomaterial accomplishment that aligns human and non-human actors, including artifacts and social arenas, to assemble a narrative. This narrative in turn works to legitimize and make claims about what is of value, often in contestation to other values and uses (Ernstson, 2013a and Ernstson, 2013b; Fig. 1).

Fig. 1. Value articulation processes can be described as the alignment of actors, artifacts, and social arenas that together assemble a narrative that legitimizes and articulates certain values. Figure adapted from Ernstson (2013a).

2. METHODS

We have used a cross-disciplinary approach to analyze and interpret our findings (Hadorn et al., 2008). This reflects our different backgrounds: one an architect with an interest in sustainable urban planning and design and the other an urban political ecologist interested in critical enquiry. This has influenced the objectives of the study and the interpretation of empirical data. We have adopted a combination of critical and analytical perspectives, such as “how do processes of civic environmentalism transpire and gain power?”, with an interest in suggestive and solution-oriented approaches, such as “what implications might this have for planning and urban design practice?”.

The case studies were chosen for their ability to demonstrate value articulation processes, but also because they represented
interventions into urban nature as a “traveling urban process” that spans cultural contexts (McFarlane & Robinson, 2012). This follows a “comparative gesture” that Robinson (2011) has argued for in urban studies. Rather than controlling for specific variables, this means to compare “across sometimes quite different cities which participate in specific global processes” with the aim of providing “understanding and theoretical inspiration” (McFarlane & Robinson, 2012, p. 767).

For each case study, and following Ernstson (2013a), we analyzed the empirical material to create a record of how artifacts were used, including how they were placed and interpreted in relation to particular places; how social arenas were used or created and how this influenced value articulation; and which actors (individuals, organizations, institutions, and non-humans as in plants, water, horses etc.) took part in producing particular arguments or shaping more cohesive narratives. This meant analyzing plans, maps, design entries, newspaper articles, reports, webpages; and conduct open-ended, semi-structured interviews with people with central roles (Appendix A, Table A1). At least one of us made repeated visits to each locality between 2008 and 2012. One commonality between the case study sites—a wetland, a built structure and a park—was that all were under threat of demolition and change. It was this threat in each case that sparked the value articulation processes that we have analyzed. The sites also initially had a quality of “terrain vague” (cf. De Solà Morales, 2014), i.e. they were perceived by local media and public opinion as leftover spaces of uncontrolled occupation by humans and non-humans alike.

3. CASE STUDIES

3.1. ________________Dressing the Princess: the craft of weaving a protective story

In August 2008, the “Dressing the Princess” project was initiated at a wetland in southeast Cape Town, South Africa (Ernstson, 2013b). When plans emerged in 2009 to build a shopping center at the wetland, the Princess Vlei Forum was formed, which in 2014 managed to stop the shopping mall. This was partly achieved through a community-driven articulation of landscape design, or what they called the “People's Plan” (Fig. 2). Our analysis emphasizes how memories of oppression and spatial linkages were woven into a powerful narrative that mobilized across racial divisions and combined dignity and environmental values in post-apartheid South Africa.
Fig. 2. The “People’s Plan for Princess Vlei” was circulated in local media in a strategy to mobilize and raise awareness. Part of its background can be traced to a series of interviews that the second author of this article was asked to do with key activists involved in 2010. This lead to a background report of values and visions for the wetland as expressed by the activists (see Ernstson, 2012). The background report was reworked by the Princess Vlei Forum into the first version of the “People’s Plan” and included a hiking trail to the Elephants Eye Cave, the Sunset Concert Park, and a KhoiSan cultural heritage and environmental center, among other things. Noteworthy is that between 2005 and 2012, the project did not directly involve urban design professionals, other than graphic designers Hannah Williams and Mark Henning. They helped to clarify the message around the “People’s Plan” with the design of pamphlets and a website developing a graphic profile that was partly inspired by anti-apartheid struggle iconography. From 2013, architects and artists got directly involved in a bid to let the “People’s Plan” compete in the activities surrounding Cape Town as World Design Capital in 2014. © Hannah Williams and Mark Henning.

Cape Town’s historical geography played a role in this process of value articulation. Apartheid spatial planning, starting with the Group Areas Act of the 1950s that separated those classified as so called White, Coloured, African Black/Bantu, and Indian, not only influenced people, but also urban nature (see Western, 1996; note that when these racial categories are not capitalized in our text, we interpret them as social identities as used by interviewees, see note 1, Appendix A). For instance, Table Mountain became encircled during the 20th century by White privileged areas, whereas the inhospitable Cape Flats (an area of sand dunes, wetlands, flooding, and harsh winds) was from the 1950s a “dumping ground” where Coloured and African residents were forcefully relocated into poorly-serviced shanty towns and slums (Besteman, 2008). Following racist planning logic, wetlands, or vleis, were considered amenities that should be placed within White areas. However, since Princess Vlei was lying further out on Cape Flats it became the only wetland during apartheid that bordered a White and a Coloured area. Whereas furthermore most ocean beaches were classified as “Whites only”, Princess Vlei became a popular recreational space for working-class Coloureds where they would fish, swim and organize family
barbecues, so called braais. During the campaign to save Princess Vlei, these apartheid injustices were mobilized but a rallying call was also to articulate Princess Vlei as “[o]ne of the few public open spaces with the potential to bring our divided city together” (Princess Vlei Forum, 2014).

The mobilization to save Princess Vlei can be traced back to the creation of a nearby community park at Bottom Road in 2005 (Ernstson, 2013b). Here a local baker (Interview Person 1) mobilized his neighbors to not build security walls between their properties (a common practice among house owners in Cape Town), but instead work with nature conservators to create a community garden and rehabilitate fynbos, a highly diverse vegetation endemic to the Western Cape (Anderson, Avlonitis, & Ernstson, 2014). The community park that developed at Bottom Road eventually also included walkways, park benches, and places for braai, creating mixed-use space for people and conservation (Fig. 3).

Fig. 3. The photo shows Bottom Road Sanctuary where a local baker (Interview Person 1) started the initiative to build a community and conservation park in 2005. The photo was taken on 14 December 2007 when the fynbos vegetation had grown significantly and when walkways and simple structures for barbecues, had been built (Ernstson, 2013b; Photo: Henrik Ernstson).
For the “Dressing the Princess” project, Bottom Road served as a “blueprint” for design, but also as a social arena where politicians and journalists could be taken to see for themselves what could happen at the much larger Princess Vlei and how community and conservation interests could be combined. As the baker phrased it, “It’s better to show than tell.” (Interview Person 1). However, not everyone was convinced that the shopping mall at Princess Vlei was a bad idea. Over the years local media had created an image of Princess Vlei as a place for drugs and even murder. Local gangs had at times dumped dead bodies on the wetland’s shore. For some, the “securitization” and “development” promised by the developer seemed like a good choice. To mobilize support among locals, the “Dressing the Princess” project organized objection letter days and planting days (Fig. 4). An “adopt a plot” scheme brought in school classes from the surrounding working-class coloured and black neighborhoods so that kids caring for fynbos could also spread the message of the struggle to their parents. This broke with cultural ideas that only whites could care for nature (Van Sittert, 2002), and signaled an active idea of citizenship:

I will green the Cape Flats and restore it, and restore the dignity of my people. [...] I am of the Cape Flats. I am not of the green plush areas. And I’m saying: ‘Here is the Cape Flats, that’s in a state of, not disrepair [but] Cape Flats is in a state of repair. So we need to actively get involved, in terms of that, you know. Otherwise we lose everything (Interview Person 1).

As the struggle intensified (including legal help to investigate fraud charges against the municipality), better-resourced groups joined, including white-based environmental groups, a local ratepayer’s association lead by coloured anti-apartheid stalwarts, and old labor union activists. In 2012, the Princess Vlei Forum was formed, which launched the “Imagine Princess Vlei” campaign as a community-led planning process to develop the “People’s Plan” further.
A key artifact in these efforts was a legend of how European sailors had raped and killed, or in some versions “abducted”, an Indigenous “Khoi Princess” over 500 years ago. The legend places the Princess in the Elephant’s Eye Cave on Table Mountain, which gaping hole can be seen from the shores of Princess Vlei, and in one powerful version, her tears flowed down the mountain to fill up the wetland to give it its name. By circulating this legend, soon taken up in the press (e.g., Groenewald, 2009), the fynbos rehabilitation and the project received a layered meaning. To fight the shopping mall was to place oneself in a wider struggle against colonial abuse and violence. To plant fynbos was to clothe the Princess with her indigenous vegetation, which in extension meant to bring back her dignity and the dignity of her descendants, those of mixed descent from Indigenous KhoiSan, Europeans and African/Malaysian slaves and who, classified as Coloureds were forced out of the city from the 1950s. The legend was reified in the “People’s Plan” by envisioning a hiking trail that lead from the mountain to the wetland along a small stream with guided walks exploring the history of colonialism, apartheid, and ecological rehabilitation. The trail also connected Princess Vlei to a wider hydrological/ecological system, and socially with environmental groups upstream.

Circulating the legend also brought support from the emergent KhoiSan indigenous movement. When the “People’s Plan for Princess Vlei” was launched on Youth Day in 2012 it was opened with a KhoiSan leader burning incense and performing a ceremony in the KhoiKhoi language. Soon after, rappers Emile YX? (sic.) and Mixed Mense used the legend to record a song. Rapping their rhymes, they melded colonial and apartheid abuses with those of today: “They again intend to ‘mall’ and rape us. From our legacy and common ancestry. Here they plan to concrete away our memory.” This placed the wetland within a more antagonistic context of apartheid and colonialism (Ernstson, 2014). However, the “People’s Plan” intended to be more reconciliatory and to fit within the wider “rainbow nation” paradigm to “bridge old divides”. It included a hiking trail to the Elephants Eye Cave, a Sunset Concert Park, and a Khoi heritage and environmental center (Fig. 2). The narrative emerging from these multiple activities over the course of only 4–5 years interwove cultural, environmental and historical threads. In particular, memories of oppression from colonial and apartheid years were interlaced with contemporary notions of caring for nature (Ernstson, 2013b). This made the emergent narrative to resonate with powerful constituencies, both green (and often white-based) environmentalists, and previously marginalized communities.
Even anti-apartheid hero Desmond Tutu, a champion of reconciliation, came to the vlei to show his support. In late 2014 the shopping mall plan was dropped. The Forum has continued its community-driven planning process and volunteer design professionals have become more directly involved for the first time, partly in relation to Cape Town becoming the World Design Capital in 2014.

3.2. The High Line: from “eyesore” to “model public space”

Built on a section of a disused elevated railway in Manhattan, the High Line Park in New York, our second case study, can be viewed as shaped by civic and governmental partnerships, but also by elite networks. The last train ran on the structure in the 1980s, and the disused railway had become a self-sown landscape in which seeds, “dropped by trains, birds, and breezes grew in the gravel ballast” (Friends of the High Line, 2008, p. 26). Since opening in 2009 the park, inspired by the Promenade Plantée in Paris, has become one of the most visited tourist sites in New York and is touted as a “model public space” for other cities to emulate (Taylor, 2010). However, the desire to preserve the overgrown post-industrial structure was not always apparent. A community meeting in 2000 recorded starkly differing opinions. Some saw an “eyesore” that made its neighbors feel “like we’re standing behind a prison bar” (Lobbia, 2000) and some recalled the homes that were torn down when the High Line was built for rail traffic in the 1930s. Others saw a “one-of-a-kind monument” that was “full of botanical treasures” (Lobbia, 2000). How was public opinion turned from considering the structure to be an “eyesore” and hence in need of demolition, to viewing it as a “model public space” worthy of protection in such a short time?

In this case, as with the previous case study, the value articulation processes started with a few engaged individuals. Two residents in particular worked to protect the structure: freelance writer Joshua David and artist/entrepreneur Robert Hammond. They eventually founded the non-profit organization “Friends of the High Line” (FHL), and their story has become almost mythical. Starting at a community meeting in 1999, they describe an organic process (Interview Person 5). At first there was no other vision than to save the structure. Their emphasis was to keep it open to different opportunities, to spread awareness and gather support from the community (Interview Person 5.). Traversing the upper surface of the High Line was prohibited, but with permission from the rail road company, FHL invited government officials and others onto the structure to make visible this illicit, self-seeded world (David & Hammond, 2011).

Two early artifacts became important in creating social arenas and in bringing support from various constituencies. The first key artifact was a series of photographs that told the story of the High Line. FHL commissioned a professional photographer, Joel Sternfeld, to photograph the abandoned structure over the course of a year (Fig.
5). The series of photographs created a sense of wonderment at a new kind of wilderness right in the middle of the city. The photographs “help[ed] people imagine and visualize the potential of the structure as a prospective landscape and park in the sky. People had never seen it in that way.” (Interview Person 7). The photos were “picked up” and reprinted on websites and in the Media, spreading the story of how the forgotten structure could manifest a new kind of beauty. In 2001 the images were exhibited at the Pace Wildenstein Gallery and reproduced in a book (Sternfeld, 2001), and FHL handed out copies of the photographs to followers and funders. The photographs were also reviewed by prestigious journalists and art critics, which boosted the project’s status in design and art circles. While evaluating Sternfeld’s artistry, these reviews also contained interwoven arguments for the structure’s preservation. The New York Times’ art critic Smith (2001) wrote:

Joel Sternfeld’s photographs of the rusty, overgrown elevated railroad known as the High Line (...) are a good argument for preserving this iron-girder structure, but also for leaving it as untouched as possible. Turning it into a safe, accessible public park would be great, and more than enough in the way of use-conversion.

This reimagining contains direct parallels to how the legend of the Khoi princess in Cape Town opened up a new and surprising layer of the place’s story and a means to understand the depth of a place that many had simply driven by in the past.

Fig. 5. The photo is taken by Joel Sternfeld and entitled “Looking South on an
Afternoon in June 2000.” © Joel Sternfeld; Courtesy of the artist and Luhring Augustine, New York.

The second key artifact was the economic feasibility study that FHL commissioned in 2002. The study found that to save the High Line as a park would raise more finances for the city via increased taxes and property values than the release of the land for development would, which was contrary to what critics had said. The city owned the structure of the High Line, but the ground below was made up of a patchwork of plots and private owners, who would need to be convinced of the benefits of keeping the structure as a park instead of tearing it down. The city’s strong support of FHL’s agenda was predicated on this economic feasibility study (Interview Person 6) and it built support among bureaucrats and landowners. It was one of the most important artifacts to create momentum for preserving the structure. In 2003, FHL organized an open design competition, further generating artifacts and social arenas for value articulation. Using its extended networks in the design and art circles of New York, the FHL competition received over 720 proposals from 36 countries (David & Hammond, 2011). The proposals were exhibited at Grand Central Station and were imaginative and visionary rather than realistic; one suggested turning the linear structure into a mile-long swimming pool; another proposed leaving it untouched but with a rollercoaster suspended over it. In contrast to Cape Town, design was used here much more actively as a “discursive tactic” (Svendsen, 2013) to generate buzz and imagination about what could happen to the structure. In addition, FHL worked closely with museums and art curators:

They [FHL] just have a whole, I don’t want to say PR in a bad way, just a whole staff of people that are creating materials and presentations and just going out and tapping the right people. They take this stuff really seriously and its very high quality, and it is also expensive but they feel like it is worth it. (Interview Person 8 from the New York City Department of Parks and Recreation).

In her analysis, Svendsen (2010, p. 91) calls this quite rightfully a “sophisticated marketing campaign,” which was driven by urban design. However, it is important to note that FHL also used the designer as a profession with agency. Designers used their expertise, their stamp of approval to guarantee quality, to lend weight and legitimacy to the project. Building on this momentum, in 2004 FHL co-organized a final design competition with the City of New York. A team led by James Corner Field Operations, in collaboration with Diller Scofidio + Renfro and Piet Oudolf, were selected from a number of avant-garde “star” designers to win the design for the first section of the park. Their design balanced the essence of the abandoned structure with the demands of a publically accessible park.

In our interview, the lead designer of the project at Field Operations clarified that to have a civic group as their client was both challenging and rewarding. Importantly, FHL built a constituency around the High Line through gathering a community of activists; whether it
was those mobilizing for the very specific aesthetic idea of “preservation and turning unused into something useful,” or environmentalists seeing the “ecological benefits at large of the city,” or those sensing a revival of how “community activism [was] able to say something in New York” (Interview Person 7). FHL brought a set of sub-narratives into the design process that articulated different types of values, all with their own subtleties. With this input, the winning design proposal aimed to respect the innate character of the High Line itself, but also bring new life, sociability, and vitality to the structure. The mantra throughout the design process was “keep it simple, keep it wild, keep it slow, and keep it quiet,” aspects that resonated with existing “terrain vague” characteristics (Kamvasinou, 2006). However, in an ironic twist, “saving” the wild required that all vegetation and soil be scraped off the structure when constructing the park. Although seeds from some of the self-sown plants were collected, stored and later replanted in the park, this heightens how urban nature is always “mongrel”, part-cultural and part-biophysical with no easy delimitations to be found in-between.

3.3. A horse's tale: building a constituency through projecting stories

Our third example is a project by the London-based art and architecture practice muf (written in lower case). This case is interesting since it demonstrates how professional designers, in collaboration with local residents, have worked with similar narrative methods as those observed in our previous two case studies. Through a collaborative practice a marginalized group and its local culture was made visible and celebrated to articulate values of urban nature.

The area, situated in a rundown part of Tilbury, east of London, was a void green space between a series of buildings that form part of the Broadway Estate; a temporary housing development built in the 1980s that is still in use some thirty years later. In contrast to the two previous case studies, there were initially few citizens who articulated the value of the open space. The area had been blighted by vandalism and local council was searching for ways to turn the down-spiraling trajectory of the area around. The first in-house solution from the council was simply to fence off the space between the buildings. The Tenant Participation Manager from the council, however, felt that this would not solve anything: “They will just knock it down. What we need to do is be more innovative in how we solve the issue.” (Interview Person 10).

Subsequently, a multi-agency partnership led by the council in interaction with local tenants and the police was formed and a design tendering process was initiated. Local residents were on the committee board and in 2003 muf architecture was appointed to make a proposal for the site. Tenant representatives choose them for their enthusiastic and different way of working (Interview Person 10). In one of her first visits to the site, a muf co-founder recalled:

One of the first things we did was to notice that the green [space] was used for huge
amounts of antisocial behavior; there were black patches on the ground were young men and women had stolen cars and burnt them out. It was covered in glass, and there was a little children’s playground with a really broken fence around it [...]. Then we noticed that in the playground there were horse droppings, and we thought – that’s a bit odd. We [also] noticed that there were quite a few children around who were riding ponies or leading ponies through the estate (Interview Person 9).

Through conversations with residents, muf learnt that many residents belonged to the rich and varied community of Travellers in the UK (on usage, see note 2 in the Appendix A). The Estate had been a temporary place to overwinter but with time people had settled more permanently. They had retained their Traveller heritage, particularly the tradition of keeping horses, which were kept at the edges of roads and in other areas not designed for housing animals. As a legitimate part of local culture, muf’s designers saw the potential for horse-related activity to become an integrated part of the park. An early community event, a gymkhana, was organized by muf, a sort of “fun-day” built around the theme of horses. Over thirty children turned up on their ponies. During the day it became clear that horses represented a particular spatial use of the area, and they formed a positive part of young people’s life at the Estate, nurturing sharing and communal interaction.

The council’s attitude had, however, so far been to try to outlaw horse keeping on the Estate. Since the horses did not have a designated space, it was seen as misbehavior (Interview Person 9). The Tenant Participation Manager recalls: “Certainly the council, certain parts of the council, I had to work with to convince. It was very strange that the council should support a project of this sort” (Interview Person 10). In response, muf created an independent project that ran in parallel to their official commission. This project was called “Local Stories” and it was structured around the questions “What does history mean for you?” and “What are your roots?”. Through multiple activities a wider story was being woven into the site, based on the residents’ strong interest in horses. In one activity, children were asked to collect stories and physical artifacts from their neighborhood. These were then mapped spatially on an interactive map (Fig. 6). In other activities, they constructed artifacts such as horse costumes, effigies, animations, and choreographed performances, as well as taking photographs of themselves in the costumes (Fig. 7). These were posted on billboards at local bus shelters.

Instead of organizing traditional stakeholder meetings, muf, following a deeper thread of their practice, ran a variety of community events from where shared understandings could emerge:

They [muf] would actually be doing their consultation with people during activities. In your typical project you get focus groups, and you sit them all in a room and give them lots of paper work, and you know – people shut down. Whereas their [muf’s] methods were very interactive, and very creative, they pushed the boundaries.

(Interview Person 10)
In 2005 the park opened, now including a garden and dressage area for horse riding. For the Tenant Participation Manager, it was clear that the collaborative work by muf had convinced the council to include horses as a legitimate part of the park (Interview person 10). At the opening, the children marched in procession in their horse costumes from the public space of the Tilbury old fort, where it was legal to let horses graze (Long, 2005), to the peripheral Broadway Estate (Fig. 8).

Fig. 6. The image shows an interactive map used in the “A Horse’s Tale” project in Tilbury, southeast London, UK. It was published as an interactive map on the project’s website in which local artifacts and stories were posted according to a timeline that dates back to the 1850s. When you clicked on a horse’s head, you could read one of the stories and see the map evolve. © muf architecture/art.
Fig. 7. “What makes a place feel like it’s yours?” In Tilbury, the tradition of keeping horses became a narrative element that helped build a sense of ownership. As part of muf’s speculative and collaborative investigation into the local landscape, local children were involved in mask-making workshops and performances. By blending art, architecture and collaborative practices, muf worked to address, as Dodd (2011) means, “the subversive quality in local agency”. © muf architecture/art.

Fig. 8. The photo depicts a procession of schoolchildren that are dressed up as horses. They are making their way from the common land around the historic Tilbury, where horse keeping has been allowed, to the the green park at Broadway Estate, where horses had been deemed “anti-social behavior”. Through actions such as these, muf and community members connected the estate and its park to a larger area, both symbolically and literally. © muf architecture/art.
When *muf* returned to do a follow-up on the project some years later, several things had changed. The park was used more extensively, the car burning had stopped, and people from outside the neighborhood were using the park. However, a new type of conflict had emerged. People were asking things like: “Why is there no place in the park for those who like flowers and horticulture? Why is there nothing for elderly people to do? Why are people with horses advantaged?” (Interview Person 9). The green space, which initially had so few advocates that it was at risk of being demolished, had now become the subject of an increasing number of demands from residents to have their say about what was to be considered of value. In our interviews, *muf* describes these conflicts as constituting a kind of “proof” that the project had succeeded in its value-creation process (Interview Person 9). As former *muf* member Dodd argues in her PhD thesis, the final project could be seen as initiation of a new “constituency of space, one that had arguably altered its trajectory from the undesirable to the desirable” (Dodd, 2011, p. 52).

4. Discussion

We argue that the protection of urban nature can be viewed as a “traveling urban process,” – an innovative and multifaceted urban planning practice that spans cultural contexts (McFarlane and Robinson, 2012). We view it as part of any society and city, but manifested in different ways. It is a contested and power-laden process that works across government, private and civic groups, including design professionals, to articulate certain aspects of urban nature as valuable. Here in the discussion we will draw upon what McFarlane and Robinson (2012) have called “experiments in comparative urbanism”, which encourages the comparison of case studies from quite different settings. We will pull out crosscutting themes and contribute towards wider understanding by focusing on how narrative practices provide an alternative language to challenge society/nature and city/nature dichotomies; how protective narratives shift to projective narratives; and the role of urban design professions.

4.1. Collective narrative practices challenging nature/culture divides

When narrative is viewed as a sociomaterial practice, i.e. something beyond words or texts, then the physical landscape, and the physicality of things, can become active narrative elements. This is crucial to keep in mind when trying to understand just how important local culture and power relationships are in articulating certain values and building mobilization.
4.1.1. Non-humans as active elements

In Cape Town, the Princess legend, which our informants viewed as a “slave legend” (Interview Person 1, 3 and 4), acted as a metaphor to instill the notion that *fynbos* rehabilitation at the wetland was more than simply protecting biodiversity. In “dressing” her by planting *fynbos* – the Princess, the mismanaged wetland – came to resonate with wider struggles of marginalized communities, as we noted above, but it also turned their school kids into capable environmentalists and the campaign gained support and funding from environmentalist institutions and groups from more affluent areas. However, the very physicality of *fynbos*, or perhaps more correctly, their “bio-physicality” played a role in mobilization. For instance, the *fynbos* plants were planted in spaces where the city planned to locate the shopping mall. This planting required care and the testing out of what plants could grow in this particular soil. But the plants also came to function as extended or surrogate “activists”; they were mobilized or enrolled to mark out a space of community and resistance when human activists had to leave the vlei and return home. We can note this non-human agency in the other case studies as well. At the High Line in New York, the self-sown landscape on top of the structure became a narrative element in its own right, as a “terrain vague” that was performatively productive of values and imaginations (see also Millington, 2015).

In Tilbury, the physical landscape played a slightly less important role in constructing the narrative. Here instead, small ‘clues’, like noticing horse droppings at the site, became part of an alternative tactic for reconnecting people to the landscape by building a sense of ownership amongst a population that had historically been disenfranchised in relation to its surroundings. Growing plants, self-sown seeds, and horse droppings enter these narrative practices. They provide cues to human actors for how to spell out connections to other spaces, time-lines and life forms (Hinchliffe & Whatmore, 2006). They configure the symbolic content of the narratives in particular and real ways, earning Latour’s (2005) more general naming of humans and non-humans as “actants”; entities that weave material and symbolic context together (see Law, 2009 and Ernstson, 2013b on material semiotics). Non-humans are not simply mute biophysical ‘objects’ in these narratives, on to which humans can project meanings and ideas, but they actively participate in shaping how humans symbolically understand the world, asserting their own agency, however slight.

4.1.2. Narratives as inclusive, yet specific

Interpreting across the case studies, successful narratives are inclusive (open, broad and general) yet specific (with a distinct character and direction). In this way they can assemble a multitude of actors, agendas, and sub-narratives in order to bring together diverse constituencies and push projects forward. In the High Line process, narratives that were built
solely around single elements such as railroad history, or the botanical aspects of the site for example, would likely have excluded too many actors and interests to give the project momentum. The “terrain vague” narrative—captured by Sternfeld’s photos and later translated by Field Operations and partners into the four design principles of the park—was poignant, yet also broad enough (both conceptually and aesthetically) to accommodate multiple sub-narratives and give stakeholders a strong common voice.

This follows other theorists e.g. Hajer (1995, p. 56) who posited that a key function of a story-line is its ability to “suggest unity in the bewildering variety of separate discursive components”. Van Herzele, analyzing urban forestry movements, emphasized the need for “balance” between ‘commonality’ and ‘autonomy’ that allows followers to “maintain their differences as long as it is compatible with the common project” (2006, p.693). However, to this we would add a more generative and design-focused aspect of narrative – how narratives may be transformed into a comprehensible and coherent plot. Landscape theorist Czerniak has provided the useful term “legibility” to understand this dual capacity, describing the ability of a park or a green space to accommodate complexity and change yet concurrently be understood in relation to its intention, identity, image, or (in her words) marketing strategies (Czerniak, 2007, p. 215). She means that a legible design logic can “sustain a dialogue with multiple contexts, accommodating and growing from the pressures put upon it” (p. 230) which is especially important in the context of contested urban natures (see also Erixon et al., 2013).

4.1.3. Spatial linkages and wider connections

Successful or influential narratives seem to also contain explicit spatial dimensions, what Ernstson and Sörlin conceptualized as “spatial linkages” (2009). The slave legend in Cape Town spatially linked the Princess Vlei wetland on Cape Flats with Table Mountain. The tears of the Princess that flowed across old racial barriers such as railway lines and motorways (and also alluded to hydrological properties), worked as a metaphor to argue that Princess Vlei could bridge racial divides. It simultaneously allowed historically marginalized people of Cape Flats to lay claim to Table Mountain, a space of the elite with already well-protected nature areas. In a similar manner, muf expanded the scope of its commission by constructing strategic spatial linkages between the Broadway Estate and more established neighborhoods of Tilbury. Mapping artifacts and stories of horse keeping, and the procession of horse-costumes, connected the marginalized Broadway Estate to a well-known and prestigious public space where grazing of horses was allowed. Similarly, recognition that the High Line not only had value as a single object (a railroad structure), but also benefitted surrounding neighborhoods and the city at large (demonstrated by the economic feasibility study), cemented momentum for protection. It is important to note here that the High Line project, quite unsurprisingly when it turned
successful, contributed to accelerate gentrification that had already begun in the area, and pushed out poorer households and minority groups (Millington, 2015, Patrick, 2013 and Svendsen, 2013). However, regardless of socioeconomic outcomes, to understand why and how certain narratives become powerful (and not others), we see that in all cases, spatial linkages help to narrate the site as part of holistic or wider entities, which seems to have the effect of ‘borrowing’ protective value from adjacent areas deemed to have higher social status. Infringement on the site becomes a threat to the values of the wider area as a whole, demonstrating how spatial linkages are key in weaving protective stories (Ernstson & Sörlin, 2009).

Finally, rather than opposing change (common in not-in-my-backyard protests, or so called NIMBYism), the narrative-based interventions studied here are generative, imaginative, and at times spectacular. Importantly, these case studies challenge the prevailing conceptual diad of city/nature in which the “city” is typically considered to be active, articulate, and expansive, whilst “nature” in turn is seen as passive, static, and inarticulate. Indeed, assuming such an opposition, it usually means that when trade-offs must be made, green spaces often weigh lighter. Through these narrative practices, urban nature and green public spaces are (re)constituted as active, creative, and dynamic components of urban life, set in a constant flow of negotiation and renegotiation, stabilization and destabilization.

4.2. The dynamics of protective and projective narratives

There is consequently a distinct performativity to these narratives as sociomaterial practice. As with all storytelling, these narratives contain elements of testing and trying out new futures. In narrative theory, Mattingly (1998) refers to this capacity as the “what if,” or “subjunctive” mode. In cultural theory, Thrift (2000, p. 215) speaks of the “power of imagination [as] ‘the capacity to posit that which is not, to see in something that which is not there’” (quoting from Castoriadis, 1997, p. 151). In our case studies we identify moments through which these imaginative powers come into effect, when protective narratives turn into what we earlier referred to as projective narratives. This is when initiatives move beyond the mere protection of urban nature, towards the remaking of spaces, materially and symbolically. Simply put, protective stories can gradually become projective when they start changing the very context on which they feed, and in which they are expressed. Theoretically, we mean, this turns the story itself into an actor.

Take for example the economic feasibility study commissioned in relation to the High Line. Situated in a cut-throat real estate market like Manhattan, once the elite took an interest, the feasibility study became a self-fulfilling prophecy. As with the stock market, expectations arising from the expected outcomes of repurposing the structure into a park—before anything had been built or even
ratified—spurred development of the area which in turn gave the story credibility and authority. It is as if the story of the High Line became an actor in itself, where the future-park-in-the-making spoke for its own becoming (one might consider Latour’s study of the Aramis train (Latour, 1996)). Similarly, the 2003 open design competition, which sparked the High Line’s development and which was intended to attract attention and provoke dialogue about its future, worked to change residents and wider citizenry’s ideas about the site. From having been an “either-or” question, firmly inscribed in habitual dualism of city/nature in which the structure was imagined to either be demolished or protected – sacrificed or saved – the High Line instead was translated into a site for the projection of a range of different possibilities. The many submitted proposals shifted collective focus away from the question of what would happen on the site, to understanding that something (anything) could happen, hence making visible the site’s inherent potential and its accompanying (protective) value.

The Princess Vlei Forum also developed a projective narrative from a protective one. Organizing under the motto “it’s better to show than tell”, Bottom Road was re-worked into a community garden that fused (marginalized) people and plants, where the plants, by changing soil characteristics and attracting pollinators (Anderson et al., 2014), also re-worked the biophysical properties of the site. In Tilbury, muf’s designers conceptualized this in terms of “use predicts use.” Their project explored the staging of various activities and actions—even occupations—to “test” possible snapshots of the site’s future:  

What the horse project did was [that it] enabled people to see that there was a real value and legitimacy in the way they had a relationship to their home [...] and that they could take control of that and start projecting their own stories on to it. Previously, the story [that] had been projected was, this is a ‘no go area’, this is a ‘bad place’, ‘no one wants to go here’ and everyone wanted to move out. And then the story [was] reframed and [it] brought a kind of new value to how people were able to conceptualize where they lived (Interview Person 9).

Similar to the first two cases, muf’s projective narrative strategy at Tilbury worked to “reboot” the value system, or rather to ground it among its actual residents to nurture a sense of ownership.

4.3. The role of the professional: towards “co-authoring” tools

The recognition of nature conservation as a selective and active process as outlined above opens up alternative ways for designers and planners to use their skills in order to relate to (or challenge) current urban power structures. In our view this implies the adoption of more humble, yet concurrently more active, approaches and the development of what we call “co-authoring tools”.

A more humble approach, firstly, in that nature protection could take place, as in Cape Town, without much involvement from design professionals at all. Design professionals can learn from others,
including grassroots and citizen groups, how to transform their own practice of design. Architecture’s traditional focus of the “looks and making” of objects could thus potentially shift to (also) include co-authoring tools; what scholars at the London-based Agency Research Centre discuss in terms of “spatial agency”. This is the ability to critique and change (or at least tweak or hack) how urban space and nature is produced, and it addresses empowerment, or how to work as designer in “allowing others to ‘take control’ over their environment” (Scheider & Till, 2009, p. 99; Awan, Scheider, & Till, 2011). At a wider urban scale, this implies to develop modes of working in urban planning practice that, to a larger extent, can take care of and support initiatives that arise from community groups and others. Such a transition, however, begs greater awareness of who in fact has the agency to participate in the production of urban space – and who is possibly excluded, prompting the need for critical and reflective perspectives to be integrated into design and planning practices.

Secondly, our analysis of narrative practice brings out a more active role for design professions. Design practitioners’ particular skills (to e.g. combine writing, sketching, conceptual images, and physical models to project new futures onto space), are central to weaving protective and projective narratives. In this context, the capacity in good design to transform what has been perceived as negative or problematic into something positive should not be underestimated. This means design professionals, as argued by Awan et al. (2011) do not need to diminish their expert skills, but humbly turn them into what can be referred to as “co-authoring tools”. Such tools, we mean, should empower others to articulate values, as we saw in all three case studies. Crucially, co-authoring tools, from idea sketches to the activities arranged by muf around horses, can help citizen groups to test out, and be confronted by their own ideas and how they can transform physical spaces. For urban design, such a practice might more specifically involve alternative ways of acquiring commissions, by working not only with friendship groups and community activists (i.e., through participatory planning methods), but to also work directly for such groups. Its elite status apart, the High Line process demonstrates how a civil society group became the actual client with power and spatial agency to influence urban development.

Internationally, there is a growing group of design professionals that are putting co-authoring tools into practice. They develop alternative ways to acquire commissions and projects and through this defy existing, often economically dictated, power structures (Awan et al., 2011). Indeed, our case studies demonstrate quite different narrative practices involving struggles over which values to establish, which land-use activities, people, plants, and things should be permitted and what kind of urban space and urban nature should be produced or nurtured. As ‘thought pieces’, they can help design professionals to understand spatial agency and envision co-authoring tools.
5. Conclusion

In our case study analyses in Cape Town, New York, and Essex/London, we demonstrate the ability of narrative to weave together actors, artifacts, and arenas, and to tell stories through which values are articulated and, in public discourse, *de facto* created. Indeed, the interventions addressed here did manage to change spatial urban planning decisions, stop building plans, and mobilize state and private capital to rework urban nature. They all demonstrated how values are accorded to urban nature as they are performed in public discourse, changing real decisions in the city.

We view such bottom-up analysis of how values emerge as complementary to, for instance, economic-based analyses of the ecosystem services framework (see critique in Ernstson & Sörlin, 2013). In contrast, our bottom-up analysis embeds interpretation of what value is within the social, political, and cultural conditions of particular places and cities (Ernstson & Sörlin, 2013), thereby contributing an important research strategy to the task of rethinking what urban sustainable design and planning could be in practice. This mode of analysis helps to dislodge singular, essentialist, and universalist ideas of nature, and instead emphasizes that “multiple natures are locally embedded in historically specific social practices” (Lachmund, 2013, p. 237). We believe that this can help to profoundly rethink policy, planning, and practice in terms of: (i) how urban nature can be re-humanized and historicized by being embedded in vernacular stories about the city; (ii) how expert categorizations, such as city versus nature, can be undermined; and (iii) how various skills and ways of knowing can be brought into planning processes.

Indeed, rather than external or universalist frameworks that either “value” or “save” nature, our mode of analysis contributes to thinking through ways to achieve longer lasting protection of urban nature across cultural contexts. Specificity or particularity is not a problem for this mode of analysis, but the very material through which nature protection is understood and carried out. At its core, our approach advocates a necessary rethinking of the role of urban design professionals in relation to urban nature protection and politics. Our case studies infer that design professionals should adopt a more humble, yet concurrently more active approach, and our analysis spells out a quite important, and possibly powerful, alliance between design professionals and civil society groups. Citizen groups have the capacity to transform Nature from a singular and scientific object placed in opposition to City, into “natures”—a pluralized, lower-cased configuration in which social and biophysical things are woven together to form part of everyday relations and city-living. Importantly, such work, which muddles the binaries of nature and culture, is not only required in grassroots struggles, but also in larger societal planning institutions. While empowering others, design professionals could work—and some already are—to make room in the
planning context for an anti-essentialist, situated, and ultimately a more democratic view of urban nature.

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APPENDIX A.

The Table A1 provides an overview of interviews and empirical material from each case study in Cape Town, New York and Essex-London.
Table A1.
Overview of empirical material, including interviews that were used for each case study. Interviews for case study 1 was done by Henrik Ernstson, and for case study 2 and 3, by Hanna Erixon Aalto.

### Case study 1
“Dressing the Princess” – a wetland in Cape Town, South Africa

<table>
<thead>
<tr>
<th>INTERVIEWEE</th>
<th>ROLE IN THE CASE STUDY</th>
<th>TYPE OF INTERVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Person 1</td>
<td>Local baker. Initiator of Bottom Road Sanctuary in 2005; Co-initiator of Princess Vlei Forum in 2010.</td>
<td>Five recorded interviews from 2008 to 2010; one together with Interview Person 3.</td>
</tr>
<tr>
<td>Interview Person 3</td>
<td>Chairman during the time of the research of three civil society organizations, including the Princess Vlei Forum, the local ratepayer’s association LOGRA, and the Greater Cape Town Civic Alliance.</td>
<td>Multiple interviews with field notes at several Princess Vlei Forum meetings from 2010 to 2012. Recorded interview in October 2010 with Interview Person 1; and filmed interview in March 2015 with Interview Person 2.</td>
</tr>
<tr>
<td>Interview Person 4</td>
<td>Hip-hop artist and youth/popular pedagogue. Active in Princess Vlei Forum. Founder of the Heal the Hood Project.</td>
<td>Multiple interviews with field notes from several Princess Vlei Forum meetings from 2010 to 2012. Two filmed interviews in March 2015.</td>
</tr>
</tbody>
</table>

### Case study 2
“The High Line” – built railway structure, New York City, USA

<table>
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<tr>
<th>INTERVIEWEE</th>
<th>ROLE IN THE CASE STUDY</th>
<th>TYPE OF INTERVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Person 5</td>
<td>Co-founder of Friends of the High Line.</td>
<td>Semi-structured interview in February 2009. Notes taken as recording was not possible.</td>
</tr>
<tr>
<td>Interview Person 6</td>
<td>Chief Planner for Manhattan Special Projects for the New York City Department of City Planning, Manhattan Office.</td>
<td>Recorded interview in March 2011.</td>
</tr>
<tr>
<td>Interview Person 7</td>
<td>Principal and lead designer for the High Line working for design firm James Corner Field Operations.</td>
<td>Recorded interview in March 2011.</td>
</tr>
<tr>
<td>Interview Person 8</td>
<td>Program Manager for Department of Parks and Recreation, New York City.</td>
<td>Recorded interview in March 2011.</td>
</tr>
</tbody>
</table>

Other materials include: Newspaper articles, organizational documents, planning documents from the City of Cape Town, websites, objection letters, and participatory observations from 2007 to 2012 at various locations. Note: This study is part of a longer ethnographic study.
### Case study 3

**“A Horse’s Tale” – residential park area, Tilbury, Thurrock, London, UK**

<table>
<thead>
<tr>
<th>INTERVIEWEE</th>
<th>ROLE IN THE CASE STUDY</th>
<th>TYPE OF INTERVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview Person 9</td>
<td>Co-founder and artist partner of muf architecture/art, London</td>
<td>Recorded interview in June 2010 and written follow-up in March 2016</td>
</tr>
<tr>
<td>Interview Person 10</td>
<td>Tenant Participation Manager, Thurrock Council</td>
<td>Recorded interview in March 2016</td>
</tr>
<tr>
<td>Interview Person 11</td>
<td>Strategy and Project Operations Manager, Thurrock Council</td>
<td>Recorded interview in March 2016</td>
</tr>
</tbody>
</table>

Other materials include:
- Newspaper articles, organizational documents, websites, planning documents and field site visits.

### NOTES

1. While race and racial categories are social constructions, they have real cultural and material effects and influence both social scientific and everyday understandings. We have kept references to racial categorizations in our Cape Town study since they were used by our interviewees for self-identification and in making sense of their city. This also captures the racialized landscape through which the contested values of Princess Vlei were articulated. Fully aware of the debates on whether to use capital or lower case spelling of racial and ethnic categories, we have here used capital letters as in Coloured, White, African, Indian when referring to apartheid-era imposed classifications (as in “Coloured township”), and lower case when we have interpreted these same words as social identities used by those we have interviewed. This usage also makes scare quotes less necessary.

2. According to Matthews (2008) there are around “300,000 Gypsies and Travellers” in the UK (p. 1), including a range of subgroups. We use Travellers as the term in this paper for these varied communities that “have lived, worked and travelled throughout the UK for over 500 years.” (Matthews, 2008, p. 1)
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