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Comparative Planning, Learning and Evolving Governance

Editors

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Editorial

Learning from Other Places and Their Plans: Comparative Learning in and for Planning Systems

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Abstract
In this thematic issue we pursue the idea that comparative studies of planning systems are utterly useful for gaining a deeper understanding of learning processes and learning capacity in spatial planning systems. In contemporary planning systems the pressures towards learning and continuous self-transformation are high. On the one hand more and more planning is needed in terms of integration of expertise, policy, local knowledge, and response to long term environmental challenges, while on the other hand the value of planning systems is increasingly questioned and many places witness an erosion of planning institutions. The issue brings together a diversity of contributions that explore different forms of comparative learning and their value for any attempt at reorganization, adaptation and improvement of planning systems.

Keywords
adaptation; comparative research; governance; planning; policy learning; policy transfer

Issue
This editorial is part of the issue "Comparative Planning, Learning and Evolving Governance" edited by Kristof Van Assche (University of Alberta, Canada), Raoul Beunen (Open University of the Netherlands, The Netherlands) and Stefan Verweij (University of Groningen, The Netherlands).

1. Introduction: Tough Learning in Policy and Planning

This thematic issue aims to enhance the understanding of comparative learning in spatial planning. Comparison can be useful within planning practice, and it can be useful in the scholarship of planning, whether it is in the discipline of planning, or carried out in other disciplines. Some of that scholarship can then benefit planning practice.

In their seminal essay on learning in policy, Bennett and Howlett (1992) present learning as diverse, sometimes aiming at policy change, at changing policy tools, rethinking organizations, or altering discourses. They argue that different forms of learning, by different actors, in different networks, and at different levels, take place with different aims. They then invoke different logics of learning, which will resist integration into a neat typology under one concept of policy learning (although they present one themselves). In other words, 'learning' may be very different things, which might have to lead to formation of new concepts before jumping to too many conclusions regarding learning. Bennett and Howlett (1992) point out that, if we are talking about learning at levels higher than the individual, the only clear outward signal of learning (besides self-reporting) is some form of change in behavior, which then has to be ascribed to

learning. They usefully remind us that other paradigms of understanding policy change have not lost their value: Competition and conflict are still useful to grasp much of what is going in policy and administration. The parallel revival of Foucauldian studies of planning and policy (see e.g., Hillier, 2002) tends to find much value in that old alternative, while looking much more skeptically at learning as a process that can be used and abused and which can go recognized and unrecognized (Burchell, Gordon, & Miller, 1991).

Hood and Peters (2004) further elucidate that the evidence prompting organizations and other actors in policy to learn is never neutral and entirely transparent, while, crucially, they bring up that managers of public organizations often have structurally little motivation, interest, and the possibility to change; and whatever change does take place might derive from 'learning' much outside transparent arena's supposedly devoted to learning. Alvesson and Spicer (2012) colorfully speak of "stupidity-based organizations" and develop a rather persuasive theory of "functional stupidity" where, at the level of organizations, what is learned is often not to think, not to argue, not to question, not to deviate, and not to actually deliberate. For policy learning, for learning in governance systems including a variety of governmental and non-governmental actors, there is the additional issue of complexity in interaction and complexity in implementation (Klijn & Koppenjan, 2015). This includes limits to the steering of the web of actors after learning, in case learning leads to policy change. 'Muddling through' (Lindblom, 1959) is still on the menu (e.g., Marsden, Ferreira, Bache, Flinders, & Bartle, 2014), and the more intricate the governance configuration, the harder learning and implementing change. Organization studies, in sync with systems theory (e.g., Seidl, 2016), would further emphasize the limits of steering as emanating from limits of observation, with organizations never fully able to reconstruct each other's logic; but also management, never entirely capable of steering an organization, because of an internal opacity which is partly deliberate.

2. Back to Square One? Not Really, and Certainly Not in Planning

The scientific literature on learning is characterized by revivals of modernist analysis and revivals of their post-modernist critiques (including a critique of jumping to normative conclusions). On the one hand, learning is often promoted in a normative, teleological, unproblematic manner, as an extension of promotion of good governance, deliberation, of evidence-based policies. While on the other hand, learning might appear as eminently abusable, a product of questionable power relations and hidden assumptions, as performance of management and captured by ideology. In our view, the middle ground between these two perspectives has gained much less attention. Yet, such middle ground does exist in practice, e.g., in the practice of planning.

Spatial planning, urban planning, regional planning, land use planning, urban and landscape design, or whatever name one might prefer for the expertise on the coordination of spatial organization (Van Assche, Beunen, Duineveld, & de Jong, 2013), was from the start oriented towards learning. Theorists and practitioners alike looked at older and other forms of organization, at model cities and situations they wanted to avoid (industrial slums, revolutions), or at the fate of administrative and creative experiments going on elsewhere. The practice and the discipline had to legitimize themselves through continuous reference to other places and ideas, and it had to adapt itself in series of successes and failures, with political overlords quick to point out what counted as a failure (Sandercock, 1990).

In this thematic issue, we want to start a new conversation about learning in planning and policy, and about learning from systems that transcend routine distinctions between overly positive and hypercritical approaches. Indeed, if we want to learn from other planning systems, then it is essential to map out how we can learn and adapt (Smith & Stirling, 2010).

3. Creative Comparison and Assessment for Reinvention

In their framing article, Van Assche, Beunen, and Verweij (2020) start the conversation by placing comparative learning in the context of systems of planning that are embedded in systems of governance (cf. Van Assche, Beunen, & Duineveld, 2014). Comparative learning is also situated in a context in which it can interact with other modes of learning: learning from experts (inside and outside the system), learning from the past, i.e., self-reflection and self-analysis, and learning as building new insights through discussion (dialectical learning). They present reflexivity and its cultivation as a precondition for learning from the past, and for the other forms of learning, while they see comparative learning as ultimately and ideally serving dialectic learning. This is the case because simple 'input' of ideas from elsewhere would likely fail, because of a lack of contextualization. Furthermore, dialectical learning is needed for comparative learning to reach its potential to produce something new, something able to capture opportunities for coordination and value creation in the receiving spatial context. Hence, the authors advocate for 'creative comparison.'

D'hondt, Van Assche, and Wind (2020) take on the major challenge of reinventing planning systems across the world, for which, they argue, the need is pressing. Many countries do not have a functioning planning system, or they are saddled with colonial legacies which create new inequalities. In other places, planning systems are structurally hampered by their original problem focus and ideological assumptions. The authors argue for comprehensive forms of assessment. Assessment has to be context-sensitive to enhance context-sensitive reforms of planning, and this means they have to be largely self-

assessment and strongly participatory. Restructuring planning systems is thus understood as a learning process, where learning from other places, from the past and from discussion, can easily find a place. Comparative learning plays a different, more indirect role here, as experiences across the world have underpinned recommendations for planning reform coming from UN Habitat and other international organizations. 'Best practices' might not be easily replicable, but more general principles for planning can be formulated, based on the bad experiences in many countries with particular models of planning and planning reform, on success stories where a context-sensitive explanation is available, and based on the shared goals of democracy, participation, sustainability, economic development, and stability.

4. Learning and Comparison in High Complexity Environments

Willems, Molenveld, Voorberg, and Brinkman (2020) focus on complex projects and associated learning processes and conduct a comparative study of nine European cities aiming to develop new green infrastructure with an eye on climate-proofing the urban environment. They studied different tools and models of community involvement, in the understanding that a more participatory approach to such projects was the only way to make them possible, and to encourage learning for adaptation, to the governance context, and the context of changing climates. The authors observed that more ambitious authorities developed new instruments for participation (living labs, project organizations, new departments), yet the relations between such institutional experiments and the organizations they were supposed to coordinate could be complex and disappointing. The rest of the governance system, the routines, rules, and expectations in place, did not disappear. The study indicates that the possibilities and limits of participation in different places hinge on not only the ideas regarding participation, but also on the ways planning is structured and how it is embedded in broader governance configurations. The authors also suggest that, at least for many European countries, a transition might be going on towards more participatory governance through network steering, marked by more opportunities for learning and adaptation. Existing, more centralized systems and their modes of learning and adaptations cling on and influence learning modes in specific ways.

De Groot, Leendertse, and Arts (2020) stay within the realm of complex public projects and their learning potential. They focus on transport infrastructure networks, which are under a variety of pressures. These pressures do not allow for easy integration into an optimal design and management strategy, and they are highly dynamic, which prompted calls for more adaptive management. Learning is understood as enhancing adaptive capacity. In the vein of the aforementioned Hood and Peters (2004), the authors ask how agencies responsible for large infrastructure projects learn and how this contributes to their adaptive capacity. Indeed, as Willems et al. (2020) also point out, and in line with classic analyses such as (Scott, 1998), once engineering-dominated public organizations are in charge of complex projects, they are hard to dislodge, and the associated discourses on expertise, steering, and participation are hard dismantle. De Groot et al. (2020) give central place to the project level of organization, with in some cases projects serving as new entities coordinating various organizations, and in other cases as more rudimentary information exchange platforms coordinating actors within the organization. The authors observe the general success of projects in terms of local adaptation but also the distance between project discourse and the mother organizations, or higher management (echoing the Luhmannian analysis of Seidl, 2016; see also Van Assche & Verschraegen, 2008).

De Groot et al. (2020) and Willems et al. (2020) both bump into the central issue of complexity in current governance. Complexity is both necessary and problematic in the search for answers to big problems in democratic societies. Planning, as coordination in the organization of space is bound to encounter complexity, because people want to do many things in space and project many competing meanings on it. Planning is thus faced with an intricate web of expectations, interests, forms of knowledge, actors, institutions, pasts, and futures. Learning from planning systems is therefore not only learning about different contexts, ideologies etc., but also learning about distinct modes of creating and managing complexity. This becomes even more important because complexity is increasing with ongoing differentiation in society (Seidl, 2016), and because contemporary sustainability issues demand unprecedented levels of coordination (Patterson et al., 2017). Complexity, again, is a double-edged sword, as planning complexity is required to deal with external complexity, and as planning complexity renders smooth adaptation and learning difficult (de Roo & Silva, 2010). Neither expert-driven systems nor highly participatory and decentralized systems have a distinct advantage in the abstract here. The devil, as usual, is in the detail.

5. Comparing for Learning and Comparing the Learning

This idea is confirmed in this issue by Leinfelder and Buitelaar (2020), who analyze patterns of urban sprawl in Flanders and the Netherlands, with on first assumption the devil residing in Flanders, where sprawl rules. Leinfelder and Buitelaar (2020) use a detailed comparative study, invoking other comparatives along the way (Italy, US). The authors do not confirm the negative stereotypes on sprawl dominant in the US planning literature and present a subtle analysis of driving factors of sprawl in both Flanders and the Netherlands, with distinct forms of sprawl clearly emerging as a result of more than laissez-faire–laissez-passer attitudes. Indeed, they

show that histories of governmental decisions, of institutional choices, and material legacies, as in the physical landscape resulting from earlier planning, trigger particular forms of sprawl while discouraging others. In terms of Evolutionary Governance Theory (Van Assche et al., 2014) one can speak of the interplay between path dependencies, interdependencies, and goal dependencies (effects on governance of visions of the future), which shapes the possibilities of containing sprawl and the possibilities of learning from others (e.g., from Dutch neighbors) to do so.

The study by Leinfelder and Buitelaar (2020), as the others in this issue, highlight the utility in comparative planning studies to include the learning modes in the observed systems in the analysis, which will deepen the learning from the comparative analysis. The choice of the Flemish and Dutch planning system is interesting also because it offers rich possibilities to study comparative learning in planning systems: There is a tradition of shifting images of the neighbor in each of these systems, changing interpretations, which then triggered different forms of learning, ranging from attempts to copy to learning by avoiding the neighbors mistakes.

In their commentary, Rooij and van Dorst (2020) focus on the pedagogical uses of comparative work. They report on the pattern language approach to design and design pedagogy, an approach originally proposed by Christopher Alexander in the 1960s (Alexander et al., 1977). Alexander's work in their view deserves a reappraisal and can be developed to help students quickly analyze a place, structure their design thinking without pushing it too much towards a particular solution. A plethora of comparative work underpins the pattern language approach, while it also enables quick comparison of places, their structural features, qualities and problems, and results of previous planning and design interventions. The updated approach was tested in class and found useful by students, and it points at an argument made by D'Hondt et al. (2020) in their contribution, i.e., that indeed context is almost everything, that learning from other places means adapting insights to a new context, but that nevertheless, one has to remain open to the possible travel of both problems and solutions. This is partly an issue of transcending context, partly of sharing context (spatial, economic, institutional).

6. Conclusion: A Long Way to Go towards Sustainability Learning

We emphasize that this thematic issue is the beginning of a conversation. Indeed, learning might be popular in various policy-related literatures but, as said, large gaps remain in the terrain between the poles of naive learning optimism and learning as necessarily captured by strategy and competition. Each planning system has its own modes of learning, with its own potential for comparative learning and for linkages with other forms of learning. More than particular methods of comparison, what counts is the location of the comparison in broader research and/or policy goals, and the location of the compared planning system in broader governance configurations and histories. Those embeddings will co-determine how to interpret success and failure in observed systems, as they will shape the possibilities for understanding and organization in a system-presumed-to-learn. More attention is also needed for non-learning, overlooking or ignoring what is learned and learning the 'wrong' things, as these mechanisms to influence the evolution of planning systems.

Much of what has been said is relevant for likely the biggest challenge for planning and governance: planning and policy for sustainability (or resilience, climate change, energy transition, etc.). Much learning, and much learning through comparison, will need to take place before people know which tools might actually work under given conditions, before they know which aims are realistic and which forms of governance might allow for the forms of coordination needed, and before they have a good understanding of which modes of balancing, integrating, and differentiating expertise and which checks and balance might be lost, and which ones have to be guarded at all cost. Much of what we just listed is a matter of politics, not science; yet where there is a role of science, the topic of learning through comparison, in policy and planning, will most likely require much more attention than it gets now. And it will need to transcend its ideological quibbles and dividing lines to present a more realistic analysis of the potential of learning to illuminate the potential of societal transformation.

Conflict of Interests

The authors declare no conflict of interests.

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Kristof Van Assche is interested in evolution and innovation in governance, with focus areas in spatial planning and design, development, and environmental policy. He worked in various countries, and often combines fieldwork with theoretical reflection, mainly on system theories, interpretive policy analysis, institutional economics, and post-structuralism. He held visiting positions at McGill University, Krakov Agricultural University, Wageningen University, and Bonn University. Geographically, his work spans Europe, the Americas, Central Asia, and the Caucasus. He published widely on these topics.

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Commentary

Rethinking Planning Systems: A Plea for Self-Assessment and Comparative Learning

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Abstract
The authors reflect on recent experiences at UN-Habitat and other international organizations to rethink the roles of planning towards larger development goals and to reform planning systems in places most in need of them. They consider the difficulties but ultimate necessity to learn from a variety of contexts and experiences to articulate general orientations for planning and planning reform which can partly transcend context. Within the variety of planning experiences, and the experiences of lack of planning, one can discern principles which can be applied in many contexts, yet those include principles of contextualization and learning. Comparative learning underpins the attempts at finding general principles, and the local application of those principles further triggers processes of learning, including comparative learning. Local and grassroots planning capacity building is vital to locally apply and contextualize international planning guidelines.

Keywords
comparative learning; governance; international organizations; planning systems; reform

Issue
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1. Introduction

The United Nations' New Urban Agenda (NUA) and UN-Habitat's International Guidelines on Urban and Territorial Planning (IG-UTP) urge planners worldwide to re-assess the policy tools and distributional outcomes of their own planning systems. Much academic interest is focused on system change towards more sustainable and equitable development in countries with already well-established planning systems. However, a majority of the Earth's surface is covered by countries with defective or outdated planning systems, often rooted in authoritarian, colonial or tribal rule (see ESPON, 2019; Ryser & Franchini, 2015; UN-Habitat, 2009). In these countries, planning has the potential to improve the life of citizens. Even more than in the so-called developed world, new planning approaches are essential to combat poverty and to foster environmental sustainability in developing countries. However, exactly in these countries institutional change is difficult to achieve.

Where national governments—or local administrations—fail to establish accessible, just, transparent, adaptive, creative and pro-active planning systems, planners and civil society have the shared responsibility in establishing bottom-up planning practices that will contribute more compact, inclusive, climate-responsive, and better connected human settlements in harmony with terrestrial and non-terrestrial eco-systems.

These practices could be considered as a first step towards a reform of the planning system to be aligned with the NUA (United Nations, 2016) and the IG-UTP (UN-Habitat, 2015)

2. Redefining Planning Systems

International-comparative research into planning systems, combined with the authors' experience as planning practitioners in both developed and developing countries, suggests that successful planning system reforms are based on a few principles. Planning needs to have a local and contextualized presence, has to be coherent, supported by evidence and public choice, by design skills and local knowledge, and by legislation enabling and delimiting planning powers. Different planning systems flourish in different governance environments, and reform of planning needs to take such environment into account.

Ironically, planning system reform is more difficult in countries with obsolete or inadequate planning legislations at the national and local level. Too often, planning systems are poorly integrated with planning and financial procedures, mechanisms and practices, resulting in unclear responsibilities. In turn, this produces inadequate plans and poor implementation of new plans and designs. For example, many adequate plans fail as the local administration has not yet secured land tenure and has no mechanisms to control buildability rights to manage urban development.

Because normative frameworks such as the Sustainable Development Goals (SDGs), the NUA as well the IG-UTP are by default of a global and universal nature, they do not explicitly address national and subnational planning systems as such. Planners thus need to develop these ideas into multi-level systems, rooted in the local territorial and governance context. National, subnational and local planning systems have to connect the dots sketched out by the NUA and IG-UTP. Different urban and territorial issues, different political, economic and legal systems, and different cultures and value systems all shape the planning system in different ways. Planning systems are always shaped by governance contexts imbuing them with path dependencies and limited autonomy.

The (re-)design of a planning system cannot be readily approached with a blueprint template. The approach we advocate uses the broad normative principles as a tool to assess, review, improve, adjust or reform a planning system within its context. Planning systems in different parts of the world may meet these principles in different ways, using different institutional structures and processes, and different methodologies and outcomes (UN-Habitat, 2009, pp. 18–19). The principles thus require contextualization, modification. Yet the use of general principles is worthwhile to coordinate internally and externally, and to allow for comparative learning. In the long run, they might shift, but for now, many problems are so obvious, that a level of generality is warranted. We might not agree on the values which can then be enshrined in plans and enabling laws, yet we can agree right now, in the world as it is, that we need clearly defined property rights, linked unambiguously planning documents, and plans unambiguously relating to each other and to other institutions (including laws). At the same time, formalization of property rights can be abused to further marginalize poor families.

An international comparison suggests that a functional planning system contains at least three interdependent components: plans (including policies and designs), legislation and finance. Indeed, most would agree by now that planning cannot be reduced to the use of plans, and that their coordinative power has often been overestimated, yet spatial policies without plans miss out on coordinative opportunities, while stating common goals through spatial organization does not work without links with budgets and harder institutions, i.e., laws.

The international community has been active in strengthening planning systems in post-conflict and developing countries. Decades of international-comparative research show the importance of capacity building, of developing human resources, expertise and skills, so locals can define their own planning systems. Only when plans come about in co-creation between local and international experts, they can have a lasting impact on the planning system.

3. Review to Adjust Planning Practices and Systems

There are at least five compelling reasons why countries, cities and their citizens should jointly review the way urban and territorial planning and development is organised, managed and practiced implementing the NUA and attaining to the SDGs:

- The legal basis of national or devolved planning systems are often designed and developed in the 20th century and no longer fit for purpose in the fast urbanising 21st century;
- The planning system might be rooted in colonial times and not designed or developed according to the local context and specific challenges and opportunities of communities and territories;
- The planning system might be designed and developed under a different socio-ideological framework that no longer exist;
- The planning system is only addressing the formal planning while much if not most of the recent and ongoing urbanisation occurs outside the formal planning system;
- The planning system in place might simply not be up to task to deliver on the SDGs (goal 10, inequality, and 11, sustainable communities, in particular) and the NUA.

The history of Western involvement in planning in developing countries, ranging from (neo-)colonial approaches

to modernist interventions, taught us that planning reform and broader institutional reform (e.g., towards 'development') almost never works if it is a matter of coercion, by political or economic elites, by foreign powers, by experts (Van Assche & Hornidge, 2015). Some form of local sensitivity is essential, ranging from participation of local actors, awareness of the culture, history and landscape, to an understanding of the interplay between formal and informal institutions (Van Assche, Beunen, & Duineveld, 2014). Participation and representation generally require multi-level, layered institutions. In the context of authoritarian or failing states full public participation can only be achieved by the 'democratisation' of all components and phases of the planning system and processes. At the other hand, participation of local stakeholders in one or several stages of the planning cycle could be the seed for further democratization.

Planning reform has to be a planned enterprise itself, rather than ad hoc responses to disasters or critiques. It will likely be an adjustment of the existing situation rather than a tabula rasa exercise. Therefore, planning reform has to be inspired by a comprehensive review of the planning system and its distributional outcomes in its governance context. We advocate for the use of participatory forms of assessment by relevant stakeholders. Relevant stakeholders might differ from country to country, but range from governmental actors from different scale levels, (international) experts and civil society actors representing citizens with a different ethnic or socio-economic position. It is of utmost importance to include representatives of vulnerable groups as a form of advocacy planning. Too often their 'right to the land' or 'right to the city' is violated when market-driven reforms are executed. A dialogue between relevant stakeholders allows countries with limited planning systems to leapfrog towards better designed systems by earning from the hard lessons learnt by older planning systems.

In line with the international studies quoted, we argue that such review has to include at least three components:

- Planning review: assessment of policies, plans and designs to enable desired urban and territorial developments;
- Legal review: assessment of rules and regulations related to land, tenure, housing and spatial planning;
- Financial review: assessment of the mechanisms in place to finance the desired developments.

Local actors that are capable of carrying out a planning system review, or contributing to planning reforms are in many countries not readily available. An educational review could analyse whether the educational system produces the experts needed, or which skills should be added to university curricula (such as an understanding of multi-level governance and multi-scale planning).

Depending on the situation, communities or countries can choose for a rapid assessment or a more comprehensive one. The studies referred to include sets of principles and recommendations which can be fully embraced by self-assessing communities, or modified, selectively used, depending on local values and priorities.

4. How to Turn Review into Reform?

Having designed a self-assessment process and methods consistent with a clearly defined purpose, established buy-in across the stakeholder-organisations, and secured the participation of a wide variety of ethical, credible evaluators, the exercise then needs to be pursued with rigour. Stakes can be high in changing deep-rooted planning rules and the information on which the changes are based needs to be reliable and complete.

Gradually building up knowledge across the stakeholder organisations about the assessment's findings, means that the findings can be verified and gradually understood and accepted. In the final reporting, the assessment team can then move more quickly into action because the stage has been set for the team to move stakeholders to respond to the findings by committing to action. Even the best designed assessment does not necessarily lead to implementation, of course, and continuous observation and adaptation by the assessment team is recommended. The team has to respond continuously to its own findings, regarding issues, but also regarding possible solutions, reform options which might address the issue and are also feasible to achieve taking the existing governance configuration as a starting point (Van Assche, Beunen, & Duineveld, 2013). Regarding the goals of reform and of the reformed planning system: These have to be set collectively, as part of the self-assessment, but as a rule of thumb one can say that they should be primarily designed to enable sustainable and equitable development.

5. Conclusion

Reviewing and reforming planning systems is obviously a complex and lengthy process. Many countries do not even have a national system in place to reform. Our contemporary social and environmental challenges are too large to wait for planners to come up with 'perfect system reforms.' The perfect is the enemy of the good. That is why we should encourage cities and their local authorities to act in the absence of perfect national planning systems, with the legal, financial and planning means at their disposal. That is also why we need to encourage communities and their trained and barefoot planners to act in the absence of a just local planning systems (D'hondt, 2019).

Planning has to be understood as embedded in governance, and planning reform has to take into account the state and evolutions of governance systems. Not

every planning ideal makes sense for every community and not every ideal is feasible from each starting point. The rich experience with planning reform, with institutional reform and with development projects represented in international organizations such as UN-Habitat and ISOCARP, allow us to draw some general conclusions, beyond the need for context-sensitivity. International-comparative research, case study reports and local policies show that (1) planning is able to improve the quality of life in developing countries while contributing to the SDGs, and (2) that planning system reform is urgently needed as they tend to be rooted in the past, and build on old analyses of old problems. General reform recommendations, e.g., under the heading of good governance, or just labelled as institutional reform, rule of law, or market reform are not enough; spatial planning cannot be forgotten as a major road to development, which, under current conditions, has to be understood as sustainable and equitable development (Van Assche & Hornidge, 2015).

The lessons regarding planning reform drawn from and within international organizations do not stem from one formal research project, nor from a shared methodology of comparative research. Even so, it is a matter of common sense to see that these lessons, the principles for planning systems and planning reform discerned there, came out of knowledge of many planning systems and many attempts at reform. They also came out of experience in countries where a notable absence of planning systems or coherent spatial governance created some notably similar results.

The principles for reform which can transcend context are general though and include mechanisms to render planning reform context sensitive. This again entails learning, first of all self-assessment but also comparative learning, as lessons from other places can come in through diverse actors involved in participatory assessment. Our message to local and barefoot-planners is to keep on going, using stakeholder dialogue as a lever of change, whereas our message to international planners is to forget about all the reasons not to engage with countries with failing planning systems, as this is highly needed to contribute to the SDGs and the quality of life for millions.

Conflict of Interests

The authors declare no conflict of interests.

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Article

Comparative Planning Research, Learning, and Governance: The Benefits and Limitations of Learning Policy by Comparison

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Abstract
In this article, the authors develop a perspective on the value of, and methodologies for, comparative planning research. Through comparative research, similarities and differences between planning cases and experiences can be disentangled. This opens up possibilities for learning across planning systems, and possibly even the transfer of best planning and policy practices across systems, places, or countries. Learning in governance systems is always constrained; learning in planning systems is further constrained by the characteristics of the wider governance system in which planning is embedded. Moreover, self-transformation of planning systems always takes place, not always driven by intentional learning activities of individuals and organizations, or of the system as a whole. One can strive to increase the reflexivity in planning systems though, so that the system becomes more aware of its own features, driving forces, and modes of self-transformation. This can, in turn, increase the space for intentional learning. One important source of such learning is the comparison of systems at different scales and learning from successes and failures. We place this comparative learning in the context of other forms of learning and argue that there is always space for comparative learning, despite the rigidities that characterize planning and governance. Dialectical learning is presented as the pinnacle of governance learning, into which comparative learning, as well as other forms of learning, feed.

Keywords
comparative planning; governance; learning; learning methods; planning studies; policy mobilities

Issue
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1. Introduction: A First Mapping of the Field

In this article, we aim to provide a new conceptual frame for considering the possibilities and limitations of comparative planning research as a topic both worthy of investigation by itself and which sheds new light on the bigger theme of policy learning and policy comparison.

If we see comparison in the service of learning, we cannot escape the confluence of ideas and the clashes between approaches that have marked the broad field of investigations on learning in planning, policy, and public administration (cf. Gerlak, Heikkila, Smolinski, Huitema, & Armitage, 2018). Ideas of change and adaptation in planning and governance enter the discussion quickly,

and it is here we encounter the rich field of studies on the diffusion, transfer, and travel of policies and ideas (Mukhtarov, 2014). Key concepts for our investigation thus include planning comparison, learning, travel, and change (Bennett & Howlett, 1992).

Governance systems change continuously, and this can be the result of intentional learning or not. If we speak of learning it is clear that some form of change is implied—either in thinking, in organization, or in action—as well as some form of intention and awareness (Gould, 2009). What is learned does not necessarily benefit the organization, on the one hand because it might be simply wrong or irrelevant as compared to the latter's stated goals and preferences, and on the other because private (individual) goals might override the goals of the organization, or those of the governance systems and the associated community. Learning, for example, can be focused on ways to circumvent existing rules about environmental protection (Beunen, 2006; Chapron, Epstein, Trouwborst, & López-Bao, 2017). Learning can also focus on ways to weaken public goods as, for example, reflected in the literature on lobbying (Bouwen & McCown, 2007; Mazey & Richardson, 2006). The literature on social learning, sustainability learning, or organizational learning often tend to ignore this amoral feature of learning.

Within the literature on the travel and transfer of policies and practices, one can distinguish several generations, with early understandings speaking of policy diffusion, policy transfer, and best practices. More recent generations became more context-sensitive and sensitive to the processes of transformation taking place in the travel (Mukhtarov, 2014; Newig, Kochskämper, Challies, & Jager, 2016; Reed et al., 2010). Concepts such as policy travel and policy mobilities tend to signal deeper awareness of such changes and adaptations: Policies change, are reinterpreted, and adapted to the receiving context. These recent bodies of literature tend to assign more ownership and agency to the 'recipient' of the ideas or lessons, and to the learning context. Also, they showcase a diversity in the entities that can travel: not just policies, but also plans, laws, informal institutions, concepts, narratives, images, metaphors, expectations, ideologies, principles of system design, procedures (e.g., of participation), assessment methods, and more. As the post-structuralists already knew (e.g., Bal, 2002; Eco, 1976; Kristeva, 1980), the travel of signs and concepts is always partly metaphorical, as they do not travel without people using them. Yet the people using them and learning through them are also influenced unconsciously by the properties of sign systems and discourses, by discursive shifts, and discursive migrations. Traveling and learning always combine.

These introductory notions on learning and travel provide the background for the perspective on learning modes presented in the next section. Each mode involves, to an extent, a combination of travelling ideas and learning of ideas, and each is acknowledged in diverse bodies of literature. In the subsequent section, we focus on learning through comparison, particularly in spatial planning. This is an exercise in theory building, meaning that we enter into a dialogue with established literature without identifying with one existing theory in particular.

2. Learning Modes

We distinguish four modes of learning for governance and planning systems:

1. Learning from the past;
2. Learning from other places (comparative learning);
3. Learning from experts and expert knowledge;
4. Learning through dialectic engagement (discussion).

2.1. Learning from the Past

Both organizations and governance systems can learn from experience (Dunlop & Radaelli, 2013; Newig et al., 2016). That experience, though, is never unproblematically accessible, as each system remembers and forgets in its own manner and links what is remembered in different ways to procedures of assessment and adaptation of decision-making (McCann & Ward, 2015; Stein, Michel, Glasze, & Pütz, 2017). We do argue, however, that reflexivity can be cultivated, so as to enhance deeper awareness of a system's past and how it affects the present system (Edmondson & Moingeon, 1998; Gherardi, Cozza, & Poggio, 2018; Voß, Bauknecht, & Kemp, 2006). This, in turn, can inspire modifications of decision-making, i.e., learning (Golden, 1992). Learning from the past in governance can entail many things. Increased awareness of how things actually worked in the past can shed a new light on successes and failures, on assets seen and unseen, on patterns of inclusion and exclusion, on plans which remained a paper reality, on mechanisms which helped the implementation of plans, or on big promising concepts which gained little traction in the community. The learning can focus on a particular project which succeeded or failed, on expertise now forgotten, but also on the mechanisms of learning, adaptation, and change that were present. A park one is now proud of was maybe perceived as a failure before, as an authoritarian imposition, or a by-product of a political crisis and a reparation attempt. Each of these observations can trigger its own responses. Maybe it is decided that the growing city needs more institutionalized ways to enable such projects. It is also possible that the park is now seen as a major asset and part of an identity one can build on, thus allowing it to guide future developments.

Several theories can offer guidance regarding the self-analysis of organizations and governance systems, but we highlight here the potential of Evolutionary Governance Theory (EGT) as a theory focused on the way the past of governance systems shapes both its present functioning and its transformation options (Beunen, Van

Assche, & Duineveld, 2015; Van Assche, Beunen, & Duineveld, 2014). For EGT, each governance system has a unique path, a unique co-evolution of actors and institutions, and of power and knowledge. Each governance path is marked by its own pattern of dependencies, or rigidities in its evolution, which enable and constrain future transformation options. Each governance system thus has unique capacities for learning and adaptation.

2.2. Learning from Other Places

EGT, and many recent perspectives on management, organization, and governance, explore the possibilities for learning from other places. Yet, it is important to emphasize that such learning cannot rely consistently and solely on the identification of 'best' or 'worst' practices, for the rather simple reason that what works in one context does not necessarily work in a different one. Just as what worked in the past does not necessarily work in the present anymore (Sheldrick, Evans, & Schliwa, 2017; Stein et al., 2017). Context, then, has a double meaning: the internal context of the governance system, which never remains identical to itself, and the external context, the community itself, its values, expectations, resources, narratives, and power relations (Czarniawska, 2001).

Why something was possible for a given system in a given context is only accessible as a narrative reconstruction that reflects the narrative world of the observing system (Downing, 2005). Switching to indicators for the assessment of success does not alter this; the indicators function on silent assumptions within often latent narratives (Apaza, 2009). Presentations of success and failure are also performances, with strategic aims, never merely descriptions (Van Assche, Beunen, & Duineveld, 2012). Furthermore, interpretations of success and failure are always shaped by a particular understanding of the situation, of both the internal and external contexts (Bunnell, 2015; Dunlop, 2017; McFarlane, 2010).

When attempting to learn from other systems, the features and contexts of the learning (observing) system, and that of the observed system, play a role. One can say that a higher degree of reflexivity in the observing system (see previous section) will help discern what can be learned from the observed system, i.e., to identify what could fit into the receiving context. As to the observed system, there the limits of observation of other systems always apply (Cilliers, 2001), and what can be observed will be interpreted through the categories of the learning system (Seidl, 2005). Intermediaries, such as experts telling about other systems, can help clarifying why something worked in a particular context, but the intermediaries also add a layer of interpretation, and often a particular interest (Sultana, 2011).

Of particular interest here is the analysis of modes of self-transformation, meaning here the mechanisms by which the governance system can induce change in and by itself (Van Assche et al., 2014). Self-transformation can rely on learning, but not necessarily so; it can also emerge from internal interactions, both strategic and routinely (Luhmann, 1995). If in comparative learning the focus is merely on the content of a policy, the outcome, or the form of a procedure towards a policy goal or outcome, without paying attention to the modes of self-transformation, then it is not clear at all whether an attractive model from elsewhere could be emulated with the existing governance configuration as starting point, nor if it would have the same effects on its evolution.

Self-observation and observation of others thus have to be sharpened simultaneously to enable learning through comparison (Alvesson, Lee Ashcraft, & Thomas, 2008; Luhmann, 1995). Importantly, these observations cannot be restricted to features of the system, tools, and to substantive choices made (e.g., a particular policy, plan, or law), but should also include how the system changes and can change itself. It requires observation and analysis of the (internal) dynamics of the systems. Benefiting from comparative learning needs an understanding of how both observer and observed change, and of how forms of learning are implicated therein. Reflexivity is key to both improving observation and self-observation, but reflexivity itself has limitations, stemming from the fact that a system cannot observe itself entirely, and furthermore from the overburdening and slowing down of the observing system through accumulation of complexity—reflexivity as transaction costs and as impediment to action (Alvesson et al., 2008).

All this retains the possibility of learning from other places and from other governance systems. We highlight four mechanisms that make it easier to learn.

First of all, in western societies and a globalizing world, many assumptions, expectations, and features of governance are shared. We live in a functionally differentiated world, a globalized economy, most people in some form of democracy, and many ideas on basic values are similar (cf. Brans & Rossbach, 1997; Luhmann, 1995). Many narratives on success in governance are persuasive in many places, because people have at least overlapping expectations on good governance, its functioning, and its results (Bunnell, 2015; Van Assche et al., 2012).

Second, and consequently, governance and planning systems are open systems and therefore—through their interaction with other ideas, values, shared institutional (e.g., legal) frameworks, etc.—share characteristics with other systems, although differences and particular unique aspects remain (Allen, 1998; Buijs, Eshuis, & Byrne, 2009). Therefore, it might not be necessary to completely understand why something works, or doesn't work, as long as the analysis of conditions across places is sufficiently similar: It seems to work there, and we don't see any real difference in relevant conditions (Spicer, Alvesson, & Kärreman, 2009).

Third, experimenting might be possible, accepted, and worthwhile (McCann & Ward, 2015). If we are not talking about a major investment in financial or political capital, or about a major overhaul of the governance system, and if the system can reproduce itself during the

experiment, there might be no need for existential pondering (Van Assche & Hornidge, 2015).

Fourth, it might be possible to change the context enough to make a proposed solution work (cf. Gerrits & Verweij, 2018). A new policy picked up in one place might not fit the learning system in its current state, but it might be possible to embark on a larger self-transformation in which the desirable policy might fit (Sheldrick et al., 2017). For such larger transformations, the observed system might also give inspiration, but not necessarily so; that idea could also come from self-analysis or from other places.

Different reasons for and forms of comparison might succeed each other. A North American city might look at Copenhagen and its success in promoting cycling, heritage preservation, green space development, and innovation in conjunction. It might first see the reason for success in the combination of policies, tries it out, and fails. Then, spurred by internal experts and active citizens, the city might hire a Danish consultant with extensive local knowledge. The consultant comes over, studies the American city, and proposes a different combination of policies, emphasizing innovation and downplaying heritage, while forgetting the whole biking part. Local politicians might now be fully awake, organize a visit to Copenhagen, as well as participatory visioning sessions, where the emphasis on innovation is picked up, but now in tandem with a new, slow traffic network, inspired by but not copied from Scandinavia.

2.3. Learning from Experts and Expert Knowledge

Governance systems can learn from experts, either internal or external. External experts include both academics and consultants. Consultants often have a financial motive, which might inspire copy/paste attitudes, to save time and to sell branded solutions. Consultants might also have a rich experience observing other organizations and governance systems and could therefore have a trust that academics lack, a trust rooted in perceptions of 'real world' testing and of efficiency, a trust sometimes necessary to trigger change (Fincham, 1999). Academics might have more time and creative freedom, yet might lack the experience, networks, and prestige to cause change. They are therefore often not recognized as the potential bringers of messages that management could not bring themselves. Internal experts can bring insider knowledge to the table but might not have the freedom to think and speak, and might also uncritically identify with the existing system, its problem definitions, grounding narratives, etc. (Fischer, 1990).

What enters the learning system and can spark understanding and change thus hinges not only on the content of what is offered, the manner in which it is offered, and the features of the learning system, but also on the roles assigned to different actors (Dunlop & Radaelli, 2013; Gould, 2009; Newig et al., 2016). Different people with the same message will be welcomed differently, and the acceptance of the message will be contingent upon a series of factors. Some of those have been highlighted in the first section of this article, and others include the positionality (the roles taken or assigned) of those introducing the expert knowledge supposed to bring change and induce learning (Alvesson et al., 2008; Spicer et al., 2009).

One can also understand the process of inserting expert knowledge towards governance learning as a series of translations and confrontations taking place in and between networks or systems (Sultana, 2011; Van Assche, Beunen, Holm, & Lo, 2013). The role of knowledge brokers as mediators or connectors has been highlighted (Hering, 2016; Reed, Stringer, Fazey, Evely, & Kruijsen, 2014). Governance systems often include a variety of experts, channels for external expertise to enter, and several centers and scales of decision-making. It is easy to see then how the effect of new knowledge on the learning system (i.e., the learning itself) is the result of a highly complex interplay and competition between governance actors (preferring a particular learning and direction) and between the knowledge brokers themselves (either preferring a particular policy direction or marketing of particular expertise; Hoppe, 2009).

Picking up the example of learning from Copenhagen in America, a local planning expert might have whispered an advice very similar to what the Danish expert said, with little impact. A different Danish expert might have been better informed about the North American city but lacked the prestige and networks of the one hired. Meanwhile, in the American city, infrastructure experts might have sidelined planners and landscape architects for a long time, so at first, Copenhagen was dismissed as too dense and difficult for car traffic. Later, the technical specifications of the bike lanes were scrutinized for car safety implications, while ignoring the context of the bike network and the linkages with open spaces and transit. The participatory visioning sessions might bring up calls for a different expertise, not perceived as present in either Copenhagen or the American city, associated with a forgotten indigenous heritage.

2.4. Dialectical Learning

In the literature on policy learning, there is a peculiar tendency to omit or forget the kind of learning that has been central to Enlightenment ideas of learning—the kind of learning that is in fact central to late modernist discourses on participatory governance, communicative planning, deliberative policymaking, etc. We speak here of dialectical learning: the production of new insights through discussion and deliberation. Indeed, if we take Habermas and others seriously, then we cannot present their view on deliberation as simply adding up preferences, and then grinding them up in a process of calculation supposedly producing a conception of the common good (Hillier, 2003). For Habermas—for the institutionalists interested in deliberative governance—

deliberation entails discussion, a testing of alternatives or, at least, the creation of new knowledge out of the confrontation and combination of existing ideas (Flyvbjerg, 1998; Tewdwr-Jones & Allmendinger, 1998). It does make sense, therefore, to speak of dialectics.

Holding a belief in dialectical learning does not position oneself in the modernist tradition of policy and planning, as it does not necessarily assume an objective and universal truth, nor the idea that the best, most persuasive argument, is the most rational one. Dialectical learning for a governance system does have to be more than the mere construction of new insights or arguments; it has to entail an effect of those arguments (Fischer, 2009; Kennedy, 2016). Whether an adaptive response to the new insight happens, hinges, again, on a variety of parameters. The literature, in our view, does not fully elucidate those conditions, as there is usually an a priori normative; an embrace of a particular idea of rationality, form of governance, or procedure (Hillier, 2002; Voß et al., 2006).

Participation and deliberation come in many forms, and not every form is conducive to actual dialectic learning (Fischer, 2003; Reed, 2008). The aforementioned openings for external expert knowledge, and positions for internal experts, can both encourage and limit dialectic learning. From a systems perspective, one can argue that cultivating diversity within and between organizations is of the essence (Alvesson et al., 2008; Ashmos, Duchon, & McDaniel, 2000; Seidl, 2005). In order to spark dialectic learning, one has to start with truly different perspectives on the state of affairs. Often, governance systems—in the name of efficiency or of shared values, identity, or consensus, or of supposed agreement on 'best practices'—start from a situation of minimizing difference. Such institutionalization of an a priori agreement does not enhance sharp observation, nor does it stimulate the construction of different perspectives, which can then, in discussion, lead to new ideas that could become shared and trigger organizational learning. Since Machiavelli, we know that conflict can be productive too, that dialectical learning can be a matter of quiet deliberation, and of strong differences in interest and interpretation. Discursive production can be the result of both polarization and the attempts at later reconciliation or cooperation (Bennett & Howlett, 1992; Hillier, 2002; Van Assche et al., 2014).

Dialectic learning can take place in different settings, and in the learning from Copenhagen example, it happened in city council, in administration, at the visioning sessions with locals, when hosting the Danish guest, and when visiting Denmark. It was helped by the diversity of perspectives brought in and the diverse forms of comparison in the lengthy process.

3. Comparative Learning in Planning Systems

If we understand planning broadly as the coordination of policies and practices affecting spatial organization, then it is clear that planning is spatial governance (Van Assche, Beunen, Duineveld, & de Jong, 2013). We can understand planning systems as the set of actors (individuals, groups, organizations) and institutions (plans, laws, policies, informalities) which make up the configuration structuring spatial governance. Planning systems are always embedded in larger governance systems that represent special needs for learning, but also coming with particular obstacles for it (Nadin & Stead, 2008). The generation and sharing of knowledge across planning systems and from research to practice is at the core of what planning researchers do (Silva, Healey, Harris, & van den Broeck, 2015).

Clearly, spatial governance is imbued with cultural values; each culture has different ideals and acceptable modes of organization of space. Planning is linked to ideas of the good community, and to the pursuit of both collective and individual goods. This means that planning is likely to be a site of policy integration and at the same time an arena where different interests compete for greater influence on spatial organization. Moreover, planning is supposed to provide both flexibility (adapting to new public and private interests and goals) and stability (protecting property and reasonable expectations of transaction rules), which further entrenches a planning system in a locale and makes simple import of foreign practices unlikely to be successful (Beunen, Patterson, & Van Assche, 2017).

Any observer of the American planning perspectives of 'smart growth' or 'new urbanism'—each assuming that their recipe can be metabolized anywhere—can tell us that the American reception of their recipe is not an easy digestion, but instead a rejection or tough struggle, in an environment where property rights politics has shifted to the right (Platt, 2004). These two American approaches to 'good planning' also show how very different discourses on planning affect their implementation or non-implementation, including discourses rejecting spatial planning as such. Learning, then, becomes an unlikely event, as discussion and openness are either suppressed, or take the form of a debate where winning rather than dialectic learning is the goal.

Parallel to our observations on the limiting and enabling conditions for comparative learning in governance generally, we also observe that comparative learning does happen. Indeed, the idea of planning itself spread from town to town, before higher level administrations enabled it, and to an extent imposed it (Scott, 1998). Let us not repeat here our observations on governance and comparative learning, but instead specify what they could mean in the case of planning and how, despite their particular evolutionary rigidities, planning systems are not immune to comparative learning. We can speak here of planning systems that learn through direct comparison, and of the academic (outsider) benefits of planning comparisons, some of them with implications for comparative learning within planning systems.

In spatial planning systems, comparison can enter through various modes: The experts in planning them-

selves (academic and otherwise) are steeped in comparative learning (Silva et al., 2015) and the professional associations they are members of tend to reinforce this thinking. External planning consultants tend to sell their familiarity with many other cases, especially with ideas that have 'worked.' Planning academics can do the same, but often retain more space for the application of new ideas; ideas which might, in turn, be derived from comparison of cases (Hillier, 2002; Kennedy, 2016). The situation is different, though, for many other brands of academics at work in planning. For engineers, ecologists, hydrologists, and others, the knowledge base is often more based on deduction and modeling rather than on inductive comparison (Van Assche & Hornidge, 2015). Their inclusion in the planning system influences comparative learning as it brings in other criteria of evaluation.

Participatory planning discourses expect higher democratic legitimacy by including more actors directly, while arguing that this also makes planning more efficient (avoiding conflicts later) and adaptive through the inclusion of local knowledge (Hillier, 2002; McFarlane, 2012). Where private commercial parties, either consultants or developers, take on a big role in planning, their experience comes to weigh in, with comparative learning more likely to be introduced through the experts (consultants and experts working for developers). Broadly speaking, one can notice a growing complexity of spatial planning and growing tensions between dialectical learning and expert learning (Fischer, 2009). Where systems attempt to become more participatory, and when this is taken seriously, new opportunities for dialectical learning—and from there, comparative learning—might arise.

Participatory planning is thus expected to solve the issue of knowledge integration in complex governance systems, while fixing the other problems mentioned. Knowledge integration was supposedly already covered by the diversity of experts working for the high modernist state, but that idea of state got in trouble for practical and ideological reasons decades ago (Scott, 1998). The issue of knowledge integration brings us to the issue of policy integration. Indeed, the two are linked, and the way policies are integrated in a spatial plan affects both the way knowledge is weighed and how it is integrated (Van Assche & Hornidge, 2015). This process always creates losers and winners (less and more influential knowledges) and it further shapes how the system can transform (cf. Alvesson et al., 2008). For example, if a spatial plan is structured around water as a first ordering principle, and engineering and hydrological knowledge underpins this first ordering structure, then this cognitive and spatial frame will determine which spatial changes are possible and which are not, and it will influence what other knowledge could induce a system change; as for instance in the Dutch Room for the River Program of the 1990s (Zevenbergen, Rijke, van Herk, Ludy, & Ashley, 2013). For this reason, some have argued for flexible policy integration, as coordination of knowledges rather than a cemented form of comprehensive planning with predefined spots for particular knowledges (Van Assche & Djanibekov, 2012).

Limits to participation and to the flexibility of policy and knowledge integration exist and this brings us back to the specific difficulties for comparative learning in spatial planning. First, the previously existing form of policy integration exerts pressure (Candel & Biesbroek, 2016). Some choices made are not easy to alter, even if one wanted it. Second, the planning system is expected to create stability and predictability as well as adaptivity. Comparative learning can be used here by both proponents of stability and flexibility, by referring to more stable or more adaptive systems, as part of their argument. If strong property rights are the focus of planning, and coordination and collective goal setting move to the background, comparative learning is still possible, as many institutional designs are still possible. These observations reiterate, however, that planning never operates in a vacuum, and that literally every premise of a planning system can be questioned if broader governance configurations shift. That is, spatial planning remains an arena; it is never only a factory or laboratory (Bunnell, 2015; Tewdwr-Jones & Allmendinger, 1998).

This reveals a third limitation of the desirable feature of flexible policy integration: Some forms of knowledge and some forms of policy integration are deeply entrenched because of deeply entrenched discourses, values, and narratives—either in the governance system itself (e.g., city administration is an engineer's domain) or of the broader community (e.g., we are a farming community; Czarniawska, 2001; Scott, 1998; Van Assche, Gruezmacher, & Deacon, in press). We see here again the importance of the embedding of planning in governance and governance in communities, for the enabling or limiting of learning.

Planning thus comes with ambitions of policy and knowledge integration, it is marked by its own history and the history and culture of the communities it operates in, it has to balance flexibility and stability and it functions as an arena where many processes of value creation (linked to activities which need a space) are decided upon. These features of planning systems shape the possibilities and limits of learning, and of comparative learning. Grasping the features quickly leads to questioning of formulaic solutions. It inspires doubts about easy recognition and import of 'best practices' independent of unique forms of policy and knowledge integration, power relations in the planning system arena, and the double embedding referred to. Non-learning and learning the wrong thing occur very often, spurred by the desire for easy solutions, for technocratic certainty, and for political glory and economic efficiency (Dunlop, 2017).

In the following section, we elaborate the discussion of comparative learning in and for spatial planning and we consider a few methods that could be of use in the arena of spatial planning.

4. Methods of Comparison

First, when attempting comparative learning, one has to decide what to compare:

- The design of the whole planning system, as shaping learning modes?
- The adaptive capacity of the planning system and its modes of transformation, as proxy for learning?
- Forms of knowledge, of knowledge integration, or policy integration in the planning system?
- The way the planning system is rooted in governance, in cultures, emphasizing embedding as shaping learning?

Second, there is the question of what the goal of the comparison is:

- Understanding a feature of the observed system?
- Answering a more general question?
- Helping a different system struggling with a particular planning issue?

Third, there is the selection of systems to compare between. This could entail:

- A matter of sample size and composition (mostly in quantitative approaches);
- A comparison between places and only secondarily their planning systems;
- A targeted comparison with one successful area (e.g., Silicon Valley) towards emulation;
- A comparison of the embeddings of planning in governance systems;
- Comparing forms of competition between planning and other policy domains.

For comparative learning it is advisable to disentangle the specific feature from context: Does it work here because of a particular context, or may it work generally, across contexts? Answering this question can lead us to the analysis of various contexts in the observed systems, to understanding how they affect the observed feature, and to the careful observation of the feature itself in various systems: Is it actually the same with the same benefits? A third option here is to combine a mapping of planning and governance systems at the same time, which can then elucidate the linkages. A fourth approach is to focus on the shared contexts, which may make sharing of solutions easier (cf. Nadin & Stead, 2008).

A promising method of comparison for the analysis of spatial planning and governance systems is Qualitative Comparative Analysis (QCA; Gerrits & Verweij, 2018; Verweij, 2017; Verweij & Trell, 2019). QCA is particularly useful for generating explanations about how and why planning processes or systems perform the way they do, or produce certain outcomes, taking into account explicitly the perceived complexity of the contextual environments encountered (Gerrits & Verweij, 2018). The method is geared towards the comparison of systems—with cases as complex entities that consist of multiple aspects or features (cf. Byrne, 2005, 2009). Cases are arranged in a 'truth table' that lists all the logically possible combinations of aspects (i.e., configurations), and the length of which is dependent on the number of case aspects or features considered (see Schneider & Wagemann, 2012). By pairwise comparing those configurations that show similar outcomes, and that differ in only one of the aspects, that aspect in which they differ can be eliminated as—in QCA-terminology—a necessary or sufficient 'condition' or 'cause' for explaining the outcome. As such, the method allows to disentangle (contextual) features that have explanatory value in specific cases from features that work across cases, i.e., that are context-unspecific (Verweij & Trell, 2019). Although QCA can be conceptualized to be able to trace the trajectory or development of planning or governance systems over time (Byrne, 2005, 2009), it is actually not designed to do so (Gerrits & Verweij, 2018), and other methods may be better suited to that kind of purpose.

The methods of path and context mapping, derived from EGT, can prove useful to understand the evolution of planning systems more in detail, as well as their embedding in governance (Van Assche et al., 2019). Application of these methods can have the benefit of combining several of the above-mentioned options. Time constraints can be an issue, and comparing governance paths still requires decisions: Which features of the paths do I want to compare and why? Which scales are relevant? Which periods? An additional benefit is that transformation mechanisms can be made visible. Each compared system has different features which can be explained through its context, but also through its mode of transformation. Even if a context might be shared, the transformation mechanisms might not be. When comparing systems, the grasp of transformation potential looks paramount, so mapping of features without understanding existing capacities can be pointless. Moreover, as we pointed out, learning becomes implicated in itself: In order to trigger comparative learning, one has to map out existing modes of learning in the system.

If the goal of the comparison is ambitious, bricolage and nesting of methods is highly recommended. It is unlikely that one method of comparison can tease out all the information needed to answer the research question and certainly to link knowledge to action. That means that broad methods such as path mapping can contain, or combine with, other methods, such as QCA, but also traditional methods of data collection and analysis, such as: participatory observation, interviews, survey's, descriptive statistics, process tracing, document analysis (including discourse analysis), cartographic analyses, or focus groups (either per case or when comparing; Sheldrick et al., 2017; Verweij & Trell, 2019; Wood, 2016).

We can make a distinction between comparative research in and for planning systems. If we consider com-

parative learning within planning, or governance, then one can consider a variety of participatory methods, where comparisons can be included in a more structured manner (beyond the places the planners or council members have visited). One can think here of participatory visioning, charrettes, competitions, public debates, or participatory design, where either comparable cases are spelled out, or brought up during the activity (Innes & Booher, 2010).

Such participatory methods of comparison can also cultivate reflexivity in governance, which in turn can increase chances of discerning features of other systems which might translate well. Methods to encourage reflexivity enhance the conditions in which methods for comparison can be applied, as they encourage learning in its different forms, and the productive combination of forms of learning (Alvesson et al., 2008; Seidl, 2005). We referred to the relevant literature for such methods, and refer to our earlier remarks, yet can highlight here the importance of maintaining difference and discussion in governance, creating access to governance, and avoiding mixing logics (de-differentiation), rigid hierarchies, excessive policy integration and, a common issue, elimination of critical thinking by bureaucratic routines.

5. Conclusion

Comparing planning systems is as old as planning itself, and comparative learning is part and parcel of any governance process (Friedmann, 1987; Silva et al., 2015). We analyzed planning as spatial governance, as always embedded in governance systems. We situated comparative learning within a set of other forms of learning, which can entangle and enrich each other: learning from one's own past, expert learning, and dialectical learning.

Reflexivity is an important concept in understanding the possibilities of comparative learning and the possibilities of learning as such. Indeed, self-understanding and analysis of the own governance path makes other forms of learning potentially more productive, as it enhances the understanding of what would happen to knowledge in a learning system and how that knowledge could transform it. For comparative learning in governance it is easy to grasp that the observing system needs to be very well aware of its own features, transformation modes, and goals of the comparison. For comparative learning for governance the same applies, even if the observer is less implicated in the process.

Comparison which aims at using practices or ideas from other systems encounters special obstacles in spatial planning. Those are related to the function of spatial planning as a site of policy integration, its function of balancing flexibility and stability, and its deep roots in the communities whose space it organizes. Indeed, space is the expression of shared values, of cultures, as much as it is the expression of competition between values and narratives. What is possible in planning hinges on context, history, and contingent events. This applies to learning and comparative learning, whereby governance and community are relevant contexts.

Planning is always an arena of deliberation and knowledge production. The methods of comparison have to avoid either assuming that planning systems are technical systems which can be rationally optimized, or that the methods of comparison themselves are neutral. Further, the observer, either inside or outside a planning system, can clarify for his/herself what the goal, the scope, the duration and cost, and the detail of the comparison is. This can then lead to a choice for certain methods, or assemblage of methods of comparison.

What any comparative planning analysis has to grapple with is the question to what extent the features of the observed system and its successes are a product of context, of a particular fit between system and context, of contingent events, or of specific performances of success. In other words: comparative learning has to transcend technicalities to achieve real results; it has to trigger dialectical learning.

Comparative learning does not take place in isolation from other forms of learning and the linkages between the forms of learning can be managed in order to optimize the effect. The point is not to take something and adapt it, but to figure out something about other places and systems, about oneself, to learn from theory, and to bring this together in discussions which produce novel insights, which enable dialectical learning. Cultivating reflexivity helps to link the different forms of learning. This fits the image of planning (and governance) as an ongoing and open-ended conversation. Comparison ideally becomes creative comparison, and improving learning capacity involves combining the learning modes in a more conscious manner.

Conflict of Interests

The authors declare no conflict of interests.

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Article

Diverging Ambitions and Instruments for Citizen Participation across Different Stages in Green Infrastructure Projects

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Abstract
Both theory and practice increasingly argue that creating green infrastructure in order to make cities climate-proof requires joint public service delivery across the green infrastructure's lifecycle. Accordingly, citizen participation in each green infrastructure project stage is required, but the type of participation may differ. So far, limited research has been conducted to detangle how participation in green infrastructure projects is operationalised along the different project stages. This article, therefore, presents a comparative case study of nine European green infrastructure projects, in which we aim to determine: (1) how participatory ambitions may differ across green infrastructure project phases; and (2) which instruments are used to realise the participatory ambitions for each phase and whether these instruments differ across stages. The cases demonstrate different participation ambitions and means in the three project phases distinguished in this article (i.e., design, delivery, and maintenance). The design and maintenance stages resulted in high participation ambitions using organisational instruments (e.g., living labs, partnerships with community groups) and market-based instruments (e.g., open calls). In the delivery phase, participation ambitions decreased significantly in our cases, relying on legal instruments (e.g., statutory consultation) and communicative instruments (e.g., community events). Altogether, our exploratory study helps to define participation across the green infrastructure lifecycle: Early stages focus on creating shared commitment that legitimises the green infrastructure, while later stages are also driven by instrumental motives (lowering management costs). Although theory argues for profound participation in the delivery stage as well, our cases show the contrary. Future research can assess this discrepancy.

Keywords
climate adaptation; community involvement; green infrastructure; participation; policy instruments; urban water management

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1. Introduction

Local governments are increasingly constructing green infrastructure, such as rain gardens, green roofs, and permeable pavement in order to make their cities more climate-sensitive (Benedict & McMahon, 2002). Green infrastructure can have multiple benefits, for example, enhanced ecology, property values, and health and well-being (Kabisch et al., 2016; Zidar et al., 2017). The benefits of green infrastructure are widely recognised, yet

the actual design, delivery, and maintenance of green infrastructure on the local level are found to be difficult (Jerome, Mell, & Shaw, 2017). Where traditionally grey infrastructure is delivered in a technocratic, centralised, and engineering-driven manner (Brown, Ashley, & Farrelly, 2011), the creation of green infrastructure increasingly takes place within a network of multiple stakeholders. These stakeholders can involve local communities, businesses, and NGOs (Innes & Booher, 2004; Osborne, Radnor, & Nasi, 2013). Hence, local governments responsible for constructing green infrastructure are increasingly moving towards an enabling or facilitating role in order to stimulate a variety of stakeholders in co-delivering green infrastructure (Mees, Uittenbroek, Hegger, & Driessen, 2019).

This new role fits within a popular contemporary understanding of governmental involvement in public policy and public service delivery in general. In this understanding, a central premise is that each stakeholder brings in their own specific resources to the table and public value is mutually created (Voorberg, Bekkers, & Tummers, 2015). Thus, the pooling of diverse resources is elemental for effective decision-making, policy design, and implementation (Osborne, Radnor, Kinder, & Vidal, 2015). In addition, the government's main task is to facilitate network partners to collectively determine the scope, ambition, and instruments of these public services (Hartley, 2005; Osborne, 2006). Such a participatory conception of public service development and delivery is increasingly the standard in policy domains such as public health care (e.g., Dunston, Lee, Boud, Brodie, & Chiarella, 2009; Hyde & Davies, 2004) and education (e.g., Kotze & du Plessis, 2003; Porter, 2013), as well as urban planning (e.g., Burton & Mustelin, 2013) and urban water management (e.g., Sharp, 2017).

More participatory forms of public service delivery can also be seen in the domain of green infrastructure construction. Recent research on green infrastructure has discussed, for example, effective collaborative governance arrangements (Frantzeskaki, 2019), new participation techniques (Wilker, Rusche, & Rymsa-Fitschen, 2016), local government roles in community initiatives (Mees et al., 2019), the use of citizens' local knowledge (Faehnle, Bäcklund, Tyrväinen, Niemelä, & Yli-Pelkonen, 2014), and citizen volunteering (Jerome et al., 2017). However, to date, the dynamic nature of green infrastructure remains somewhat neglected in this body of research. Green infrastructure is a dynamic asset that, being nature-based, is self-generative (Fletcher et al., 2015). Accordingly, green infrastructure requires on-going participation over the course of its lifecycle. Yet, the type of participation may differ along the lifecycle (Uittenbroek, Mees, Hegger, & Driessen, 2019; Wilker et al., 2016). To illustrate, the design phase may bring ideas together from different stakeholders, whereas the maintenance phase could entail citizen volunteers that monitor the green infrastructure. Given the different types of participation, we aim to determine: (1) how participatory ambitions may differ across green infrastructure project phases; and (2) which instruments are used to realise the participatory ambitions for each phase and whether these instruments differ across stages. As a result, this article answers the questions: (1) To what extent do participatory ambitions differ across different stages of green infrastructure development? (2) What kind of policy instruments are implemented by local governments in order to stimulate such a level of participation?

In order to answer our research questions, we conducted a comparative case study of nine green infrastructure projects situated in North-Western European mid-sized cities that are located in Belgium, Germany, the Netherlands, Norway, Sweden, and the UK. The projects are similar in terms of ambition (realising green infrastructure in a participatory manner); are all the responsibility of local governments (municipal level); and are all driven by public departments that share a background in engineering common in the field of urban water management (Brown et al., 2011). This article contributes to the literature on green infrastructure by enhancing our understanding of how ambitions about citizen participation may differ across the different phases of green infrastructure construction, what these possible differences explain, and how these differences are reflected in the selection of different policy instruments.

The article is structured as follows: The second section entails the theoretical framework, which combines insights from the literature on public participation and policy instruments. The third section discusses the methodology and introduces the nine cases. Fourth, the results are presented per green infrastructure project phase. The fifth and final section presents conclusions and reflections.

2. Literature Review: Citizen Participation in Green Infrastructure Projects

In general, the participation of citizens in public service delivery regained attention in the aftermath of the critique on New Public Management (NPM) as the dominant governance paradigm (Rhodes, 1996). In NPM, due to an increased emphasis on governmental efficiency, public services were fragmented (Dunleavy, Margetts, Bastow, & Tinkler, 2006), lacked the typical legitimacy of non-market driven services (e.g., education, social support; Brandsen, Trommel, & Verschuere, 2015), and generally were increasingly considered as unable to address new challenges in a complex world (Osborne, 2006; Rhodes, 1996). Therefore, in order to effectively address societal needs, the government is to be expected to collaborate with and within a network of other stakeholders, such as citizens and their communities, businesses, and NGOs (Innes & Booher, 2004). The underlying idea is that when those resources are pooled and actors understand their inter-dependent position within a network with other actors, new and innovative solutions to contemporary policy challenges are developed

(Osborne et al., 2015). Also, since a wide range of stakeholders can be involved in both the design and implementation of public services, these services are considered to be more legitimate than traditional public service development (Osborne et al., 2013). Such collaborations imply a profound level of participation of communities, businesses, and NGOs that goes beyond information provision or consultation (Arnstein, 1969). As a consequence, collaborative arrangements are proposed in which actors mutually create value, for example, reflected in either formal or more loosely coupled partnerships. Despite its promises and widespread use, research has presented mixed results of participation until now (Burton & Mustelin, 2013; Rydin & Pennington, 2000).

The need for more elaborate forms of citizen engagement can also be found in the literature on green infrastructure (e.g., Faehnle et al., 2014; Lovell & Taylor, 2013; Mees et al., 2019). Here, a similar need for profound levels of participation is displayed, often because the wider societal benefits of green infrastructure require that "all groups of society should have a say in its planning and implementation to ensure that it meets their requirements" (Wilker et al., 2016, p. 230). If we look more closely into research on participation in the realisation of green infrastructure, scholars have focused predominantly on the early stages of green infrastructure development. In these stages, forms of collaborative governance and co-production are advocated (Frantzeskaki, 2019). Likewise, Wilker et al. (2016) argue that more interactive participation methods should be used at the very early stages of the planning process in order to achieve legitimate outcomes. As Jerome et al. (2017) argue, participation in later stages, such as the maintenance phase, remains under-researched, which could be substantiated with insights from green space management strategies that advocate environmental stewardship and citizen volunteering.

The different operationalisations of participation in green infrastructure development suggest that participation is shaped differently over the course of the green infrastructure lifecycle. Based on Uittenbroek et al. (2019), we define three phases in green infrastructure projects: project design; project delivery; and project maintenance. Consequently, we expect that the type of participation desired by local governments will differ across these three stages.

2.1. Policy Instruments to Stimulate Participation

The type of participation employed by local governments in green infrastructure projects can be understood by looking at the policy instruments they use (Salamon, 2002). Policy instruments are the "tools of government" (Hood, 1983) that aim to either restrict or enable certain activities and behaviour (Bouckaert, Peters, & Verhoest, 2010). Furthermore, each policy instrument places responsibility on certain actors differently, for instance assigning responsibility to the government itself, businesses, associations, communities, or combinations of these. Policy instruments, thus, differ in the way they steer. To illustrate, in the creation of green infrastructure, governments can make use of legal instruments, such as regulations and norms, and market-based instruments, such as tenders and grants (Krause, Hawkins, Park, & Feiock, 2019). In addition, they have developed capacity-building and awareness-raising instruments to involve communities in taking climate adaptation measures (Dai, Wörner, & van Rijswick, 2018).

Whereas the literature often suggests that policy instrument choice is based on its effectiveness (e.g., Henstra, 2016; Hood, 1983), Kassim and Le Galès (2010) argue that contextual factors also play an important role in policy instrument choice, stressing the power balance between actors. Thus, governments not only follow the logic of effectiveness, but also the logic of appropriateness in selecting and developing policy instruments (Capano & Lippi, 2017; Krause et al., 2019). Policy instruments can be categorised in various ways (e.g., Bouckaert et al., 2010). Probably most famous is the distinction between the stick, the carrot, and the sermon (Bemelmans-Videc, Rist, & Vedung, 2011). Another widely used distinction is how governments employ the resources of nodality (or information), authority, treasure, and organisation, which is translated into respectively communicative, legal, market-based, and organisational instruments (Hood, 1983; Howlett, 2000). In this article, we follow this distinction since it has been used more widely in climate adaptation research and it encompasses both coercive and less coercive instruments (see Table 1; Henstra, 2016; Mees et al., 2014).

First, legal and authoritative policy instruments involve norms and standards (Bouckaert et al., 2010). This category of instruments can be characterized as top-down, in which governments define the participation frameworks. Accordingly, responsibilities are clearly assigned—often to technical elites—and other actors are required to comply. Legal instruments are considered to be resource-intensive because of the monitoring and enforcement costs of laws and regulations. These instruments can also be somewhat imprecise, as standardised rules often target a large audience (Henstra, 2016). Likewise, there is little autonomy for implementers and they are inflexible to coordinate (Verhoest, Legrain, & Bouckaert, 2003). Second, market-based instruments are instruments aimed at changing certain behaviour through market mechanisms (Bouckaert et al., 2010). Subsidies and grants are common examples of this and can activate communities to become involved. As they are usually targeted at distinct audiences, market-based instruments are said to be efficient and accountable instruments (Henstra, 2016). Third, communicative instruments focus on informing an audience about certain matters such as relevant issues, policies, activities, or events (Henstra, 2016). A typical example is the awareness-raising campaign. By informing an audience, these instruments generally help to increase legitimacy and can mo-

Table 1. Four categories of policy instruments to stimulate participation (adapted from Henstra, 2016; Hood, 1983).

	Category	Type of participation	Examples
1	Legal	Participation through compliance	Penalties; mandates
2	Market-based	Participation through influencing market mechanisms	Grants; competition; subsidies
3	Communicative	Participation through information provision	Information boards; public campaigns
4	Organisational	Participation through mobilisation of actors	Partnerships; agreements; social networks

tivate stakeholders to take actions. However, such instruments typically treat the audience as a passive receiver of information, rather than an audience to be engaged and activated—and thus become involved. Fourth, organisational instruments relate to the establishment of new organisational units or social networks in order to mobilise actors and stimulate direct involvement. Examples of this are community partnerships or voluntary agreements. Although organisational instruments are directly aimed at involving a variety of actors, they often remain largely invisible to the greater public and therefore may have limited legitimacy (Henstra, 2016).

Taken together, this article focuses on the type of participation ambitions that local governments espouse in the different phases of green infrastructure projects. Differences in participation type can become visible in how governments aim to achieve these ambitions, i.e., which policy instruments they use to fulfil their participation ambitions. In the next section, we elaborate on the used research methods in order to answer our research question.

3. Methodology

Our study is based on a case study comparison of nine green infrastructure projects in North-Western Europe, involving nine cities and six countries (introduced in Annex 1 in the Supplementary Material). The cases share the ambition to realise green infrastructure in a participatory manner. Together, these cases provide an overview of current green infrastructure practice in North-Western Europe.

3.1. Data Collection and Analysis

The data collection relied on two data sources. First, a questionnaire was distributed among project leaders in late 2018 to get an overview of the project, the ambitions, and the involved local governments and other stakeholders (see Annex 2 in the Supplementary Material for detailed questionnaires). Second, 21 representatives from the nine cities (approximately two participants from each city) were consulted during a workshop organised in Bradford (UK) in September 2019 to further discuss the type of participation and the policy instruments used. In the workshop, three topics were discussed:

1. Inventory of the ambitions. In this step, participants talked and wrote about the projects' aspirations and ambitions by the start of the project concerning citizen participation;
2. Inventory of the policy instruments used. Participants were asked to define their instruments for citizen participation and relate them to the categorisation of Table 1;
3. Rating the effectiveness of the instruments (what works well, what does not work). The final step included a measurement of the perceived effectiveness and hence a self-estimation of the civil servants championing the projects.

For each step, participants filled in hand-outs (summarised in Annex 2). Group discussions were audio-recorded. Also, the authors' observations were used to verify the findings. For the analysis, the cases were first clustered based on the project phase. First, participation ambitions were identified from the hand-outs. Ambitions stated in the workshop were verified with findings from the questionnaire from 2018. Second, the instruments used for citizen participation were examined per project phase and categorised into one of the four instrument types. Third, the perceived effectiveness of individual instruments was used to identify underlying motivations for the instrument choice.

4. Results

The results section presents, first, the participation ambitions of the cases and, second, the policy instrument choices that lead to a type of participation. The third and final part of this section contains a discussion of the findings.

4.1. Different Citizen Participation Ambitions across Project Phases

When it comes to citizen participation, we see that the projects have very different starting points in terms of ambitions. Annex 1 presents the ambitions of the nine cities concerning citizen participation. The ambitions of the cases can be clustered following the three project phases distinguished in the theoretical framework.

4.1.1. Design Phase

In the project design phase, respondents indicate that citizen participation is focused on building coalitions, engaging citizens with their living environment, and mutually designing the green infrastructure. The three projects that are in this stage, located in Antwerp, Dordrecht, and Gothenburg, entail large-scale urban redevelopment projects with a central role for green infrastructure, which they aim to realise through the involvement from different municipal departments (e.g., urban planning, transportation, urban drainage, and health), landowners, NGOs, and community groups. To illustrate, Antwerp City Council had long-term ambitions to redevelop the Sint-Anneke Plage on the left banks of the Scheldt River. The opportunity to create green infrastructure in this area was seized by the project team to also boost the local socio-economic situation and improve recreation facilities. As the project impacts local residents, landowners, and entrepreneurs, the City Council wants to heavily involve them in the design, delivery, and maintenance of the green infrastructure. Similarly, Dordrecht City Council had many separate investments planned in the Vogelbuurt neighbourhood related to improving the social cohesion and living conditions as well as to replacing the sewage system. The ambition to create green infrastructure resulted in a goal to combine these investments into one comprehensive plan which highlighted the inclusion and collaboration of NGOs, residents, and neighbourhood organisations. Finally, the project in Gothenburg is aimed at "activating" the Frihamnen area, a former uninhabited harbour area that will be transformed into a residential neighbourhood. The co-design of green infrastructure is used to engage local residents with the area, so they get to know this currently uninhabited area.

4.1.2. Delivery Phase

Citizen participation in the project delivery phase is perceived as somewhat different compared to the previous phase. The projects that are currently delivering their green infrastructures are located in Aberdeen, Bergen, Bradford, and Hamburg. These projects include both large-scale redevelopment projects (Bergen, Bradford) and small-scale green infrastructure (Aberdeen, Hamburg). According to respondents, the aim to deliver the green infrastructure project requires no or limited community involvement. As a result, the local government leading the project adheres to a more traditional role, in which citizen participation is predominantly an instrumental aim that helps to deliver the project more smoothly. This can be explained by two mechanisms. First, some cases, such as Bergen and Bradford, feel a limited need for citizen participation that moves beyond consultation at this stage. The projects in Bergen and Bradford are driven by transportation goals, with a smaller role for green infrastructure. To illustrate, the project in Bergen is driven by the creation of a new light rail that will connect the Mindemyren neighbourhood to the city centre. Bergen City Council uses this redevelopment as an opportunity to create green infrastructure along the corridor. Attention in this phase is mainly paid to swift implementation. Second, some cases have limited experience with participation. To illustrate, in the cases of Aberdeen and Hamburg, public water authorities or water departments are in the lead of creating the green infrastructure. These cases are in general more engineering-oriented, focusing on creating climate adaptation measures and less on community involvement. This is, for example, reflected in the term Sustainable Urban Drainage Systems (SUDS) used by Aberdeen, which stresses the technical orientation, albeit more nature-based (using ecosystem principles in the technical design). The central aim is to create more water storage and climate adaptation measures, seen in small-scale projects such as the creation of rain gardens along a street.

4.1.3. Maintenance Phase

The projects in the maintenance phase are Enfield and Kent, which also have high ambitions in terms of community involvement. While citizen participation in the design phase aimed at networking and bridging interests, the projects in Enfield and Kent aim for a more facilitating role since the local governments aspire to involve the community in the maintenance of the green infrastructure. They have already realised green infrastructures, such as rain gardens (e.g., at George V Park, Kent) and wetlands (e.g., in Broomfield Park, Enfield). These instances are relatively small-scale, concrete infrastructure measures that require more maintenance than traditional grey infrastructure would. Therefore, respondents argue that they aim to stimulate communities, such as voluntary groups, to co-maintain the more costly green infrastructure. To illustrate, a respondent from Enfield stated that this could not only lower maintenance budgets but also stimulate social cohesion in the neighbourhood adjacent to the wetland.

Overall, we observe that citizen participation ambitions follow the curve of a U-shaped parabola (red line, Figure 1).

4.2. Policy Instrument Choice for Citizen Participation

If we look at how the cases translate their participation ambitions into policy instruments, we observe that the projects have employed different instruments for citizen participation across the project phases (Table 2).

4.2.1. Design Phase

The cases seem to prefer two types of instruments in the design phase: organisational and market-based instruments. Concerning organisational instruments, the cases of Antwerp, Dordrecht, and Gothenburg have estab-

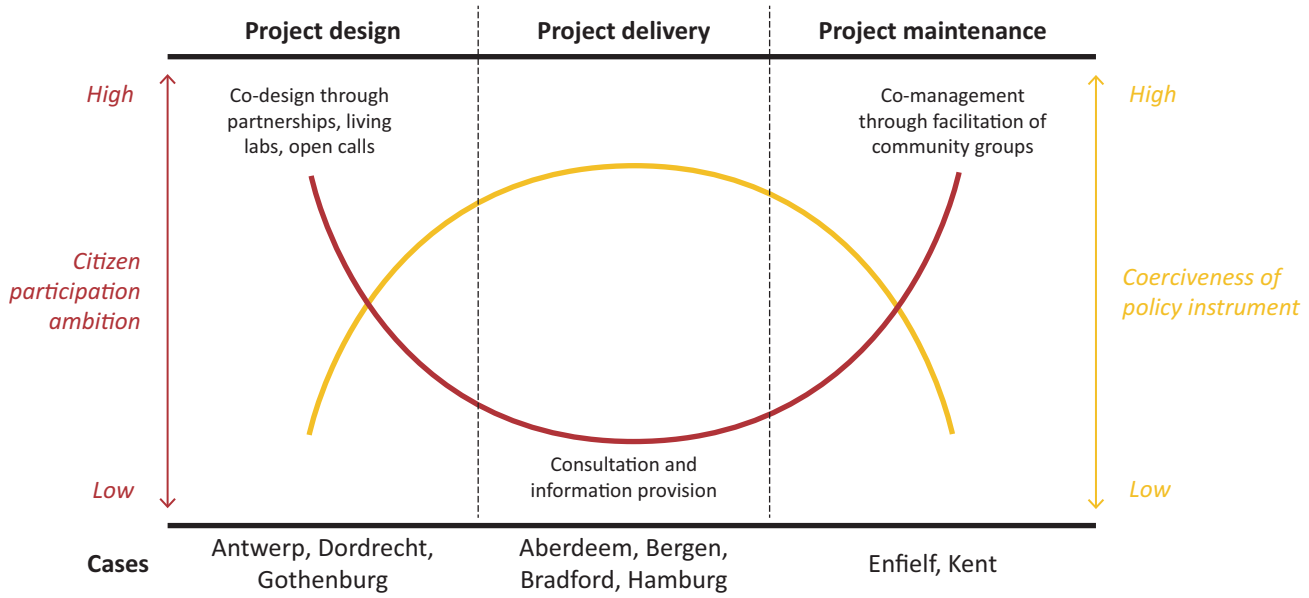

Figure 1. Citizen participation in the three green infrastructure project phases, including examples of policy instruments used.

lished new organisational units, such as the launch of an urban living lab (Antwerp), a dedicated team working on "blue-green challenges" (Dordrecht), and a new project team (Gothenburg). Respondents argue that these new units could more easily reach out to other stakeholders, which is effective for building coalitions and in shared meaning-making between stakeholders. For example, respondents in Antwerp stated that the living lab created a setting in which the local government can work together with local stakeholders more collaboratively, resulting in a jointly designed green infrastructure plan, developed from the "bottom up." However, respondents mentioned that mobilising actors did not directly result in political support for the plan. For instance, the plans jointly developed by a constellation of the City Council, an NGO, the waterway authority, and consultants in the living lab in Antwerp were not approved by politicians, which put the project on hold. Similarly, municipal departments that were not involved in the living lab considered the plans unfeasible and felt they were given limited incentives to implement them. The new department in Dordrecht did not receive abundant financial resources, so the team became occupied with building up a coalition of stakeholders that could become supporters of realising green infrastructure and put pressure on stakeholders to invest in this. In Gothenburg, a project team was formed by officials from the municipal City Planning Office (*Stadsbyggnadskontoret*) and the public enterprise River City Company (*Älvstranden Utveckling*), which is the landowner in the Frihamnen district. As the team was loosely connected to their "mother organisations," the project team felt more freedom to involve communities as much as possible, which resulted in the development of a participatory place-building method.

In addition to organisational instruments, market-based instruments were also used. In Gothenburg, the team used the instrument of an open call to invite architects and artists to design prototypes for Frihamnen. These prototypes had to be developed in close cooperation with residents. To illustrate, one architecture firm developed a sauna which was co-designed with residents. According to a respondent, the area used to be a no-go area in the city, as the area was uninhabited. Through the creation of prototypes and the involvement of citizens, the project team triggered interest in the area (hence place-building). Respondents from Gothenburg were very positive about this: The open call not only created value in the area (through the construction of prototypes) but also generated social cohesion and a sense of ownership among residents that participated in the design. This is accredited by respondents to the high level of organisation of the architecture firms that won the open call, building further on their experience gained in other projects. Dordrecht made use of a European funding opportunity, in which the grant application was jointly developed by both the local City Council and neighbourhood organisations. Thus, such applications can help in creating a shared commitment. Although the grant was not approved, respondents from Dordrecht City Council are still positive about this instrument. For example, a respondent argued that working together generated a lot of energy among stakeholders and that the shared ambition continues to exist. Taken the two instrument categories together, the organisational instruments focused mainly on creating a network that could contribute to the co-design of green infrastructure, while the market-based instruments were used for the actual co-design.

4.2.2. Delivery Phase

The cases in the delivery phase, having limited participation ambitions, predominantly relied on statutory con-

sultation, a legal, coercive instrument. Examples include formal public hearings as well as more informal community meetings and events. For example, in Aberdeen, consultation took place with local stakeholders in community consultations, such as with the local Fernielea School. To illustrate, school pupils and their parents were involved in choosing different SUDS designs. In Bradford, the wider public was mainly informed through traditional and social media and can provide input during statutory community meetings. Respondents argued that they are well-experienced with consultation meetings, as they have ample experience with this. In general, they argue that face-to-face consultation ("two-way communication") is preferred over "passive" consultation via (online) questionnaires. For consultation meetings, respondents provided a wide range of communicative instruments to inform residents, such as drawings, 3D-animations and videos, and both social and traditional media. Respondents from Bergen were very enthusiastic about the creation of a scale model of their regeneration project, which worked well to make the plans concrete and to start discussions with residents. Likewise, a respondent from Bradford City Council argues that videos made the plans more tangible and imaginable for residents. According to respondents, a downside of these instruments was that they fail to reach everybody within the community. Particularly in neighbourhoods without any (formal) community groups known to the authority, respondents argued that it can be challenging to engage with residents. Respondents suggest working with local schools to reach their parents and, subsequently, build up trust and engage with the wider community. In addition, online communicative instruments were considered challenging, as information can easily be misinterpreted and, according to a respondent from Enfield, can start "living its own life." Respondents, therefore, preferred direct communication, for example at community events.

4.2.3. Maintenance Phase

In the maintenance phase, the cases in Enfield and Kent have adopted a facilitating role by using organisational instruments. On the one hand, Kent County Council has created more organisational capacity by appointing a community liaison officer who is responsible for community engagement. On the other hand, Kent and Enfield have established partnerships with local communities for the maintenance of the newly created parks. These partnerships are made with Friends of the Parks groups. For example, Enfield City Council created wetlands for water storage in Broomfield Park, which is currently maintained by the Friends of Broomfield Park, a group of volunteers. Similar to the projects in the design phase, local governments have been using organisational instruments for mobilising actors. Respondents from Enfield and Kent were positive about this, as it lowers municipal maintenance costs and simultaneously creates community cohesion. For instance, the shed used by Friends of Broomfield Park in Enfield is an important social hub for the local community. Especially in areas where community groups already exist, facilitation of these groups is considered promising, according to respondents. Respondents indicated, though, that long-term interest from these groups remains difficult, and that they prefer to engage with so-called "champions" as an entry point in the community.

4.3. Discussion

Over the course of the green infrastructure lifecycle, we have observed different ambitions regarding citizen par-

Table 2. The policy instruments used per phase and linked to the cases.

	Design	Delivery	Maintenance
Legal		Statutory consultation (Aberdeen, Bergen, Bradford)	
Market-based	Joint grant application (Dordrecht); open call to develop prototypes (Gothenburg)		
Communicative		Community events (Aberdeen, Bergen, Bradford); newsletters (Aberdeen, Bergen); scale model (Bergen); visualisations (Bradford)	
Organisational	Urban living lab (Antwerp); new department (Dordrecht); dedicated project team (Gothenburg)		Establishment of partnerships (Enfield, Kent); appointment of community liaison (Kent)

ticipation. In the project design and maintenance, high ambitions exist; the project delivery phase suffices with lower ambitions (red line, Figure 1). High participation ambitions are usually accompanied by softer, more voluntary policy instruments, while coercive instruments are used for lower ambitions (yellow line, Figure 1).

Despite similar high ambitions between the design and maintenance phase, we also see different foci. High forms of citizen participation in the design phase are advocated in the cases and seem widely accepted, as participation legitimises the green infrastructure more (Frantzeskaki, 2019; Wilker et al., 2016). Moreover, local stakeholders can pool in new resources that lead to higher public value (Osborne et al., 2015). Respondents, though, mention the difficulty of getting to results. This may be due to the initial stages of the project, in which more undefined boundaries exist. The policy instruments currently used by the cases demand vast resources (time, human, financial), which are often secured through new organisational units (new teams, the start of a living lab) or external grant applications. The type of participation in the design phase is thus often allocated to new, temporary organisational structures or new collaborative arrangements. Respondents expressed concerns about such arrangements. For example, the project in Dordrecht was put on hold once a European subsidy was not granted. In a similar vein, the living lab in Antwerp was discontinued after local elections in 2018. Being located outside regular organisational practices gives a project freedom (see Gothenburg), yet this position also runs the risk of remaining a "stand-alone," disconnected from these regular practices (van Popering-Verkerk & van Buuren, 2017).

In contrast, participation in the maintenance phase seems more feasible and more instrumentally motivated. Participation in this phase can be targeted specifically to local community groups and residents, while participation in the design phase was focused on more institutionalised actors (e.g., NGOs representing communities or private landowners). As the green infrastructure is already constructed at this stage, the boundaries within participation can take place and seem better defined compared to previous phases. Accordingly, citizen participation becomes easier to relate to these better-defined tasks. Participation, then, often takes shape in the form of green space co-management, which has been previously discussed by Jerome et al. (2017). Once communities were recruited, respondents from the projects in Enfield and Kent were rather satisfied with the level of participation.

Citizen participation ambitions in the project delivery phase were overall much lower. Interestingly, several researchers have argued that more participation is required in this stage of implementation (Burton & Mustelin, 2013; Wilker et al., 2016), but this is not seen in our cases. Consequently, this confirms the on-going struggle of local governments to involve communities in the actual delivery, often explained by their engineering-driven, expert-led background (Brown et al., 2011). In this phase, the decision-making is left to experts and participation ambitions are more instrumental and aimed at implementing the project smoothly. Respondents from the project, though, self-assess this positively. They consider themselves well-equipped, having developed an extensive set of instruments for consultation and communication. Moreover, they do not perceive a need to involve citizens in such depth in this phase. One explaining factor could be that previous phases already entailed more profound participation, yet our research design allows us to only present a snapshot of the cases.

5. Conclusion

The design, delivery, and maintenance of green infrastructure are instances of a public service that is increasingly considered a mutual effort of public and private actors. Hence, local governments are exploring new ways of enhancing citizen participation, which moves away from a more hierarchical and engineering-driven style towards a more network-steering and facilitating role (Brown et al., 2011; Mees et al., 2019). This article examined what ambitions exist in nine European projects for stimulating citizen participation in the design, delivery, and maintenance phases of green infrastructure projects, and whether different policy instruments are used per phase.

Our exploratory study revealed different types of participation in green infrastructure projects with different types of policy instruments used to enhance this. First, cases in the design phase (Antwerp, Dordrecht, Gothenburg) stated high ambitions and often made use of organisational instruments that could bring stakeholders together. This type of instrument was considered a more legitimate means of public service delivery, developing green infrastructure in a participatory, joint fashion. However, the organisational instruments received mixed reviews, because ideas developed in new organisational units, such as a living lab, can help in building coalitions and shared meaning-making, but can become detached from regular work practices (see also Kemp & Scholl, 2016). In the design phase, market-based instruments were also used, such as the joint writing of grant applications and open calls. They were rated positively by respondents since these instruments created shared incentives, commitment, and provided the freedom for participants to co-design the green infrastructure. Second, projects in the delivery phase (Aberdeen, Bergen, Bradford, Hamburg) had low overall participation ambitions and displayed a more traditional, government-led style of working. These projects mainly used legal and communicative instruments, such as statutory consultation and community events and newsletters. Third, projects in the maintenance phase (Enfield, Kent) aimed again for higher forms of participation, both from a legitimation and from an instrumental point of view. The co-management of green infras-

tructure, namely, could stimulate community engagement, but simultaneously lower public maintenance budgets. To this end, mainly organisational instruments were used, such as partnerships with local community groups or the creation of a community liaison. These instruments facilitated communities to become involved in their locality.

Overall, we observe that green infrastructure projects aim for high participation in the early and later phases of the project (Figure 1). Our cases suggest that higher ambitions of participation could be better realised through (often more voluntary) organisational and market-based instruments. Several respondents questioned the extent to which their instruments are effective to accomplish public participation. Most governments had the ambition to reach out to different societal groups, but respondents stated that they had trouble reaching them all. Often, they preferred to work with institutionalised actors. Therefore, we could argue that the instruments currently used may not be very effective in democratising public service delivery. This confirms previous research that urban water management remains a highly expert-driven field (Brown et al., 2011). Further research is required to determine whether the instruments used are unequipped to realise more equal relationships between stakeholders. For instance, open calls may lead to more community involvement, yet a vertical dependent relationship continues, in which the local authority (solely) defines the conditions.

Our article is an exploratory assessment of participation ambitions and policy instruments that enhance public participation in the public service delivery of green infrastructure. The analysis provided an empirical illustration of the diversity of policy instruments for preferred participation per phase. Future research can look more systematically into these relationships, for example addressing to what extent the participation ambitions are actually achieved by these instruments. As our research focused on one specific moment in time, longitudinal studies could improve our understanding of the evolution of collaborative arrangements over the course of the green infrastructure. The comparison in this article helped to identify patterns in participation ambitions and subsequent policy instruments. The local spatial governance system, in which the projects are embedded, seemed an important conditioning factor for the ambitions and approaches developed in the project. For instance, projects that were led by authorities responsible for urban drainage or transportation generally defined narrower participation ambitions and used more coercive instruments. Projects led by authorities responsible for urban development often defined broader participation goals and developed more voluntary instruments (e.g., the implementation of a living lab or an open call). This distinction suggests that at least two different spatial governance systems are in place for green infrastructure projects that lead to different participation types. Future research could detangle these two governance systems more in-depth and incorporate more contextual factors that may have influenced the type of participation and policy instrument choice, such as existing power asymmetries between actors (Kassim & Le Galès, 2010).

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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Article

Building Adaptive Capacity through Learning in Project-Oriented Organisations in Infrastructure Planning

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Abstract
Transport infrastructure networks are currently being challenged by rapidly changing contexts, such as climate change, new IT and mobility technologies, ageing infrastructure, demographic changes and growing engagement of stakeholders. These challenges call for an adaptive management approach in infrastructure planning. Apart from making the physical infrastructure more adaptive, organisational adaptive capacity is currently being discussed in both literature and practice. The literature describes learning as one of the key elements of organisational adaptive capacity. However, it remains unclear how infrastructure network agencies learn. Most of these agencies are organised in a project-oriented way. Projects can be considered as information exchange platforms of individuals that have to align their knowledge and interpretations to collectively make sense of this information to deliver a project-result. However, projects operate relatively autonomously from their parent organisation. This article aims to enhance the understanding of how projects learn from each other and how the parent organisation learns from projects and vice versa. To this end, we have conducted an in-depth case study of a typical project-oriented organisation in infrastructure planning: Rijkswaterstaat—the executive agency of the Ministry of Infrastructure and Water Management in the Netherlands. Data was collected through documents and semi-structured interviews with members of a selection of projects of Rijkswaterstaat and other members of this organisation. We used Social Network Analysis to support the analysis of the data. Subsequently, the results were confronted with literature to understand how collective learning occurs in project-oriented organisations.

Keywords
adaptive capacity; collective learning; infrastructure planning; project-oriented organisation; social network analysis

Issue
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1. Introduction

Infrastructure systems are becoming increasingly complex due to their connections with the surrounding area, new developments in mobility, and the more dominant role of stakeholders. Increasing complexity causes a greater degree of unpredictability in infrastructure planning and requires that infrastructure systems dynamically adapt to changing contexts. In order to efficiently realise or improve infrastructure facilities, infrastructure network agencies often use projects, thereby arranging themselves as project-oriented organisations (Gemünden, Lehner, & Kock, 2018). Projects typically operate within set conditions to deliver a predefined result. These constraints imply that it might be difficult for individual projects and project-oriented organisations as a whole to adapt to changing circumstances. In fact, complex infrastructure projects in the Netherlands are still

struggling with delays, cost overruns, and dynamic stakeholder environments, which suggest insufficient adaptation. The accompanying undesirable societal effects require a more adaptive approach towards change and uncertainty. Although adaptation is only visible in hindsight, organisations can create the conditions for adaptation by optimising the adaptive capacity of the organisation.

Adaptive capacity is generally described in the literature as the capacity of a system to absorb disruption and reorganise so as to still retain essentially the same function, structure, identity, and feedback (see, e.g., Gunderson & Holling, 2002). Adaptive capacity can thus be broadly understood as the ability of a system to cope with changing conditions. In infrastructure planning, adaptive capacity tends to be focussed on the physical part of infrastructure. However, Brown, Seville, and Vargo (2017) argue that it is also important for infrastructure network agencies to strengthen the adaptive capacity of the organisation itself. Enhancing adaptive capacity of organisations is perceived in literature and practice as an answer to the aforementioned increasing uncertainty and dynamics (Skrimizea, Haniotou, & Parra, 2019).

There is a general consensus in the literature that adaptive capacity and collective learning are linked (see, e.g., Raymond & Cleary, 2013; Yuen, Jovicich, & Preston, 2013). However, despite various calls for empirical evidence of the effectiveness of learning processes to the adaptive capacity of an organisation, we only found limited proof. For example, van Epp and Garside (2019) argue in their article a positive link based on limited empirical analysis. In our article, we also assume a positive relationship between adaptive capacity and learning in the organisation. This is based on the theoretical argument that *collective learning* can be seen as a process of adaptation consisting of changes in common understanding, mutual agreement, and collective action (Phuong, Biesbroek, & Wals, 2017). The ability to build new knowledge, relationships, and practices in response to complex environmental challenges links collective learning to adaptive capacity (Collins & Ison, 2009; Ensor & Harvey, 2015). Collective learning as a process comprises collecting data (monitoring), recognising patterns in these data (information) and giving meaning to this information related to new tasks and contexts (knowledge), evaluating and reflecting on the learning process and diffusing results (Raymond & Cleary, 2013). Given the aforementioned description of adaptive capacity, collective learning can hence be considered a proxy for adaptive capacity. Literature generally assumes a positive relationship between learning and adaptive capacity. However, since learning is defined as using built-up knowledge in new contexts, path dependency may also restrict possible variation and thereby reduce the adaptive capacity of the organisation. Although collective learning partly occurs through internalising explicit knowledge by individuals, social interaction is an important aspect in making the learning process and products collective, so we also considered literature on social learning with social interaction as defining characteristic (see, e.g., Doloriert, Boulton, & Sambrook, 2017). Both social and collective learning concern a change in understanding that goes beyond the individual (Backström, 2004; Keen, Brown, & Dyball, 2005; Reed et al., 2010). For consistency, we will use the term collective learning in this article.

In project-oriented organisations, collective learning takes place at different levels: learning within projects (intra-project learning), learning between projects (inter-project learning), and learning by the parent organisation from projects (called meta-project learning in this article). As an ongoing process, collective learning leads to a wealth of knowledge over time. Experiences, for example, the collapse of a bridge due to faster concrete deterioration than expected, influence the further development of knowledge. However, experiences in projects are fragmented across an organisation. Weichhart and Stary (2017) argue that especially collective learning across levels contributes to the adaptive capacity of an organisation. However, it remains unclear how this actually occurs, specifically in project-oriented organisations in infrastructure planning. Therefore, the aim of this article is to get a better understanding of how collective learning, as a proxy for adaptive capacity, occurs in project-oriented organisations in infrastructure planning. This leads to the following research question for this article: How does collective learning occur in project-oriented organisations in infrastructure planning?

To answer this question, we performed a literature search on collective learning and developed a framework to analyse collective learning in practice. We conducted an in-depth case study of a typical project-oriented organisation in infrastructure planning: Rijkswaterstaat—the executive agency of the Ministry of Infrastructure and Water Management in the Netherlands. Data was collected through documents and semi-structured interviews with participants of a selection of projects of Rijkswaterstaat and other members of this organisation. We used Social Network Analysis (SNA) to support the analysis of the data, particularly the flow of information between and from the selected (infrastructure) projects. Subsequently, the results were confronted with literature to understand how collective learning occurs in project-oriented organisations.

2. Methodology

The theoretical background of this article was based on a literature search. We searched Web of Science and Elsevier Scopus using “collective learning” or “social learning” and “interplay” and “adaptive capacity” as codes. In the results, the systematic review of Phuong et al. (2017) was considered the most relevant one, because this was the most recent and extensive review of the interplay between collective learning and adaptive capacity. We used this review to perform a backward reference search. We focussed on publications that described the interplay between adaptive capacity and

collective learning and considered conditions that enhanced collective learning in an organisational setting. We confined our search to publications not older than 10 years since the discourse about the interplay between collective learning and adaptive capacity of organisations is relatively recent, as also indicated by Phuong et al. (2017). A total of 25 studies were finally retained for our study.

We chose Rijkswaterstaat for an in-depth case study. Rijkswaterstaat is the executive agency of the Ministry of Infrastructure and Water Management in the Netherlands. Rijkswaterstaat uses projects for maintenance, reconstruction and renewal of infrastructure facilities and is organised as a project-oriented organisation (Rijkswaterstaat, 2018). For our study, we looked for similar projects containing an above-average degree of uncertainty and change. We used the following selection criteria: DBFM (Design-Build-Finance-Maintain), as this is a relatively new and complicated type of contract; a challenging environment, i.e., many stakeholders; projects in the realisation phase, because of the large amount of different activities and time pressure; and highways as a specific type of infrastructure, because highway projects are often contested and experience pressure from the environment. This resulted in six projects clustered in two metropolitan regions: Amsterdam and Rotterdam. The three projects in the Amsterdam region were part of a programme. The realisation phase of the selected projects started in the period between 2010 and 2018 with an interval of one to two years, enabling us to analyse whether projects had learned from past projects. Table 1 shows information about these projects.

Collective learning takes place by and between actors (Zappa & Robins, 2016) who are part of or create social networks (Bener, Caglayan, Henry, & Pralat, 2016; Siciliano, 2017). Data and information flow through these networks and are given meaning by the actors depending on the task or context at hand (Barasa, Mbau, & Gilson, 2018; Lee, Vargo, & Seville, 2013). To gather data about these flows of data and information and about the networks of relationships, in-depth semi-structured interviews (19) with members from Rijkswaterstaat were conducted between February and September 2019 and documents, such as the project management plans and project evaluations, were examined. Transcripts of the interviews were analysed based on codes from the framework using ATLAS.ti 8.4. To be able to derive the social networks from the interview transcripts, we used SNA. Scott (2017, p. 2) states that SNA "comprises a broad approach to sociological analysis and a set of methodological techniques that aim to describe and explore patterns apparent in the social relationships that individuals and groups form with each other." A social network consists of nodes, representing actors such as (groups of) individuals, departments, projects, and ties (Robins, 2015), representing the flow of information or other resources, either material or nonmaterial (Wasserman & Faust, 1994). As it is impossible to determine beforehand who interacts with whom and to prevent us from excluding possible relevant actors, we used snowball sam-

Table 1. Information about the projects selected.

Region	Project	Characteristics
Amsterdam	A1/A6 Diemen–Almere Havendreef	• Realisation 2013–2018 • 23 km highway expansion • 60 new constructions (e.g., bridges, viaducts, and the widest aqueduct of Europe)
	A9 Holendrecht—Diemen	• Realisation 2014–2020 • 7 km highway expansion • 3 km new tunnel with 5 tubes
	A6 Almere	• Realisation 2016–2020 • 13 km highway expansion • First energy neutral highway in the Netherlands
Rotterdam	A15 Maasvlakte–Vaanplein	• Realisation 2010—2015 • 37 km highway expansion • (Re)construction of approx. 50 constructions (e.g., one of the biggest vertical-lift bridges in Europe)
	A24 Blankenburgverbinding	• Realisation 2017–2024 • New highway with connections to the A15 and A20 • Various new constructions (e.g., 2 tunnels) and deepened parts
	A16 Rotterdam	• Realisation 2018–2024 • 11 km new highway with connections to the A13 and A16 • Various new constructions (e.g., a tunnel) and adjustments of connecting highways

pling (Robins, 2015). The approach started with interviewing the project manager and the stakeholder manager of each selected project because they are supposed to have an overview of most of the relationships within a project and between a project and its environment. These 12 interviews were conducted between February and April 2019. The other seven interviews were subsequently conducted between June and September 2019 with members of other projects and departments of the parent organisation that were indicated as relevant interviewees by the first group of interviewees. By asking all the interviewees with whom they link up and which information they shared, we identified their networks of relationships. As interviewees indicated relationships between projects, departments, and other organisational entities, the network started to unfold. We considered the interviewees' relationships with other individuals as relationships between the organisational entities that they represent, enabling us to get a clear view of flows of data and information between organisational entities. The network that was created enabled us to analyse how inter—and meta-project learning occur in practice.

3. A Framework for Collective Learning

To structure our analysis, the framework of collective learning by Gerlak and Heikkila (2011) was considered the most relevant one because it provided a concrete and comprehensive framework of collective learning, whereas other publications merely dealt with parts of collective learning or referred to this framework. We enriched this framework with findings from studied literature to an adapted framework for our analysis. The basic framework contains structure, social dynamics, and technology and functional domain as the main characteristics or conditions that shape collective learning. Collective learning itself comprises both the learning process and learning products. The collective learning process "can be understood as a set of actions that allow new information or knowledge to be acquired, processed, shared, and transferred across individuals within a group" according to Gerlak and Heikkila (2011, p. 621). As such, the adaptive capacity of the organisation can be understood as the combination of conditions, learning process, and learning products, such as new shared ideas or strategies, and policy or institutional changes as the outcome of the learning process. Although collective learning might be influenced by exogenous factors, this study only considers the characteristics of the collective setting and the learning processes themselves.

Structure, in the framework, refers to "the design or structure of institutional arrangements," according to Gerlak and Heikkila (2011, p. 623), and is defined as "organisation and coordination of the functions, tasks, and responsibilities of actors in a group" (Heikkila & Gerlak, 2013, p. 501). The structure of an organisation can support or inhibit communication. Project-oriented organisations consist of projects and a parent organisation, which results in some degree of fragmentation and multi-level institutional design. The institutional design influences learning processes (Medema, Wals, & Adamowski, 2014) and thus the adaptive capacity of the organisation (Emerson & Gerlak, 2014). Multi-level integration reduces barriers for collective learning and supports knowledge synthesis across vertical and horizontal scales (Armitage, Marschke, & Plummer, 2008; de Kraker, 2017; Pahl-Wostl, 2009; Reed et al., 2010). According to Eakin, Eriksen, Eikeland, and Øyen (2011) this can be achieved through the interplay between policy entrepreneurs, for example, in informal networks linking multiple levels of an organisation (see also Pahl-Wostl, 2009).

Heikkila and Gerlak (2013, p. 501) define social dynamics as "interrelationships and communication patterns among actors in a collective setting." Trust and an open atmosphere are considered important factors because a safe, informal, and democratic environment can support collective learning (de Kraker, 2017; Ensor & Harvey, 2015; Gerlak & Heikkila, 2011; Medema et al., 2014; Yuen et al., 2013). Whereas Gerlak and Heikkila (2011) used the term leaders for the influence and power of individuals on learning processes, we use the term leadership (in line with Medema et al., 2014) to underline that learning processes are fostered by a clear vision about collective learning regardless of an individual's influence or power in an organisation. Collective learning emerges from human interaction through social ties (Armitage, Berkes, Dale, Kocho-Schellenberg, & Patton, 2011; Boyd, Ensor, Broto, & Juhola, 2014; de Kraker, 2017; Gerlak & Heikkila, 2011; Hurlbert & Diaz, 2013; Phuong et al., 2017; Yuen et al., 2013). We added diversity of actors to the framework because this "can improve the quality of social networks and can trigger social learning" (Phuong et al., 2017, p. 5) or collective learning through access to external knowledge and multiple perspectives (Gerlak & Heikkila, 2011). This diversity implies that capabilities of individuals, such as experience and the ability to share knowledge, are also relevant for collective learning (Chaffin, Garmestani, Gosnell, & Craig, 2016; Eakin et al., 2011).

The technology and functional domain involve "technical or substantive activities (e.g., services, products, and outputs) produced by a group and the information and technological resources and tools that actors draw upon in undertaking these activities" (Heikkila & Gerlak, 2013, p. 501). Tools used for processing and storing information support collective learning processes in the sense that everyone can access information at any moment in time (Gerlak & Heikkila, 2011). In other publications, this is referred to as information management (de Kraker, 2017; Medema et al., 2014). However, the limitation of these tools is that they can only process and store data, information and explicit knowledge, while collective learning also involves tacit knowledge which is transferred through social interaction. Regarding this, literature mentions rules for dialogue (Ensor & Harvey, 2015; Medema et al., 2014) and learning platforms as tools

to facilitate collective learning (Armitage et al., 2008; Berkes, 2009; Yuen et al., 2013) across levels, projects, areas of expertise, and between projects and the parent organisation. Learning platforms serve a purpose similar to learning integration projects (Ensor & Harvey, 2015; Raymond & Cleary, 2013) and bridging (de Kraker, 2017; Ensor & Harvey, 2015; Medema et al., 2014), namely establishing collective learning across organisational barriers. Lastly, Ensor and Harvey (2015) mention the necessity of scope for change to try out new technologies or substantive activities from collective learning to occur as means to adapt. Table 2 summarises the conditions that we found from our literature search.

Combining the conditions mentioned in Table 2 and the original framework of Gerlak and Heikkila (2011) results in an adapted framework of collective learning as shown in Figure 1. The terms from the original framework are shown in italics.

4. Analysing Collective Learning in Project-Oriented Organisations

This section presents the findings of this study as derived from the interviews and supported by the SNA performed, following the framework of collective learning. Figure 2 visualises the interactions mentioned during the interviews. The nodes represent the selected projects (navy blue nodes with capital letter A to F), other projects mentioned by interviewees (lavender nodes with small letters), departments (light blue nodes with capital D and number), learning platforms (yellow nodes with capital O and number), and relevant entities external to Rijkswaterstaat (green nodes with capital E and number). The size of the nodes represents the degree centrality, i.e., the popularity of a node (Robins, 2015).

4.1. Structure

Rijkswaterstaat consists of many departments and projects, each with their own goals. Often mentioned by interviewees was the temporary character of projects. Interviewees experienced limited time for reflection and sharing of experiences due to the strict planning schedules of projects. Moreover, the parent organisation's goals change over time, but projects are held to their assignments, sometimes resulting in conflicting interests. A project director stated: "Projects will always wonder whether changes are relevant for them or not because they only exist a couple of years." Interviewees also stated that projects can more easily adapt to change, but are hindered by the parent organisation due to "standardised process frames that can't keep up with the speed of changes in the environment or a lack of capacity to support such change" as a stakeholder manager stated.

Table 2. Conditions for collective learning regarding the adaptive capacity of organisations.

Category	Condition	Reference
Structure	Institutional design	Emerson and Gerlak (2014); Medema et al. (2014); Phuong et al. (2017)
	Multi-level integration	Armitage et al. (2008); de Kraker (2017); Gerlak and Heikkila (2011); Pahl-Wostl (2009); Reed et al. (2010); Weichhart and Stary (2017)
	Informal network	Barasa et al. (2018); Bener et al. (2016); Eakin et al. (2011); Lee et al. (2013); Pahl-Wostl (2009); Siciliano (2017)
Social Dynamics	Trust and an open atmosphere	de Kraker (2017); Ensor and Harvey (2015); Gerlak and Heikkila (2011); Medema et al. (2014); Yuen et al. (2013)
	Leadership	Gerlak and Heikkila (2011); Medema et al. (2014)
	Interaction	Armitage et al. (2011); Boyd et al. (2014); Collins and Ison (2009); de Kraker (2017); Doloriert et al. (2017); Gerlak and Heikkila (2011); Hurlbert and Diaz (2013); Phuong et al. (2017); Yuen et al. (2013); Zappa and Robins (2016)
	Diversity	Phuong et al. (2017)
	Capabilities of individuals	Chaffin et al. (2016); Eakin et al. (2011)
Technology and Functional Domain	Information management	de Kraker (2017); Gerlak and Heikkila (2011); Medema et al. (2014)
	Rules for dialogue	Ensor and Harvey (2015); Medema et al. (2014)
	Learning platforms	Armitage et al. (2008); Berkes (2009); de Kraker (2017); Ensor and Harvey (2015); Gerlak and Heikkila (2011); Medema et al. (2014); Raymond and Cleary (2013); Yuen et al. (2013)
	Scope for change	Ensor and Harvey (2015)

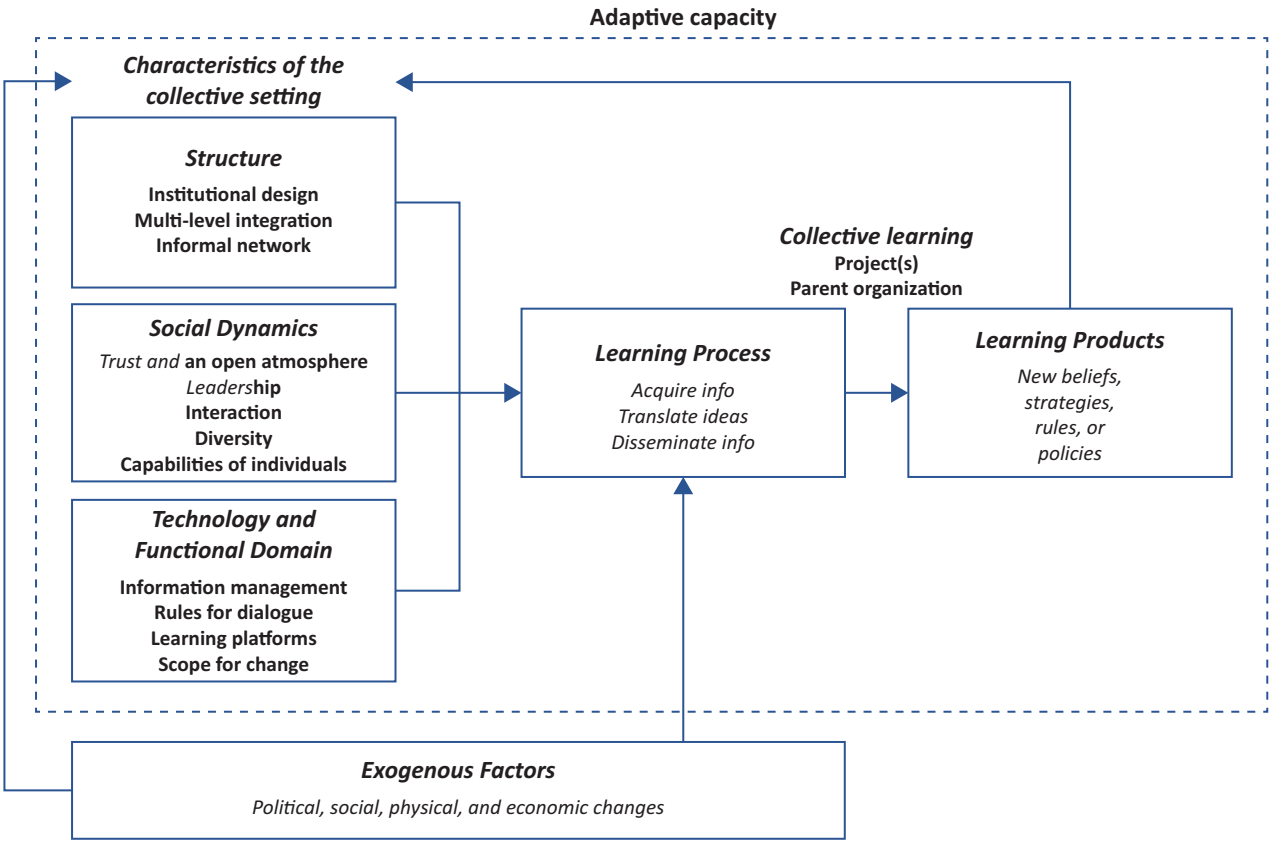

Figure 1. Framework of collective learning (adapted from Gerlak & Heikkila, 2011).

All the projects studied are coordinated by a project management team representing various specialisms, an integrated project management team. According to the interviewees, the focus on these specialisms caused most of the interaction between project members to take place within the boundaries of these specialisms. However, the managers regularly discussed issues that could not be solved within their specialism and forced them out of their boundaries. Interviewees viewed their informal networks that were particularly important for discussing issues, although they predominantly used it for problem-solving and thus reactive learning. Proactive learning, without the urgency of a problem to be solved, hardly occurs according to the interviewees, mostly due to the pressure of deadlines and daily operations in projects.

This problem orientation in projects causes projects to become "islands drifting away from the parent organisation" as a portfolio manager described it. Especially large projects or programmes with their own, sometimes specially developed rules and processes are susceptible to a sceptical attitude by the parent organisation or other projects. "Large projects are sometimes viewed with a mixture of jealousy and envy, particularly because things are invented in these projects," said the Programme director. A portfolio manager explained that this is because "you are basically being pampered and secluded in a programme." Figure 3 shows that departments of the parent organisation are considered more on the periphery of the network studied.

To overcome structural problems, two measures were mentioned by the interviewees. First, projects can be bundled into multi-project programmes. For example, a stakeholder manager who worked in a programme stated: "Working in a programme offers much comfort, and procedures are organised very well because you do it together and there is an entire organisation behind it." Projects A, B, and C in Figure 3 were realised in the same region (Amsterdam), shared many stakeholders, had to deal with similar issues, and were embedded in one overall programme. As shown in Figures 2 and 3, their nodes are closer to each other than other projects studied. Interviewees particularly mentioned frequent information transfer and switching of project members between projects within the programme. Most of these aspects also hold true for projects E and F, which were realised in another region (Rotterdam). However, these projects were not embedded in a programme structure, explaining the greater distance between the nodes. Project D was realised a few years earlier, also in the Rotterdam region.

A second measure mentioned by interviewees was that employees of the parent organisation can be positioned in multiple projects to secure that organisational and project goals are aligned and to enhance inter— and meta-project learning. A stakeholder manager mentioned such a co-worker: "We have an asset manager in our team. She works at the regional department and makes connections with other projects in the region where she takes her learning experiences."

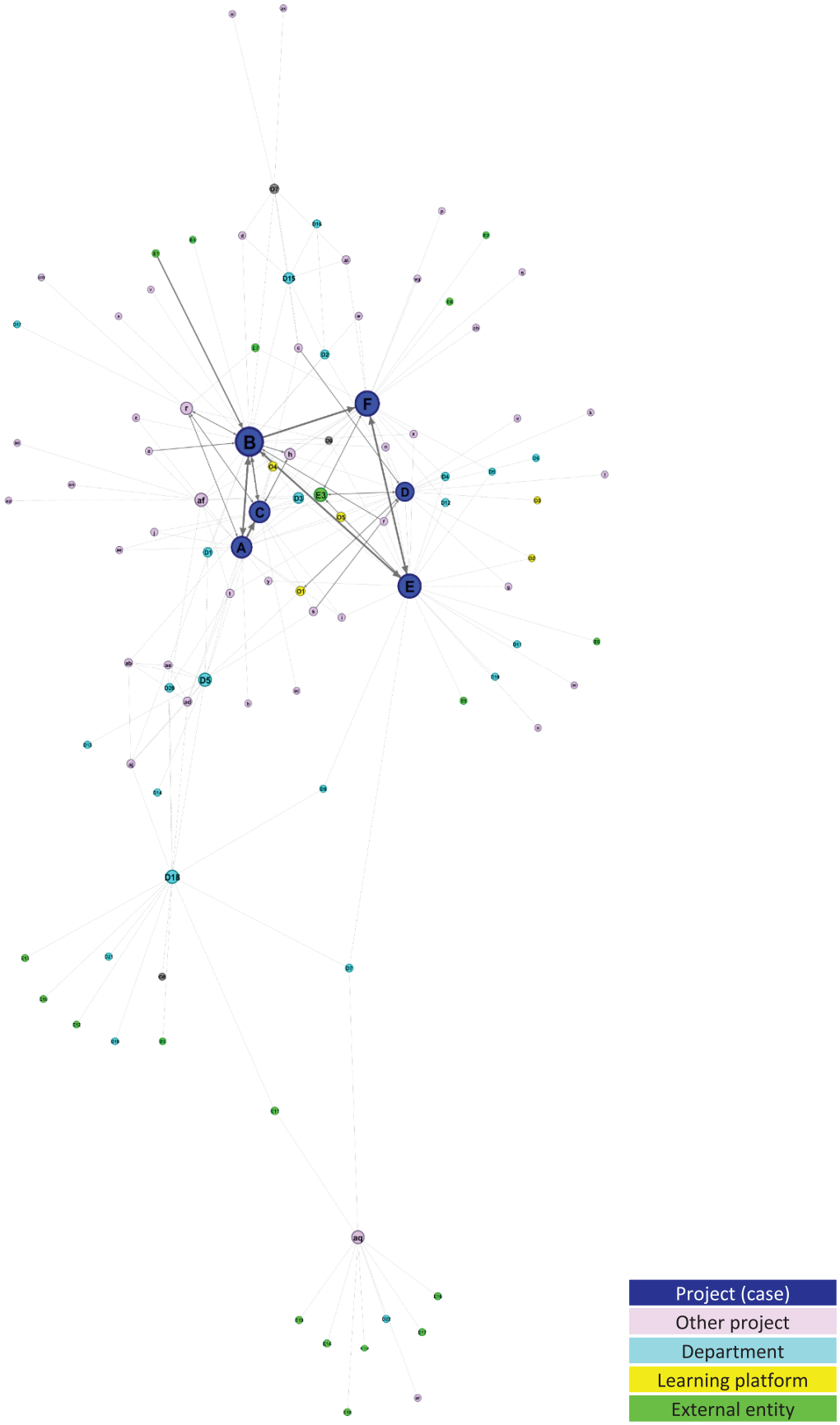

Figure 2. Network visualisation of interactions in the case studied.

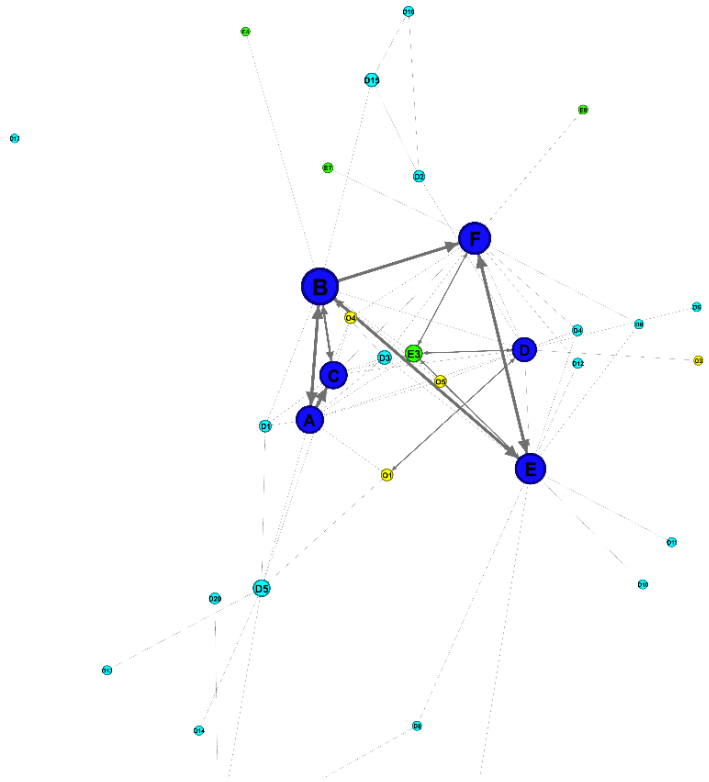

Figure 3. Selection of nodes. Notes: Projects (blue nodes), departments (bright blue nodes), internal learning platforms (yellow nodes), and external learning platforms (green nodes).

4.2. Social Dynamics

Regularly mentioned was the issue of learning from mistakes. A condemning attitude of the clients in the parent organisation was seen by interviewees as a barrier to discuss mistakes openly, stressing the need for a safe environment and trust for collective learning. "You actually only really do this once you trust each other very much," a project manager stated. However, it takes time and interaction to build trust. Within projects, people regularly meet and build relationships. Between projects, relationships are less intensive and mostly concentrated in peer groups that speak the same language and work in a similar environment. Interviewees often used their social ties outside regular structures when they had to solve a problem or needed peer consultancy. An interviewee stressed that "a different view might open your eyes to other solutions." Trust relationships between projects and the parent organisation prove to be much harder to create because of less intensive interaction and the slightly different worlds of working. Moreover, interviewees mentioned that projects are reluctant to share information outside their projects to avoid interference, especially when it concerns new approaches. However, a portfolio manager stated that "nobody has ever been fired because of making a mistake."

Having knowledge is considered necessary for good project results. However, knowledge generally resides with a few specialists. Because of this scarcity, people are replaced with other projects or assigned to several projects. A stakeholder manager explained:

> When the problem is big enough, facilities are created that allow me to get involved in the three biggest projects in my region, but there is a lot to gain when it comes to how you actually transfer knowledge to people who are the future of our organisation.

Furthermore, people come and go. This influences the building of trust relationships. Moreover, external consultants or temporarily hired employees take their knowledge and learned lessons with them, inhibiting dissemination of information within the organisation.

4.3. Technology and Functional Domain

Interviewees viewed information management to be little useful for collective learning because projects always have unique characteristics. It takes much effort to externalise knowledge and store it in systems. An interviewed project manager stated that "writing evaluation reports to capture knowledge is horrible" and another project manager added that "my experience in my team is that knowledge is harder to transfer from books than from people." Some interviewees did find the process of externalising knowledge useful when it focuses on the dialogue needed to externalise. "Reflecting, discussing, and writing down experiences is a learning pro-

cess in itself, resulting in new ideas," as a project manager stated.

Apart from a general attitude of curiosity—"only curious people learn," a portfolio manager stated—interviewees did not mention rules for dialogue. Both internal and external learning platforms were regularly mentioned as useful tools to support interaction between projects, disciplines, and across an organisation. However, interviewees predominantly engaged in learning platforms based on task specificity, e.g., regarding a specific job position, specific field of expertise, or specific types of projects. Strikingly, the most important learning platform—node E3—is an external learning platform called Neerlands Diep. Members from various projects and various governmental project-oriented organisations share experiences through this academy for public construction and infrastructure projects. Interviewees from all projects studied mentioned this learning platform and its importance for intra- and inter-project learning. The size of this node shows that this learning platform has the highest degree centrality of all learning platforms in this network, which supports the interviewees' perceived importance of this external learning platform.

When it comes to scope for change, interviewees within projects generally did not experience much space. A stakeholder manager stated that "you are judged on colouring within the lines." Interviewees within programme boards and the parent organisation stressed the importance of scope for change. However, a programme director stated that "there should always be a balance between giving space to individual project managers to do things their way, but at the same time not at the expense of the programme."

4.4. Learning Process and Products

SNA enables us to establish relationships in a network visible alongside the intensity of and changes in these relationships over time. Interviewees indicated which relationships were present during each stage of the realisation phase of projects. We used this data to visualise relationships over time. The learning processes and resulting products regarding intra-, inter-, and meta-project learning will be described for one project from this research as an example, in this case, project D and its neighbouring nodes as shown in Figure 4 (left). The realisation phase started by preparing a (DBFM-)contract and finding a contractor. Interviewees indicated that much information was acquired from multiple sources (blue lines) mainly through documents, such as evaluation reports, contracts or plans from other projects that could be used as an example—nodes g, k, and l—and individuals bringing their knowledge and experience from past projects—nodes c, f, and s. The thicker lines represent the richness of both the information from documents and the project members' knowledge. Once a contractor started, project D primarily focussed internally. At the end of the realisation phase, the project started to open up again. Information was then disseminated to other projects—nodes C, E and F—and an external learning platform—node E3 (red lines). According to the interviewees, the external learning platform facilitated the evaluation of the realisation phase, resulting in new ideas for subsequent projects and an evaluation report as learning products.

Although collective learning seems to take place quite intensively at the beginning and the end of the realisation phase, it also takes place during the rest of the realisation phase, as illustrated in Figure 4 (right). The black lines represent inter-project learning in case of an encountered problem. Nodes A, B, and t represent projects that started later than project D. The figure shows that projects also acquire information from parallel projects. A project manager stated: "because these projects belong to a later series, the least you can do is see how they dealt with an issue." The pink line between nodes D and u represents interaction about a geographical interface with another project during a short period of time. A project manager explained that "there is inten-

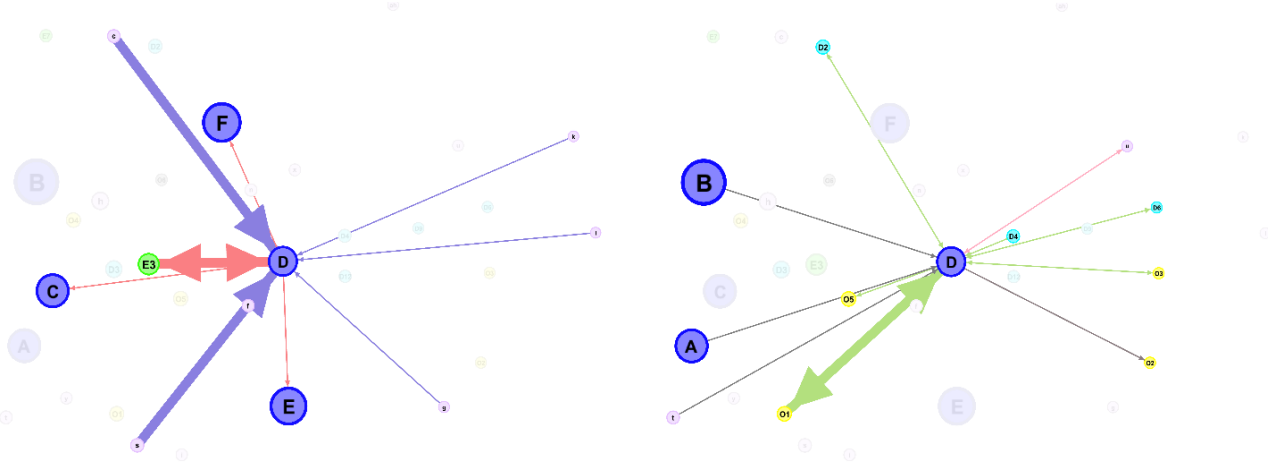

Figure 4. From left to right: Collective learning at the beginning (blue lines) and at the end (red lines) of the realisation phase; collective learning in case of an encountered problem (black line), in case of an interface (pink line), and regularly organised meetings (green lines).

sive interaction during a couple of months and once you feel the interface is controlled, then everyone goes their own way."

Regarding meta-project learning, Figure 4 (right) shows green lines representing regularly organised meetings. There is a formal relationship with departments D2, D4, and D6 of the parent organisation. In contrast to D2 and D6, D4 represents the internal project client, which explains the greater distance of project D from D2 and D6. The other green lines, connecting D with the yellow nodes O1, O3, and O5, represent regular informal meetings in learning platforms. Nodes O3 and O5 represent learning platforms based on specialisms, communities of practice. Professionals meet each other monthly to discuss issues in their field. The relationship between D and O1 was the most intensive as this concerned a community of practice about DBFM projects, a new type of contract. The black line from project D to node O2 represents the exchange of experiences with the DBFM contract, especially regarding encountered problems.

5. Discussion of Collective Learning in Project-Oriented Organisations

All the projects studied to use a formal information management system. However, this system is hardly used by projects. In externalising knowledge, some of the richness of the knowledge is lost. Moreover, explicit, general knowledge quickly becomes less useful due to the context-specific nature of projects. Therefore, learning from information exchange often occurs via the informal network. Interviewees stress that the value of a formal information management system is not the information itself, but the *dialogue* about information. They have the possibility to discuss insights and how it could fit their own situation. Next to learning from the information seeker's perspective, Dixon (1999) argues that such an information transfer process also helps to strengthen the speaker's understanding of that information. Hence, there are learning products at both ends of the relationship.

Furthermore, it appears that information exchange is primarily discipline-oriented, via the formal and, above all, the informal network of discipline leaders. Since projects are organised through a project team consisting of discipline managers, this greatly promotes a disciplined focus and 'homophilous' relationships, which means that people have relationships with people who are socially similar or physically close (Rogers, 2003). This makes sense because social similarity makes it easy for individuals to understand each other and physical proximity makes these relationships less time-consuming. Furthermore, it is easier to assess if someone is able to help you with an issue if you know that person. The research of Borgatti and Cross (2003) shows that for information exchange and, thus, learning it is important to know what another individual knows and how to access that knowledge. Although it is a challenge for project-oriented organisations to stimulate heterophilous relationships to enable a higher level of collective learning, this is an important condition for collective learning because "difference fosters collective learning" (Dixon, 1999, p. 53).

Apparent from the case studied is that the process and content of learning differs per project phase. In the preparation phase of a project, there is a strong focus on intra- and inter-project learning, building the team and the project. Despite a primarily internal focus in the realisation phase, still, inter-project learning occurs. In this phase, project members acquire information from other projects when they come across issues that they have not dealt with before. Typically, only at the end of the realisation phase, projects start to open up and become willing to disseminate their knowledge and experiences. Hence, projects do learn from each other, but above all, they are focused on the result to be delivered.

Although projects initially tend to focus internally and adopt a reactive approach towards collective learning, the studies shows that inter-project learning can be promoted by, first, sharing infrastructure interfaces (e.g., projects having a physical interface due to parts of the infrastructure network directly connecting to each other, and projects having to align project activities in order to minimise effects on infrastructure availability on a regional level), second, connections with the same stakeholders (e.g., clients, local governments, authorities, companies, and citizens) seemed to promote inter-project learning, and third, similarities (e.g., the same type of contract, the same project phase, the same period in time, and a similar project environment). Furthermore, an explicit knowledge dissolution assignment from and facilitated by the parent organisation can help projects to invest in earlier collective learning activities.

This study suggests that a focus on projects creates an institutional distance between projects and their parent organisation, which hinders learning. Furthermore, a lack of trust between projects and the parent organisation is apparent. Daring to give confidence and allowing mistakes by the parent organisation to projects and daring to actually being involved in projects can strongly promote mutual trust-building and an open atmosphere (Ensor & Harvey, 2015; Medema et al., 2014; Yuen et al., 2013). Although interviewees in the parent organisation indicated the presence of trust and an open atmosphere, interviewees in projects experienced otherwise. Building trust takes time. Where the ties are strongest, trust will build up the easiest. In particular, from projects to the parent organisation, these ties are relatively weak and so the build-up of mutual trust takes longer.

This institutional distance between projects and their parent organisation is frequently mentioned in the relevant literature as a problem for collective learning. However, literature about adaptive capacity suggests that a relatively weak tie to the parent organisation fosters adaptive capacity because of modularity (see, e.g., Orton & Weick, 1990). Projects combine an efficient

delivery of results to the possibility of localised adaptation to change. One could thus argue that project-oriented organisations are in themselves structured as adaptive organisations. The practice of studied cases shows that structures supportive to collective learning emerge (the project-oriented organisation adapts) without restructuring the organisation as a whole. Especially, learning platforms and programmes were mentioned by the interviewees.

Learning platforms such as communities of practice or educational platforms are present, although these platforms mostly support an exchange of general information and working methods. Moreover, these platforms are often organised in a discipline-oriented manner. Learning platforms are viewed by the interviewees in particular as good media for the exchange of information and especially for dialogue about issues and working methods. Strikingly, the most important learning platform—node E3—is an external learning platform called Neerlands Diep. Members from various projects and various governmental organisations share experiences through this academy for public construction and infrastructure projects. Platforms offer the possibility to reflect on issues from daily practice and share *views* of issues discussed. This is in line with Medema et al. (2014, p. 30): "Reflection as an integral part of learning and change processes reveals in more depth the ways in which both the external and internal context as well as individual attributes of those involved affect learning and change processes, actions and values." Moreover, external learning platforms offer the benefits of multiple perspectives (Dixon, 1999), not only extra-project but also extra-organisational, because of the participation of other organisations. However, the interviews reveal that the knowledge that is transferred or created through these platforms mostly remains within the projects that were engaged in these platforms.

Projects can be interrelated in multi-project programmes. The study results indicate that this offers a good opportunity for parallel and subsequent projects to learn from each other, given that the programme has a clear vision on learning and the learning process and an explicit organisation of that process. Programmes can facilitate intra- and inter-project learning. Gerlak and Heikkila (2011) argue that some evidence suggests that this may be effective because it promotes indirect interaction among various entities, which also holds true for learning platforms. However, the disadvantage of programmes, especially if they are large, is that they are sometimes seen as separate and exceptional by the parent organisation or other projects. Intra- and inter-project learning is then promoted, but meta-project learning faces an extra barrier. Interviewees often refer to programmes as bridges between relatively autonomous projects and the parent organisation. In that sense, programmes can (become) a promising link for creating adaptive capacity in project-oriented organisations.

6. Towards Adaptive Capacity

In accordance with the literature, our study shows that it is precisely the scaling up of learning experiences from projects to the whole organisation that is lacking in project-oriented organisations. If projects do not receive a specific knowledge dissolution assignment from the parent organisation, they will focus exclusively on their own objectives. The study gives several reasons. The temporary nature of projects can conflict with the permanent nature of the parent organisation because goals diverge. Furthermore, due to this temporary nature, employees come and go in and between projects and in and out of the organisation. Moreover, knowledge resides with a few specialists. Well-considered management of human capital from a long-term organisational vision (instead of just capacity management) can enhance inter- and meta-project learning.

Furthermore, our study showed that programmes and learning platforms contribute to inter-project learning. These programmes and learning platforms have relationships with the parent organisation, but these relationships are relatively weak. Could stronger relationships between programmes or learning platforms and the parent organisation enhance meta-project learning? If so, how can we strengthen these relationships without creating a rigid organisation? We suggest further research on the role of learning platforms and programmes in enhancing meta-project learning.

Since the presented study is only a first exploration of collective learning as a process of building adaptive capacity in project-oriented organisations, we strongly suggest further empirical study on this subject. More specifically, we would recommend continuing the process of snowball sampling to gather more data and more perspectives, working towards a whole network. In addition to interviews, which are useful for understanding collective learning processes, surveys could be used to get more insight on learning products and complementary data to further analyse patterns within the network. SNA as a method could then also be applied more comprehensively. Furthermore, it may also be worthwhile to compare the currently studied realisation phase to other phases of a project and to study how collective learning during the transition between phases occurs. This enriches the view on collective learning processes in project-oriented organisations.

7. Conclusion

With this study, we aimed to reach a better understanding of how collective learning as a proxy for adaptive capacity occurs in project-oriented organisations. We started with a literature search of the conditions required for collective learning. These conditions lie in the structure and institutional design of the organisation—such as multi-level integration and the informal network—in the social dynamics within

the organisation—such as an open atmosphere, building trust, diversity, and interaction—and in the technical functional domain—such as having an information management system, information exchange platforms, and scope for change. The (collective) learning process takes place within these conditions, which leads to learning products as building blocks for adaptive capacity.

In project-oriented organisations, collective learning takes place within and between projects, but scarcely from projects to the parent organisation. The relationship between projects and the parent organisation appears to be relatively weak compared to intra- and inter-project ties. As a result, projects focus on reactively learning on behalf of their projects, delivering localised adaptation to change. However, the case studied shows interesting examples of how meta-project learning can be enhanced—such as learning platforms, employee exchange, dialogue, programmes and explicit learning assignments to projects—and thereby the building of adaptive capacity of infrastructure network agencies as a whole. We recommend further exploration of these interesting examples in practice as well as academics.

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Conflict of Interests

The authors declare no conflict of interests.

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Article

Public Design of Urban Sprawl: Governments and the Extension of the Urban Fabric in Flanders and the Netherlands

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Abstract
Urban sprawl is often portrayed as a (quasi-)natural process, as inevitable and taking place behind our backs. However, we claim that it is co-produced by government: Governments not only allow sprawl to happen, but often also incentivise and stimulate it, either knowingly or unintentionally. We substantiate this claim by comparing urban development and government institutions in Flanders (Belgium) to the Netherlands, two neighbouring territories, yet very different regarding this matter. Urban development in the Netherlands is considered orderly and compact, whereas in Flanders it is considered haphazard and sprawled. Urban planning, too, could not be more different. Strong national planning and an active local land policy characterise Dutch planning, while the opposite applies to Flanders. Although these images seem largely accurate, we argue that it is very particular government institutions in both countries that (help) create and reproduce the various degrees of urban sprawl.

Keywords
discourses; Flanders; government institutions; land-use planning; public design; the Netherlands; urban development; urban fabric; urban sprawl

Issue
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1. Introduction

The word "sprawl" in relation to cities was first coined in the United States by Earle Draper. It was conceived to describe the outward movement of low-density urban development. The term especially points to negative economic effects in terms of long and expensive travelling, and social disadvantages, most notably the loss of community life (Nechyba & Walsh, 2004). More recently, the issue has been picked up more widely in Europe, where the area of land that has been developed continues to grow in all countries at a far greater pace than the increase in population (Henning et al., 2016; Uhel, 2006). In the developing world, especially in Africa and Asia, it manifests itself in a competing demand for areas suitable for agriculture and areas suitable for urban development (Montgomery, 2008).

Urban sprawl is often portrayed as an uncontrolled (Resnik, 2010) and unplanned (Oueslati, Alvanides, & Garrod, 2015; Uhel, 2006) process: Individual preferences, the increasingly intensive use of automobiles, and market dynamics are generally considered to be the main causes of sprawl development in a situation of presumed deregulation and absence of planning (Moroni & Minola, 2019). As a result, many argue that more (comprehensive) planning and regulation are the solution to stop

sprawl and its damaging role (Ewing, 1997; Ewing & Hamidi, 2015; Morriss & Meiners, 2000).

This article takes a critical stance against this common analysis of urban sprawl. Not only do governments often not constrain sprawl, but there are also many instances in which they actually co-create or foster it. This idea—that greater liability for sprawl should be assigned to public authorities, creating unfavourable conditions for densification and favourable conditions for dispersed development—has not been advanced by too many scholars (exceptions include, e.g., Lewyn, 2005; Moroni & Minola, 2019; Pendall, 1999; Tennekes, Harbers, & Buitelaar, 2015). The critical contributions that do exist, however, seem to only focus on specific government institutions (such as "growth controls"), and/or are derived inductively and rather descriptively (i.e., not conceptually embedded) from one specific national context, and therefore do not necessarily apply elsewhere.

Starting from these context-specific contributions on urban sprawl, the main aim of this article is to introduce a conceptual framework for tracing "sprawl-producing" (as opposed to the well-known "sprawl-controlling") government institutions that can be applied in different contexts. This framework is embedded within neo-institutional insights, particularly "discursive institutionalism" (e.g., Arts, van Tatenhove, & Leroy, 2000; Hajer, 1995). The applicability of the conceptual framework is also tested by comparing two neighbouring countries with very different urban patterns and institutional contexts: the Netherlands and Flanders (actually, a region of Belgium). Using the framework, institutional differences and similarities were detected that allow reflecting on how government institutions enable or constrain urban sprawl.

The article is structured as follows: Section 2 starts with a (non-exhaustive) review of the literature on sprawl. In addition, the literature on the relationship between institutions is explored on the one hand and urban development on the other, which helps to develop a conceptual framework for analysing government institutions in relation to urban sprawl within different national-institutional contexts. That framework is then applied, in Section 3, to urban sprawl in Flanders and the Netherlands. In Section 4, conclusions are drawn from the conceptual and empirical analysis. The article ends with a discussion (Section 5) about current and future urban development in the Netherlands and Flanders and with a discussion about international comparative research, the central theme of this thematic issue.

2. The Institutional Origins of Urban Sprawl: A Conceptual Framework

2.1. Urban Sprawl

In general, the literature on urban sprawl refers to the excessive spatial growth of cities (Brueckner, 2000). A North American perspective defines sprawl as a "low-density, automobile-dependent, exclusionary new development on the fringe of settled areas often surrounding a deteriorating city" (Squires, 2002, p. 2). A more European definition, by the European Environment Agency (EEA), describes the "physical pattern of low-density expansion of large urban areas, under market conditions, mainly into the surrounding agricultural areas….Development is patchy, scattered and strung out, with a tendency for discontinuity" (Uhel, 2006, p. 6). These descriptions refer to sprawl as a suburbanisation process related to the outward growth of cities. In a more recent report of the EEA, the relation between sprawl and the growth of cities is less explicit: "A landscape [is affected by urban sprawl] if it is permeated by urban development or solitary buildings and when land uptake per inhabitant or job is high" (Henning et al., 2016, p. 22). They consider sprawl not so much in terms of the rural (more or less) transforming into the urban because of the gradual expansion of the latter, but as an urbanisation process in situ of the land, bringing together two opposites (urban and rural) in one conception. Similar observations have been made by Gheysen, Scheerlinck, and van Daele (2017), Neutelings (1991), Sieverts (1999), and Vigano, Arnsperiger, Barcelloni Corte, Cogato-Lanza, and Cavalieri (2017), among others, who named it, respectively, "all city/all land," "patchwork metropolis," "Zwischenstadt" and "horizontal metropolis.''

In general, the majority of academic publications on urban sprawl roughly address one, or a combination, of the following four topics: the measurement of sprawl, the causes, the effects and the (potential) policy measures.

2.1.1. Measurement

Based on different conceptions of sprawl, different indexes of sprawl have been produced and applied empirically, often in GIS applications, for cities all over the world (see, for instance, Frenkel & Ashkenazi, 2008; Galster et al., 2001; Henning et al., 2016; Oueslati et al., 2015). These indexes are often determined by variables related to income, demographics, agricultural land value, transportation, political and other socio-economic, climatic and geophysical elements. The indexes mainly attempt to represent sprawl as an increase of the spatial scale and dispersion of the (monocentric) city and an increase of dispersion accompanied by a decrease in density (Ewing, Pendall, & Chen, 2002; Hamidi, Ewing, Preuss, & Dodds, 2015). Jaeger, Bertiller, Schwick, and Kienast (2010), for instance, relate urban sprawl to both the amount of land taken for urban use and the degree of dispersion of that urban land uptake:

> Urban sprawl is visually perceptible. A landscape suffers from urban sprawl if it is permeated by urban development or solitary buildings. For a given total amount of build-up area, the degree of urban sprawl will depend on how strongly clumped or dispersed the

> patches of urban area and buildings are; the lowest degree of sprawl corresponds to the situation when all urban area is clumped together into the shape of a circle. The highest possible degree of sprawl is assumed in an area that is completely built over. Therefore, the more urban area present in a landscape and the more dispersed the urban patches, the higher the degree of urban sprawl. (Jaeger et al., 2010, p. 400)

To illustrate the two dimensions of sprawl: a territory that has 10% of urban land is less "sprawled" than one that has 20% of its land in urban use. And a territory in which this 20% is shaped as one consolidated circle is less sprawled than when that 20% has the form of many smaller separated dots.

2.1.2. Causes

According to Brueckner (2000), three market failures should be held responsible for excessive urban sprawl: the failure to take into account the social value of open space when land is converted to urban use, the failure of individual commuters to recognise the social costs of traffic congestion, and the failure of real estate developers to take into account all of the public infrastructure costs because of their development projects. A lot of the drivers of urban sprawl that are addressed by other scholars can be directly or indirectly related to these market failures (see, for instance, Colsaet, Laurans, & Levrel, 2018; Ewing, 1997; Henning et al., 2016; Uhel, 2006).

2.1.3. Effects

An extensive review of the literature on the effects of urban sprawl has been produced by Henning et al. (2016) as part of a report for the EEA on urban sprawl in Europe. They consider a large number of environmental aspects, including effects on hygiene, landscape and flora and fauna, economic aspects such as traffic congestion costs, public service costs and the loss of tourist and residential attractiveness, and finally, social and quality of life aspects, including segregation and health problems. The more than 60 effects mentioned in the report illustrate the vast impact of urban sprawl on the daily functioning of societies all over the world. Only a few scholars (Gordon & Richardson, 2000; Kahn, 2001) see the benefits of sprawl, such as more and cheaper housing and more job options.

2.1.4. Policies

As the lack of central ownership or planning and highly fragmented land-use governance are defined as important political drivers of urban sprawl (Ewing et al., 2002), changes in policies are consequently expected to contribute to the reduction of sprawl. A lot of faith is put into active planning in the form of urban growth management through zoning and urban boundaries in order to correct for the failures of the market. Additionally, there is an increasing awareness that adequate decisions on urban growth cannot be made solely at the local level: local regulations generally tend to promote sprawl but can also, when aiming to reduce sprawl, have negative spill-overs to municipalities that do not regulate growth (Anthony, 2004; Uhel, 2006).

2.2. The Role of Institutions

Urban sprawl is created by people, but these people do not act within a vacuum; they act within—and interact with—an institutional framework that guides the spatial development of a territory. Institutions are the rules of the game, whether formal and written down or unwritten and informal, that shape human interaction (North, 1990). There has been much consideration for institutions in the urban planning literature and the wider social sciences (e.g., Alexander, 2005; Buitelaar, Lagendijk, & Jacobs, 2007; Hall & Taylor, 1996; March & Olsen, 1989; North, 1990).

Government institutions may foster urban sprawl (e.g., Lewyn, 2005; Pendall, 1999; Tennekes et al., 2015). When we say this, we do not intend to say that the government is solely responsible and there is no role of "the market" or of private actors. On the contrary, there would be no sprawl without private initiators who want to develop and live further away from the urban centre. But government institutions impact the size and direction sprawl may take. Or as Lindblom (2001, p. 42) puts it: "If the market system is a dance, the state provides the dance floor and the orchestra." In other words, the former cannot exist without the latter; to consider "government" and "the market" as antagonists is misleading, even an oxymoron (Alexander, 2001; Buitelaar, 2003). In this article, we focus on what we call "government institutions," which we consider to be the formal or informal rules (co)produced and reproduced by government agencies in order to guide society (and the market).

Moroni and Minola (2019) acknowledge the (public) institutional origins of urban sprawl and come up with seven government issues/institutions that have contributed to urban sprawl in Italy: (1) an enduring "anti-urban" planning culture; (2) a priori ostracism of certain activities (i.e., certain activities not being allowed in the city and therefore pushed out); (3) regulations that hamper urban compactness; (4) obstacles to urban re-use and regeneration; (5) infrastructure policies (i.e., urban can and will only move outwards if facilitated by infrastructure and utilities provided under conditions of public monopoly); (6) property taxes; and (7) local political fragmentation (i.e., competition among municipalities leading to negative policy externalities in the form of spatial inefficiencies).

We confirm that these elements are very important and helpful in trying to trace the institutional origins of urban sprawl in other countries. But we also see two lim-

itations. First, the seven issues seem to be derived inductively, from Italian practice, and not from a comprehensive, theory-based conceptual framework that allows for replication in other contexts. Various relevant Dutch and Flemish institutions (e.g., active land policy, housing subsidies) do not fit under any of the seven labels. Next, by listing the seven issues on a flat list, no differentiation is made. More precisely, no account is taken of their ontological differences.

Based on the nature of Moroni and Minola's seven issues and our exploration of discursive-institutional literature, a major and more conceptual distinction should be made between discourses (issue 1) and institutions (issues 2 to 6; Arts et al., 2000; Hajer, 1995; Schmidt, 2010). These are broad concepts that need to be operationalised for the issue under investigation (i.e., the stimulating role of government in the process of urban sprawl).

A discourse is a "specific ensemble of ideas, concepts and categorisations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social relations" (Hajer, 1995, p. 44). The concept of institutions, on the other hand, is very broad and needs a certain customisation and categorisation in the context of government institutions and urban sprawl. That is why we suggest categorising government-created institutions with regard to the development of land and real estate in terms of how they intervene in the land market. Governments may be active, by buying and developing land and real estate, passive, by regulating land use, and persuasive, by trying to incentivise particular land uses (see Needham, Buitelaar, & Hartmann, 2018). These three broad categories can be further subdivided into an active government provision of (1) land for public goods, such as infrastructure, or (2) land for private goods, such as housing, into a passive regulation of land use through (1) location-specific or (2) more generic rules, and into persuasion through the incentivisation of land use via (1) taxes or (2) subsidies.

Finally, since governing urban development is a multi-level and multi-agency activity, this implies that multiple discourses and institutions are generated by multiple public and private actors at different territorial scales. Self-evidently, these actors operate alongside one another, either complementary to or in competition with each other. Moroni and Minola (2019) refer, for instance, to the competition between municipalities for new housing developments in order to increase local tax revenues. Later in this article we will address passive location-generic regulations that stimulate urban sprawl. Often, these have emerged as the result of bottom-up processes in which local politicians signal legal obstacles for individual housing development to the national legislator. In other words, we acknowledge that the interplay between various (competing) discourses and institutions is very relevant, but for the sake of reduction, we have decided to focus on government discourses and institutions only.

3. The Institutional Origins of Urban Sprawl in Flanders and the Netherlands Compared

In this section, we apply the conceptual framework outlined above to urban sprawl and government institutions in Flanders and the Netherlands. We use secondary sources (i.e., academic literature and policy reports) for making the comparison. In addition, we focus roughly on the second half of the twentieth century (1950–2000). This is the period in which spatial planning institutionalised and matured most strongly in both countries. More recent developments (since the turn of the century) get less attention as their impact is less clear. Our analysis is a non-exhaustive treatment that serves to illustrate how government institutions enable rather than constrain sprawl. We start by pointing out the overall post-war discourse towards the concentration of urbanisation (Section 3.1) before moving to specific institutions (Section 3.2).

3.1. Discourses about Urbanisation

Moroni and Minola (2019) qualify the Italian discourse as anti-urban. We like to propose a continuum of discourses in relation to the degree of concentration of urbanisation, with pro-dispersion on one end of the spectrum and pro-concentration on the other. Although it is hard to precisely measure discourses according to this scale, we observe (based on a literature review) clear differences in the ambitions of urban planning policy in both regions. Planning policy in the Netherlands can be qualified as more pro-concentration, albeit in a polycentric rather than a monocentric way, while the Flemish policy seems to be based on a rather ambiguous discourse of pro-concentration recently (since the mid-1990s) and a more pro-dispersion slightly longer ago. This reflects (and is reflected by) the urban morphology in both countries. If we bear in mind the two dimensions of sprawl discussed in Section 2, we can observe that both countries have a large urban uptake, but the shape of that in Flanders is more dispersed than in the Netherlands (Figure 1). According to the EEA, Belgium and the Netherlands are the two countries with the highest share of urban land in the European Union. In addition, Belgium has the highest level of dispersion of urban use; the Netherlands is fourth in that ranking (Henning et al., 2016, p. 58).

3.1.1. The Netherlands

More than anything, Dutch urban discourse can be qualified as pro-polycentric, which is somewhere between pro-dispersion and pro-concentration. In an attempt to measure polycentricity, Meijers (2008) ranks the Netherlands as the most polycentric country in the EU. In his definition, a national urban system is more polycentric when the urban areas (e.g., the functional urban areas) are more equally sized, distributed more evenly across the nation's territory and when their accessibil-

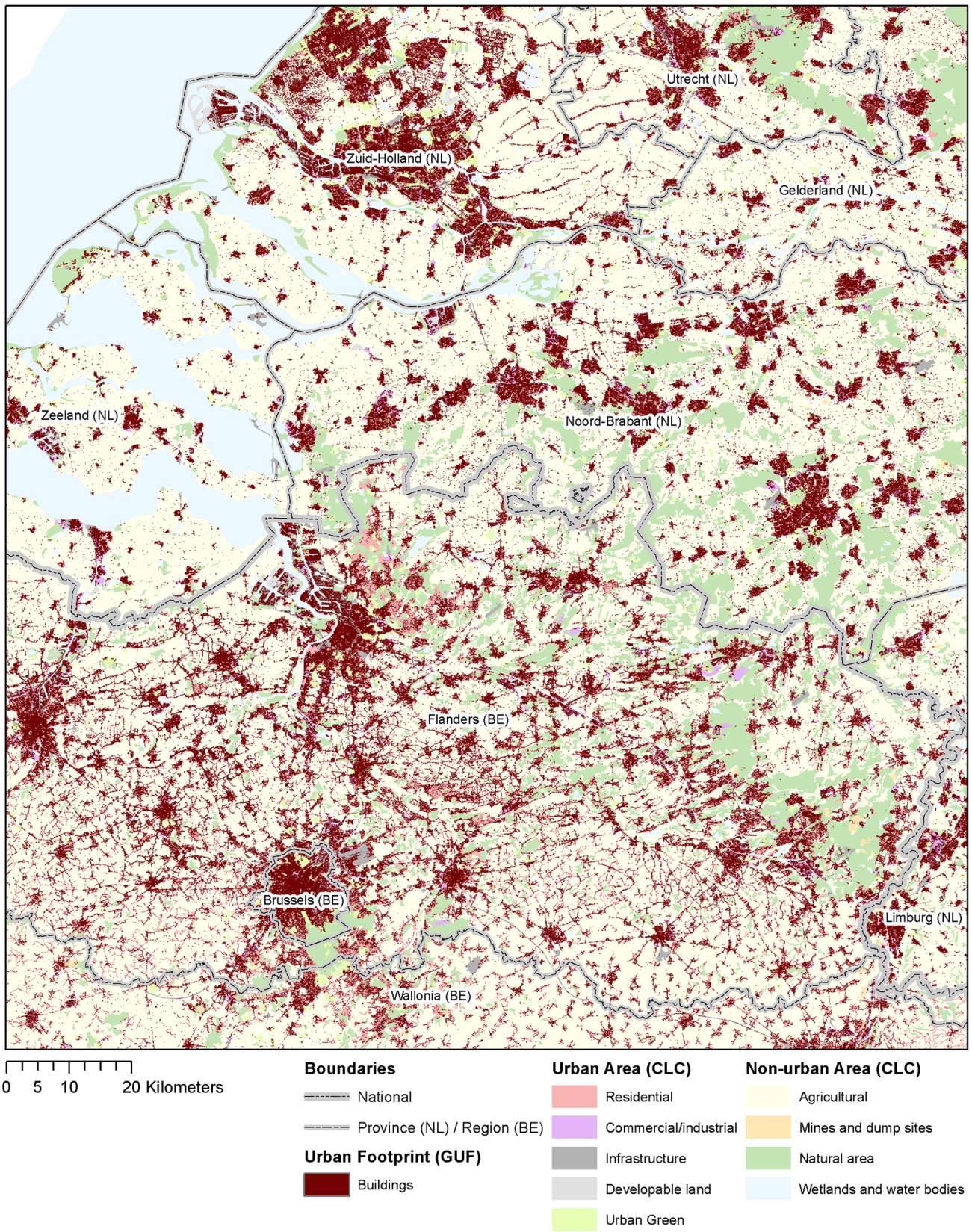

Figure 1. Urban morphology in Flanders and the Netherlands. Figure composed using Corine Land Cover 2012 (by Copernicus), Global Urban Footprint 2012 (by the DLR) and EuroGeographics.

ity is more equal. The polycentric urban structure was enabled and reproduced by post-WWII (national) urban discourse aimed at separating cities from each other and cities from the countryside (Faludi & van der Valk, 1994). We mention three subsequent policies that have taken this view and (re)produced a polycentric discourse and a

ditto urban structure, namely (1) national buffer zones, (2) new towns and (3) compact cities.

The first policy is that of national buffer zones (*Rijksbufferzones*), a concept first coined in 1958 and incorporated into the first national plan, which was adopted in 1960. Those were zones between the major cities in the west of the Netherlands (Amsterdam, Rotterdam, The Hague and Utrecht) that were to remain green and agricultural in order for the cities to remain separate entities and not be swallowed by post-war urban expansion. The committee that prepared the national plan was very clear about the purpose of those buffer zones:

> If one lets development have its course, then one loses one of the major advantages of the Randstad over foreign conurbations: the spatially separate cities of a convenient size. Therefore, it is necessary, where possible, to keep a dividing zone between the cities of 4 km free from development. (VROM, 2008, p. 13, authors' translation)

In 1963, those zones were safeguarded in local land-use plans (*bestemmingsplannen*). Later, other regions outside the Randstad area followed. In 2012, the buffer zone policy was abolished (at least at the national level) by the national spatial strategy (the SVIR) that was then adopted.

Another national policy that reproduced the polycentric discourse is the new-town policy (*groeikernenbeleid*). In post-war Holland, there was great urban pressure, but at the same time, there was the desire to keep some areas free from development (e.g., the national buffer zones) and to distribute housing and economic activities. This policy aim was referred to as "bundled deconcentration," which was the key of the second national plan of 1966: In other words, sprawl, but in a consolidated and coordinated way (van der Cammen & de Klerk, 2003). The new-town policy was established in 1972 (and completed in the mid-1980s) and was considered part of the implementation of bundled deconcentration. Unlike the *villes nouvelles* around Paris, the Dutch new towns were not aimed at strengthening a major metropolis. They were deliberately planned as satellite towns, at some distance from the major cities, in an attempt to distribute the population and relieve the cities (Reijndorp, Bijlsma, Nio, & van der Wouden, 2012).

The fourth national plan (*Vino*) came in 1988, with an addendum in 1990 (*Vinex*). The aim of bundled deconcentration was replaced by the compact city concept. The central government focused on strengthening the bigger cities by stimulating housing development in or attached to the existing urban fabric, on which it agreed with regions in covenants (in return for subsidies). These developments have become known as *Vinex* sites. However, in implementing the compact city policy, the central government was not very selective. Smaller cities and new towns, such as Leidschendam, Zoetermeer and Houten, got their own *Vinex* site within municipal boundaries (Leidschenveen, Oosterheem and Castellum respectively; see van der Wouden, 2016). Also, investment policies in the existing urban centres (*stedelijke knooppunten*) moved gradually from stimulating only the bigger cities to a much less selective group of as many as thirteen urban regions (Zoete, 1997).

In short, Dutch (national) urban policy has, for a long time, been concerned with separating cities and distributing urban activities. Rather than a fragmented and haphazard kind of urban sprawl, a coordinated and consolidated, but nevertheless "sprawled," form thereof was (implicitly) advocated and implemented.

3.1.2. Flanders

The Flemish region is characterised by extensive urban sprawl: 33% of its territory is now "settlement area" (Pisman, 2018) that is used for housing, industrial and commercial purposes, health care, education, nursing infrastructure, roads and rail networks, recreation, etc. Important historical reasons for Flanders's extensive sprawl are the favourable physical (soil and water) conditions and the anti-urban housing policy in the first half of the 20th century by the Catholic and Socialist Parties promoting residential development in rural areas through subsidies and the layout of an intricate public transport system (de Block, 2011; Dehaene, 2013; Smets, 1986). Both political parties agreed on the advantages of housing working-class families in rural dwellings with gardens in comparison to the alcoholism and other risks associated with housing them in cities (De Decker, 2011).

This discourse has intensified since the emergence of the land-use planning and building permit system in the 1960s–1970s. Legally binding land-use plans were developed at the Belgian/national level and defined the land use of every square meter in the entire territory of Belgium. Moreover, inspired by an overarching modernist pro-growth discourse, land was allocated very generously for residential, industrial and commercial purposes in cities as well as in smaller villages, settlements and in linear narrow zones (*lintbebouwing*) along many roads. Since these "national" land-use plans were only gradually replaced by new land-use plans, the impact of this generous planning exercise is noticeable even today, more than 40 years after the approval of the "national" land-use plans: 40,000 hectares of the allocated residential area is not yet developed today and cannot be eliminated either without financial compensation to the holders of the development rights.

A serious shift in the strategic planning discourse resulted in the approval of the first strategic planning document for the region of Flanders in 1997 (Albrechts, 1999; Ministerie van de Vlaamse Gemeenschap, 1997). One of the main measures of the Spatial Structure Plan for Flanders, with its overall vision of Flanders, "open and urban," was the containment of future urban growth through the definition in land-use plans of boundaries around the major and regional cities. This

concept of deconcentrated bundling—see the similarity with the concept of bundled deconcentration in the Netherlands—takes the existing urban sprawl in Flanders as a fact but tries to cluster new developments in cities and villages. Despite this clear pro-urban and anti-dispersion discourse, the political consensus was missing at the time to push it through in every detail of the document. The Spatial Structure Plan for Flanders is still valid today, more than 20 years after its approval. Since 2010, the Flemish government is busy preparing a new strategic planning document which tries to introduce the ambition to reduce the daily growth of settlement area gradually, from six to seven acres today to zero in 2040. This ambition, popularly known as the "concrete stop" (*betonstop*) discourse, was loudly announced in the media but has not yet been implemented. In anticipation thereof, building activity has increased recently with an opposite effect on land take.

3.2. Institutions

The conceptual framework we suggest to assess the relation between government-created institutions and urban sprawl refers to the active, passive or persuasive position of governments. To reiterate: active government provision of (1) infrastructure or public goods or (2) land for private goods; passive regulation of land use through (1) location-specific or (2) more generic rules; and persuasion through (1) taxes or (2) subsidies in order to incentivise land use.

3.2.1. Active Provision of Infrastructure/Public Goods

Urban sprawl can only take place if enabled by public infrastructure provision, either proactively or retroactively. As already described, the layout of a dense public transport and road network in the first half of the twentieth century was an important historical driver behind urban sprawl in Flanders. Moreover, dispersed new residential development in unsustainable locations has urged regional and local governments to invest seriously in the provision of public goods such as public transport, energy and water supply and sewage infrastructure. Residential development evokes the provision of infrastructure and public goods rather than vice versa (Vermeiren et al., 2018).

This is quite different from new urban developments in the Netherlands that are commonly designed in a consolidated way, which allows for infrastructure to be developed alongside and in conjunction with it (Buitelaar & Bregman, 2016). New towns such as Zoetermeer, Nieuwegein and Leidschendam were developed along major motorways and provided with train or light-rail connections to the adjacent urban centres (The Hague and Utrecht in this case). Also, the *Vinex* urban extension areas were facilitated by easy car access and, albeit to a lesser extent, by public transport connection to city centres (van der Wouden, 2016).

3.2.2. Active Provision of Land for Private Development

Local authorities can go further than only providing land for public goods. As they get involved in the development of (private) land for housing and real estate, they might affect urban extension patterns. National urban policies in the Netherlands rely heavily on implementation by municipalities, in particular on active local land policies (Needham, 1989). Around two thirds of Dutch housing is provided by active municipal land policy, that is, by local governments buying land, preparing it for construction and then selling it to an actor willing and able to construct real estate (Bregman, Karens, Buitelaar, & de Zeeuw, 2018). Not only is active land policy used as an instrument to guide development—if governments sell land, but they are also able to impose detailed restrictions with regard to future land use—it is an additional source of public income (Buitelaar, 2010). This applies to greenfield land more than it does to brownfield sites since in case of the latter land, rents are much smaller or non-existent. Therefore, urban extension is financially appealing to local governments, albeit not in a fragmented and haphazard way. Due to geological circumstances—much of the country lies at low altitude and has a weak soil—developing land is costly and therefore favours doing so in large quantities and in a coordinated way in order to achieve "economies of scale" (Buitelaar & Witte, 2011). The Dutch active land policy thus provides an incentive for consolidated sprawl.

In Flanders, the real estate market is almost completely privately organised: 84% of the land that is still available for residential development is in private hands and is mainly developed at the initiative of individuals and households (Loris, 2009). Private developers are rather small in size and often locally based. Municipalities are not buying and selling land actively, their role is quite passive. The non-existence of a tradition in active land policy by governments and the abundance of allocated and yet-to-develop residential area in the land-use plans do not help prevent nor stimulate urban sprawl: Actors act within the limits set by the land-use plans. Furthermore, the will of local governments to contain cities is limited since a large part of their revenues is based on income taxes.

3.2.3. Passive Location-Specific Regulation

The stock of allocated residential area in the Flemish "national" land-use plans consists of existing residential areas as well as potential residential expansion areas. The existing areas were located specifically in cities and village centres but were also conceived in the 1970s as linear zones along roads between villages. This contributed to the emergence of more than 13,000 kilometres of what is now called residential "ribbon development" (Pisman, 2018). Residential expansion areas were planned in villages and smaller settlements. Summarized one could say that, already in the 1970s, the Belgian gov-

ernment had planted the seeds for future haphazard urban sprawl. Most municipalities have added new residential expansion areas or have introduced low-density rules and large distances between buildings through local land-use plans and ordinances (Renard, 1995). Instead of controlling urban sprawl, location-specific regulations at the national/Flemish and local level have promoted urban sprawl.

In the Dutch context, location-specific rules, enacted by municipalities, provinces and the national government have also contributed to the polycentric urban structure. Earlier, the national buffer zones had already been mentioned. They are an example of location-specific rules that had a large impact on the coming about of the Dutch polycentric urban structure. Also, other restrictive national and provincial rules (most notably growth controls around urban nodes) have been used to keep cities relatively small and green space relatively empty, hence contributing to creating and reproducing the polycentric structure (Faludi & van der Valk, 1994).

3.2.4. Passive Location-Generic Regulation

In both countries, there are many local generic rules that stimulate sprawl, such as parking ordinances with high parking norms, general and restrictive height standards, high minimal widths between buildings, etc. However, there were and are some additional general spatially-focused rules in Flanders that increase sprawl which are absent in the Netherlands.

The best-known rule in Flanders was introduced together with the land use plans in the 1970s: the so-called "fill-in rule" (*opvulregel*). This rule allowed, regardless of the actual allocation in the land-use plan, to develop the land between two houses for residential purposes, as long as these two houses were no more than 75 metres apart and on the same side of the street. In practice, houses on the other side of the street were also considered and the distance was measured with an elastic band (i.e., in practice, more distances of over 75 meters were also considered; Renard, 1995). Around the turn of the century, the Flemish government introduced a more nuanced version, which translates as the rule of the "waiting façade" (*wachtgevelregel*). This rule allows new homes to be built against blind waiting façades, regardless of the allocation in the land-use plan. At the same time, the Flemish government created, in the "national" law, a new apparatus of fundamental building rights that allow former agricultural constructions to be converted, renovated or rebuilt for residential purposes. Although situated in agricultural area on the land-use plans next to the already generous location-specific regulations, these location-generic rules at national and local level stimulate urban sprawl.

3.2.5. Persuasion through Taxes

In the Netherlands, all properties are taxed in the same way. The property tax is a locally determined percentage of the property value, which has to be determined on the basis of standard valuation rules. Logically, let alone empirically, there does not seem to be a causal relation, in any direction, between the property-tax system and urban development (and sprawl).

The Flemish government taxes private property on an annual basis. As these property taxes are based on outdated theoretical rental values, referring to a no longer existing difference in comfort between urban mansions and rural sheds, they are higher for dwellings in cities than for dwellings in rural municipalities. As a consequence, it is fiscally more attractive to build or renovate houses in the countryside.

3.2.6. Persuasion through Subsidies

As previously mentioned, the system of subsidies in the first half of the 20th century has favoured and accelerated urban sprawl in Flanders. In recent decades, such subsidies were absent. In the Netherlands, until recent years when public austerity entered the urban-policy domain, decades of urban-renewal programs and accompanying budgets and subsidies were in place to invest in existing (often deprived) urban areas (e.g., *stadsvernieuwing, stedelijke vernieuwing, aandachtswijken, krachtwijken*, etc.; see Verheul, Daamen, Heurkens, Hobma, & Vriends, 2017). At the same time, there were also large sums of money available for the development of greenfield land. The implementation of the earlier mentioned new-town policy (the 1970s and 1980s) and compact city policy (in the 1990s) was made possible by national location subsidies (Faludi & van der Valk, 1994; Jókövi, Boon, & Filius, 2006). It shows the dual attitude towards sprawl: dispersion but in a consolidated way.

4. Discussion

The aim of this article has been to put forward a conceptual framework on government discourses and institutions that enables the analysis of their impact on urban development. Based on the institutional literature, the framework distinguishes between discourses and various categories of institutions. It helps compare territories with different institutional contexts. In this article, we used this framework to assess Flanders and the Netherlands, two neighbours with similar physical conditions yet substantially distinct urban structures and institutional arrangements. By making discourses and various categories of institutions explicit, the framework helps focus on urban sprawl issues that matter when comparing countries or regions. That is why the framework is used in this article and ought to be considered as a list of topics to guide discursive and institutional analyses of policy documents and laws and to manage semi-structured qualitative interviews or focus group discussions with experts and stakeholders on the topic of urban sprawl. The kind of result that emerges from this type of framework for comparative research is explanatory to

the familiar, more quantitative research that measures urban sprawl, its causes and its effects. It complements the latter research with much-needed insights that allow for policy recommendations.

This article confirms Moroni and Minola's (2019, p. 110) statement that "it is difficult to sustain the thesis that sprawl is the result of deregulation or a lack of planning….It has been more probably caused (also) by inadequate regulation and planning." This is probably most apparent in Flanders, which is the more "sprawled" of the two territories. Until quite recently, the Flemish government adopted a clear pro-dispersion urban discourse and institutions to back it up. Since those institutions were quite passive in approach, governments mainly relied on the control of private initiatives by landowners through a system of permits based on generous zoning plans and generic building laws. It explains the much dispersed, non-systematic development of urban sprawl in Flanders. However, in the Netherlands, the polycentric urban discourse, and the policies to support it, have produced a more "sprawled" urban pattern than would have been the case if all efforts—such as in France—had been directed towards creating and maintaining a large metropolis.

5. Conclusion

The article shows the close connection between the urban discourse and the various institutions governments introduce. There is coherence between the public urban policy aims and the means governments employ to implement those policies. This arguably has to do with an observation Lindblom (1959) made long ago: "Ends and means are simultaneously chosen." The means support the various degrees and forms of the desired sprawl in Flanders and the Netherlands, although in the case of Flanders there has been some divergence between discourse and institutions in recent years.

Since 2010, the Flemish government has been preparing a new strategic planning document which tries to introduce the ambition to reduce the daily growth of urbanised area gradually, from six to seven acres today to zero in 2040 (Vlaamse overheid, 2018). This ambition, popularly known as the "concrete stop" (*betonstop*) discourse, has been loudly announced in the media but fails to be formally approved. As a consequence, the actual building activity has increased with an opposite effect on land take. Where government discourse has become pro-concentration, institutions are still supporting the preceding dispersive discourse.

In the Netherlands, apparently, the need to stop further urban sprawl seems non-existent. The draft National Strategy on Spatial Planning and the Environment (Government of the Netherlands, 2019) suggests that "the further expansion of windmill parks, seaports, airports, brainports, greenports, digital infrastructure and so on, is perfectly thinkable because this will happen in a sustainable and circular way" (Leinfelder, 2019, p. 30). The fact that government contributes to and coproduces sprawl implies that they also own the key to urban containment, one could argue. However, "the weight of the past is an impediment since the policies…are strongly path-dependent" (De Decker, 2011, p. 1648). In Flanders, the government seeks change and has adopted a discourse of urban concentration since the mid-1990s. At the same time, it faces vested rights and interests that favour a reproduction of the prevalent scattered urban pattern. Not only institutions filter our future behaviour; the urban pattern itself also gives rise to path dependency. In the Netherlands, there are debates about the lack of a central and large metropolis and the need for working towards one. But urban planning cannot work from scratch. There is no tabula rasa: There is an existing urban structure that has evolved over centuries. It is arguably most effective and efficient to retrofit that structure and make it more sustainable than to try to replace it with a new structure altogether.

This article has been an exercise in international comparative research, the central topic of this thematic issue. Referring to the modes of comparative learning in Van Assche, Beunen, and Verweij (2020) in this journal, it has focused mainly on learning from the past and learning from other places. The value of learning lies not so much in borrowing best practices from other countries, in the form of policy transfer or institutional transplantation. Primarily, international comparisons help to contextualise and understand one's own national practices. Van Assche et al. (2020) state that self-observation and observations of others have to be sharpened simultaneously to enable learning through comparison. Without that, people tend to take urban morphologies, policy discourses, institutional arrangements, and other social constructions for granted, as if there is no alternative. International comparisons allow for avoiding essentialist ontologies. Urban sprawl is not inevitable; it is humanly constructed, in some cases almost designed, as are the various forms that its morphology, discourse and institutions may take across the globe.

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Conflict of Interests

The authors declare no conflict of interests.

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Commentary

A Pattern Language Approach to Learning in Planning

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Abstract
The aim of this commentary is to present the position that a pattern language approach facilitates, even catalyzes (comparative) learning in planning for young professionals. This position builds on literature and is supported by the research work of six MSc Urbanism graduation projects, in which the students adopted a pattern language approach. Additionally, these alumni have been asked in retrospect to evaluate their pattern language experiences for their learning. The students say their pattern languages give focus, enrich the knowledge field, are flexible, and they do not prescribe what to do, or how to make a plan. Students see and appreciate the value of the simple, yet thoughtful structure of a pattern with both visual and verbal information. Additionally, they observe that this method enables the connection between disciplines, between theory and practice, and between stakeholders, and that, potentially, it is a helpful tool for all kinds of stakeholders. They refer to the method as a tool for communication, a tool for design and analysis, and a tool for learning.

Keywords
design; learning in planning; pattern language; planning; urbanism

Issue
This commentary is part of the issue "Comparative Planning, Learning and Evolving Governance" edited by Kristof Van Assche (University of Alberta, Canada), Raoul Beunen (Open University of the Netherlands, The Netherlands) and Stefan Verweij (University of Groningen, The Netherlands).

1. Introduction

This article presents the position that a pattern language approach (Alexander, 1979; Alexander et al., 1977) facilitates, even catalyzes (comparative) learning in planning for young professionals, both graduate students and young practitioners. We argue that a tool such as a pattern language can genuinely help young professionals, as it contributes to their ability to organize complexity. For instance, a pattern language can help with documenting and comparing the lessons learned in projects, while on the other hand it can also transform scientific knowledge from academic research into planning and design principles supported by literature and empirical data. It results in a communicative portfolio of spatial principles, so-called 'patterns,' which help to assess planning and design situations, develop spatial plans and designs, and stimulate the debate and exchange of expertise among the involved actors.

Our position builds on literature about a pattern language approach and learning (see Section 2). It is supported by the comparison and evaluation of research conducted by six MSc Urbanism graduation students from TU Delft between 2010–2019, who adopted a pattern language approach for several planning and design assignments. Additionally, we have asked these alumni to retrospectively evaluate the benefits, values and limitations of a pattern language approach for their personal and professional learning. Section 3 explains the evaluation approach of the MSc thesis and interviews with our alumni, whereas Section 4 presents the results of those. We end this article with a reflection and consideration of the learning process of young professionals' experience via a pattern language approach.

2. A Pattern Language Approach: Learning in Planning and Design

2.1. A Pattern Language

Christopher Alexander recognized the complexity and dynamic quality of design and planning. He developed a method to deal with this complexity; making the relation between the recurring nature of a problem and the process of designing a physical form that 'solves' that problem (Alexander, 1964, 1979). This method acknowledges the complexity of a spatial design, and at the same time divides this reality into comprehensive and understandable pieces. One piece is called a 'pattern' (Figure 1).

On the one hand, the pattern is underpinned with theory, while on the other hand, the pattern is clarified with a design sketch or an example. In one 'simple' overview a pattern presents a bridge between a problem and a solution. Yet, complexity kicks in again if one tries to relate patterns to other patterns. Every pattern usually relates to several other ones, very often in different ways (e.g., thematically, or via levels of scale). A pattern may even conflict with another pattern. If the relations between patterns are sketched out, we get a so-called 'pattern field' (Figure 2), which is just as complex as a real design or planning assignment (van Dorst, 2005). Such a pattern field can also be used to analyze sites and/or locations. The variety of patterns and their relations give the urban planning and design researcher a strong tool for a systematic assessment and for comparative learning, based on the question: Which patterns are present (or not) in a certain site/location?

The work of Alexander has been critiqued in the past (Dovey, 1990). Most of the time this critique was concerned with how Alexander saw, perceived, and defined good architectural quality and form. But we should not forget the valuable aspects of the pattern language method as discussed above. For us, these values are particularly relevant and interesting when considering the learning process of young professionals.

2.2. Learning by Young Professionals

Novice urbanists are often overwhelmed by the amount of conceptual knowledge and heuristics they need to master (Curry, 2017). The Cognitive Load Theory (CLT) tells us that our working memory has a limited capacity (Sweller, 1988). In order to be able to learn, people need room in this working memory. Learning stagnates when people must remember many different things at the same time (in their working memory), which happens, for example, when planners are confronted with a new planning situation. CLT explains that you need to use the capacity of your working memory for learning (as much as possible), among others by reducing the amount you use it for other things (Sweller, 1988). Here we must make a distinction between young and more experienced planning professionals, because they face different challenges when learning. CLT shows that people solve problems by mapping out routes towards the solution (Newell & Simon, 1972). Novices and (advanced) beginners must try out all kinds of routes to find the right one while experienced professionals know the 'correct' routes (Newell & Simon, 1972).

In their work, Chi, Feltovich, and Glaser (1979) explain extensively that experts not only have more knowledge and experience than novices and beginners, but also that they approach problems differently. When confronted with a problem, people tend to dig into their memory to look for situations that you have met before. You look for points of recognition and you try to categorize the problem. Obviously, experienced professionals have a larger "frame of reference" (van Dooren, Boshuizen, van Merriënboer, Asselbergs, & van Dorst, 2014), and thus have a richer "knowledge scheme" (Chi et al., 1979). Thus, experts not only have more prerequisite knowledge, but also a deeper conceptual knowledge. As a result, experts can find opportunities for a solution more efficiently and more systematically. For novices and beginners, solving problems takes a lot of cognitive capacity and usually lacks a systematic approach (Chi et al., 1979). Beginners can be helped by splitting up a problem in sub-problems, in smaller steps, or by a systematic way of working (Dreyfus & Dreyfus, 2004; Sweller, 1988).

From the point of view of both planning and learning, it makes sense to say a few things about the difference between the language of images and words. Dual Coding Theory poses that our memory has two different processing systems, a verbal and non-verbal (Paivio, 1969). Everybody thinks with both systems and everybody benefits from the use of both. This also implies that so-called unimodal 'visual thinkers' or 'verbal thinkers' do not exist as such. Learning improves and occurs faster when both systems are used in relation to each other coherently and consistently (Paivio, 1969). And this, among others, is one of the strengths of a pattern language approach.

Within the complex process of developing a plan or design, the young professional needs ways to organize pieces of this multidimensional and open-ended puzzle. What this puzzle may look like is not clear on day one. Additionally, the formation of patterns can entail all kinds of activities, such as site analysis and/or the review of cases and literature. Patterns give young professionals freedom to create pieces before and during the process of making the puzzle. So, when a novice has found a first direction, inspiration or path towards a plan, he or she may start with creating steppingstones. Those patterns are, at the same time, simple tools to store knowledge, and are soundbites for solutions. They relieve the working memory, and thus give room to make a next (mental) step. And as every pattern connects verbal and non-verbal information, the young planner learns to see relations more explicitly, and learns to communicate those relations.

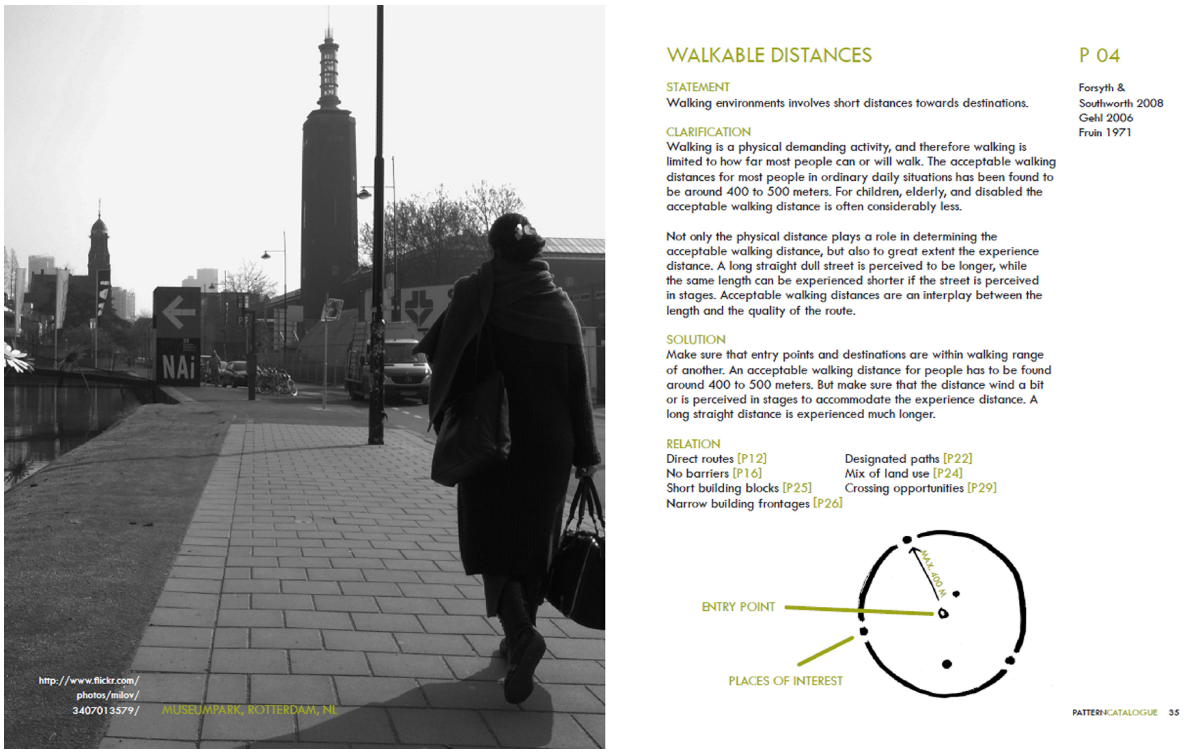

Figure 1. Example of a pattern (van Bellen, 2010b, pp. 34–35).

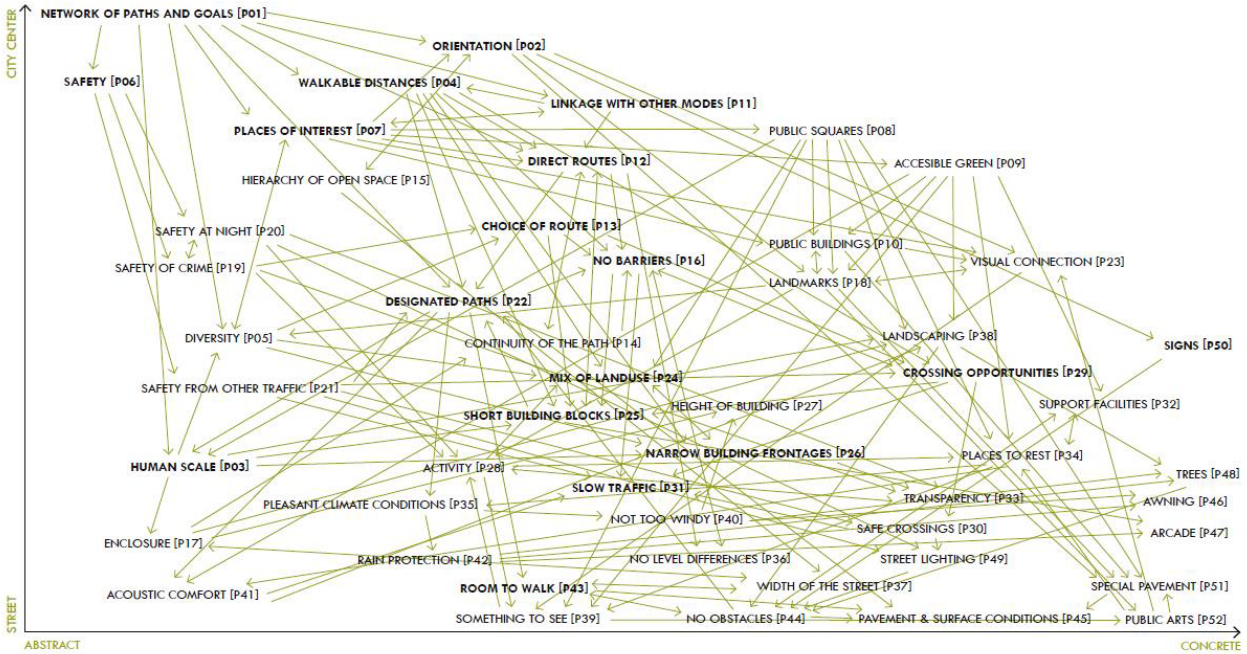

Figure 2. Example of a pattern field (van Bellen, 2010b, p. 25).

3. The Analysis of Six MSc Urbanism Graduation Projects

As urbanism teachers who experienced the positive nature of a pattern language approach for learning among our graduate students, we wanted to check if the students themselves are as positive as we are. We selected six TU Delft MSc Urbanism graduation projects, in which we were involved as mentors, and which used a pattern language approach for several complex planning and design assignments (Baak, 2019; Bruin, 2010; Koene, 2018; Koomen, 2014; van Bellen, 2010a; van Cammelbeeck, 2013).

At TU Delft, MSc Urbanism graduation students dedicate one full year (from the 2-year curriculum) to their graduation project. As part of the graduation process,

students are asked to explicitly reflect on their experiences and integrate those in the final thesis. These reflections have been a valuable source of information on how students perceived the use of a pattern language approach during their graduation, and include the following themes:

- The relation of their project to the studio theme and studio approach;
- The relation between research and design, planning, and engineering;
- The research and design methods used;
- The scientific and societal relevance of the project;
- Ethical issues which the project brings forward.

The projects that we refer to were executed in the time frame of 2010–2019. We also wanted to know how 'our' students look at it now, in retrospect. We made contact again at the end of 2019 and asked all of them (via email) to evaluate again their pattern language experiences. This questionnaire included the following:

- Did you use patterns or a pattern language after your graduation?
- Has the use of a pattern language (then, later, now) been beneficial to your personal development and your own learning trajectory as urbanist?
- Is a pattern language for you a design tool, a communication tool, and/or a learning tool, or perhaps something else?
- Have your ideas changed about the value of a pattern language over the years?
- Do you see differences for and between urbanism students, young professionals, and more experienced professionals when using a pattern language?

4. Pattern Language Approach: A Tool for Learning, Communication and Design

4.1. Comparison and Evaluation of the Reflections by Students on Their Thesis Projects

In their thesis, students say their languages give focus, enrich the knowledge field, are flexible and adaptive, and can thus grow, change, and evolve over time. They are also clear what a pattern language is not; it does not prescribe what to do, or how to do it. The students clearly see a pattern language approach as a way to connect different scientific fields, to connect theory to practice, and to connect scientific knowledge to design and plan making:

> At its core, this project aims to create bridges between the social sciences and the field of urbanism. Social sciences are disciplines that concern themselves with society and the relationships among the individuals that belong to this society, such as anthropology, economics, political science, psychology and sociology. The general consensus at this point in time is that, while the social sciences are undoubtedly relevant to the field of urbanism, they aren't connected in a way that enables us to effectively create an integral approach to prevalent socio-spatial issues. (Koomen, 2014, p. 30)

In relation to individual knowledge and learning, students express that they faced the challenge of exploring different and unfamiliar fields of knowledge, which itself, was a learning opportunity. Additionally, one student makes clear the power of a pattern language for transferring knowledge between individual actors and small teams of stakeholders:

> Visual language refers to the integration of images and elements of images (visual elements) and words (verbal elements) into a single unit of communication. Images help to clarify difficult concepts and make complex relations easier to understand. It is important to use visual and verbal elements, so that the reader is guided to the right direction. (Baak, 2019, p. 85)

4.2. Alumni Reflecting on Their Pattern Language Experience

Four out of the six alumni responded to our questions sent by mail. They nicely express different ways in which a pattern language approach has been useful in their personal and/or professional development during and after graduation:

> It made me realize that a pattern language approach is a method to make clear the variety of urban intervention proposals to people, who work on improving the city, independent of their (cultural, professional, personal) background.

> It worked for me as designer in a different field now. That is the beautiful and powerful thing of a pattern language; it can be used in different fields.

> For me a pattern language was useful…to discover the connection between the patterns is pivotal for an urbanist.

> For me the usefulness was in the learning process on the research side, not so much on the design side. To support the principles, a lot of literature review was necessary, from which I learned a lot about analyzing scientific literature and academic writing.

> In my learning process to become an urbanist it was useful. For my personal development not so much.

Two alumni who graduated more than five years ago explicitly show a more positive attitude towards a pat-

tern language approach than they had during their graduation:

> After my graduation I really started to see the actual value and contents of a pattern language.
>
> When applying, I started to see the practical use, and this has only increased over time.

We, as urbanism student supervisors, have experienced several times that using a pattern language approach gives our students more 'control' over their design and planning assignments. The alumni see the nature of a pattern language in a broad sense: as a design tool, as a communication tool, and as a tool for learning. They point out that there are differences in value for the urbanist who developed a certain pattern language, for other urbanists, and for other professionals without an urban planning and design background:

> The patterns served as inspiration for design.
>
> It is an important tool for communication, besides being a design tool, in particular because of the simple and insightful structure.
>
> A pattern language is both a design tool and a tool for learning…the development of a pattern language is a learning process, and in some ways even more valuable than the patterns themselves.
>
> A pattern language is a good tool to start a conversation with involved stakeholders.
>
> For other urbanists [than me] it can be a communication tool in the early stages of a project, and later on a design tool.
>
> For professionals without design background…it can be both a communication tool and a learning tool, but to make the patterns easier to understand, I made a separate booklet for this group.

5. Discussion

In this article we took the position that a pattern language approach facilitates, even catalyzes (comparative) learning for young planning professionals, both graduate students and young practitioners. Pattern languages consist of patterns, which contain both visual and verbal information and concepts, and are presented in a coherent and consistent way. It enables the connection between scientific knowledge and planning and design interventions in practice. It is very helpful for communication and for non-urbanists who have relatively easy access to this piece of professional knowledge. Moreover, using patterns for systematically assessing and analyzing cases is a powerful tool for comparative learning in spatial planning and urban design. On the one hand, using patterns as an analysis tool helps to define the (unique) planning assignment and/or design brief of a certain site/location. But on the other hand, it can also be used for a systematic inventory among cases which facilitates cross-case comparison, evaluation and reflection.

Our former urbanism students say their pattern languages give focus, enrich the knowledge field, and are flexible (i.e., the languages can grow, change and evolve over time, yet they do not prescribe what to do, or how to make a plan). They see the value of the simple, yet thoughtful structure of a pattern with both visual and verbal information. Additionally, they observe that this method enables the connection between disciplines, between theory and practice, and between stakeholders, and that, potentially, it is a tool to learn for all kinds of stakeholders. Logically, they all learn(ed) something different from their pattern language experiences.

All students chose to use a pattern language approach during their graduation. We did not tell them to do so; perhaps advised them to do so. Consequently, one might expect a relatively positive bias to this way of working. Additionally, we should be careful when drawing more general conclusions too quickly as such a small group of young professionals of course cannot represent all young urbanism professionals. That would require much more systematic research in urbanism education and practice. However, the students' reflections are strong indicators for a variety of important lessons on (comparative) learning in planning and design.

Our position presented is based on our personal experiences over decades of teaching urbanism, supported by the experiences of a small group of former students. The work has an exploratory and propositional nature but can be closely linked to concepts used in widely accepted models of learning. For us, it is clear that young urbanism graduates and practitioners clearly benefit from design and planning tools. Sometimes, the students start to appreciate those tools used during graduation (even more) after graduation. Young professionals face different mental challenges than seniors. Tools give young professionals a grip on complex situations, which more senior professionals might not need. The set of available tools for those novices is very limited; some can be too complex (e.g., working with scenarios), may be too random (e.g., reference projects), or could be missing a clear relation between scientific research and design (e.g., spatial site analyses).

One of our alumni wrote to us in the interview responses an anecdote of a senior urbanist and at the same time her urbanism teacher, telling her that "people who cannot design, develop a toolbox." For us, this colleague 'forgot' the amount of holistic, implicit and intuitive knowledge and skills that he has acquired over time, and, in particular, in comparison to an urbanism student. Less experienced urbanists and professionals from other fields look for ways to better understand urban design and planning knowledge, ideas, solutions, propos-

als, thinking, and language. They look for clear communication from the experienced urbanism professionals, who quite often are not aware why they know what they know, and thus how to communicate that. The anecdote reminds us that being a successful and senior urbanist does not automatically qualify you to be a good urbanism teacher.

Alexander developed a method to express his opinion on spatial quality in a simple and understandable way. His work is for fellow professionals and for laymen. The effect of this effort is a method that transforms the complexity of planning and design into a language that is understandable for all; every pattern has a comprehensive structure—a hypothesis, its backup and its implication for intervention—and combines verbal information and non-verbal information. The side effect of his goals is a method that is appropriate as a tool for (comparative) learning, due to the fact that it is easily applicable for the novice urbanist and it supports communication between student and teacher, between young practitioner and coach, between researcher and plan maker.

Conflict of Interests

The authors declare no conflict of interests.

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