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Urban Planning by Experiment

Editors
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Editorial

Urban Planning by Experiment: Practices, Outcomes, and Impacts

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Abstract
The impact of urban experimentation on urban planning approaches is so far insufficiently assessed and discussed. This thematic issue sets out to investigate the possibilities and limitations of 'urban planning by experiment,' defined as an approach that uses experimentation to innovate and improve urban planning instruments, approaches, and outcomes. It brings together eight contributions presenting original research on urban experimentation and its relation to urban planning. All contributions are empirically grounded in (illustrative) case studies, mostly from European cities. Here, we summarize and discuss the major findings across the eight contributions with respect to three key themes: the practices of urban experimentation, its outcomes, and its impacts on urban planning. We conclude that the practices of urban experimentation described in the contributions generated a wide variety of substantive and learning outcomes, which, according to the authors, represent worthwhile additions or alternatives to the current repertoire of approaches and instruments of urban planning. However, except for a single case, large-scale integration of experimentation in established approaches to urban planning was not observed, let alone a complete transformation of urban planning practices. An area for further research concerns the relation between the way urban experiments are organized and conducted, and their impact on urban planning.

Keywords
sustainable urban development; urban experiments; urban planning; urban transformation

Issue
This editorial is part of the issue "Urban Planning by Experiment" edited by Christian Scholl (Maastricht University, The Netherlands) and Joop de Kraker (Maastricht University, The Netherlands).

1. Introduction

The increasing complexity of cities and urban problems presents a challenge to established practices of urban planning (Wolfram, Borgström, & Farelly, 2019). At the same time, cities have witnessed a surge of urban experiments (Bulkeley et al., 2019; Evans, Karvonen, & Raven, 2016), interventions with the aim to innovate, learn, or gain experience with respect to complex urban problems and possible solutions (Bulkeley & Castán Broto, 2013). Urban experimentation may thus hold great potential for informing and re-directing established approaches to urban planning. However, the term has been used for a diversity of practices and urban experimentation has hardly been investigated specifically from an urban planning perspective. More importantly, the impact of urban experimentation on urban planning approaches is so far insufficiently assessed and discussed.

This thematic issue sets out to investigate the possibilities and limitations of 'urban planning by experiment,' defined as an approach that uses experimentation to innovate and improve urban planning instruments, approaches, and outcomes (Scholl & de Kraker, 2021). It brings together eight contributions presenting and discussing original empirical research on urban experimentation and its relation to urban planning. Urban planning is here understood as the established practices of public authorities—including rationalities, instruments, and

modes of governance—that aim to steer urban development into a desired direction (Wolfram, 2018). Below, we summarize and discuss the major findings across the eight contributions with respect to three key themes in the call for papers, i.e., the practices, outcomes, and impacts of urban experimentation. The latter refers specifically to the question of how and to what extent urban experimentation has changed urban planning in practice.

All contributions are empirically grounded in (illustrative) case studies, mostly from European cities. Scholl and de Kraker (2021) studied the experimentation practices of Dutch city labs; Evans, Vácha, Kok, and Watson (2021) report on the perspectives of city coordinators in the European Union's H2020 Smart Cities and Communities urban innovation program; and Eneqvist and Karvonen (2021) investigated the functional roles of the municipality of Stockholm (Sweden) in urban experimentation. Sharp and Raven (2021) looked at the Net Zero Initiative of Monash University in Melbourne (Australia); and Räuchle (2021) studied a Real-World Lab dealing with social cohesion in a super-diverse neighborhood in Hanover (Germany). Marrades, Collin, Catanzaro, and Mussi (2021) report on a Placemaking Living Lab transforming the waterfront of the old port of Valencia (Spain), and Wanner, Bachmann, and von Wirth (2021) focus on an 'experimentation episode' in the development of a central brownfield site in Wuppertal (Germany); whereas the urban experiments studied by these authors address current environmental or socio-economic sustainability issues, the case investigated by Pelzer, Hildingsson, Herrström, and Stripple (2021) presents a notable exception. They report on an intriguing experiment conducted by a land-owning church, Lund Cathedral (Sweden), addressing the question of how to plan for the very long term. Taken together, these eight contributions provide a broad overview of current practices, outcomes, and impacts of urban experimentation in relation to urban planning.

2. Practices

The urban experiments covered in this thematic issue are quite diverse in terms of experimental practices. An important difference concerns the scale of experimentation, varying from short-term, small-scale urban development projects (Scholl & de Kraker, 2021) to a long-term, large-scale experimental waterfront redevelopment project (Marrades et al., 2021). In all cases, a variety of urban actors is involved in experimentation, but the cases differ according to which actor is in the lead. This ranged from municipalities (Eneqvist & Karvonen, 2021; Evans et al., 2021; Marrades et al., 2021) or universities (Räuchle, 2021; Sharp & Raven, 2021) to citizens as 'city makers' (Scholl & de Kraker, 2021) and 'change makers' (Wanner et al., 2021), or, as mentioned before, a church (Pelzer et al., 2021).

Both scale and leading actor seem to impact the level to which and how the experimental process is structured and formalized, with larger-scale experiments led by municipalities or universities being most structured. For example, experimentation in Dutch city labs, which are mostly led by activist creative professionals and residents, is generally action-oriented, resource-limited, and largely driven by opportunities (Scholl & de Kraker, 2021). As a consequence, not much effort is spent on connecting to the urban development agenda of the municipality, on formulating learning questions before, and on the wider dissemination of lessons after the experiment.

However, even when experiments are more structured and better funded in case municipalities are formally in charge, similar issues arise. The city coordinators interviewed by Evans et al. (2021) complain that experimentation in the EU-funded innovation projects does not generate much useful learning, while lessons are not well embedded and scaled to achieve broader transformation. This has multiple causes. Project-based funding drives a hunt for novel topics and allows little time and resources for systematic identification of key knowledge gaps before and dissemination of lessons after the project. Acquisition of these projects and topic selection is driven by a few entrepreneurial individuals within municipalities and not by the priorities of the local urban development agenda. The projects are not well-designed to answer key questions, generally focus on the technical performance of an innovation, and fail to fully address the social, political, and economic factors that determine its potential to be adopted more widely. Finally, wider dissemination of lessons and upscaling of innovations is hindered by the sectoral structure of municipal organizations and the lack of frameworks for the city coordinators to store, analyze, and share the lessons learned in a more organized way.

Even in cities like Stockholm, where urban experimentation is actively promoted by the municipality, effective learning and internal upscaling and implementation of results is problematic (Eneqvist & Karvonen, 2021). Major reasons include the fragmented organization of the municipality and the often poor connection between experimentation and the city's long-term agenda. The latter, in turn, is due to experiments often being isolated initiatives of individuals, similar to Evans et al. (2021), but also to difficulties the municipality faces in taking the lead in experiments. While companies are eager to initiate experiments, take the lead, and set priorities in favor of short-term goals, there is a lack of leadership competences at the municipality.

In case the municipality is not directly or indirectly involved in the urban experiments, it is even more difficult to connect to the local urban planning and development priorities and to disseminate lessons effectively (Scholl & de Kraker, 2021). However, according to Sharp and Raven (2021), shifting to a larger scale of experimentation (precinct) offers more opportunities for other actors to anchor experiments in formal plans, because this represents a functional scale at which urban planning commonly operates. They also note, however, that

framing experiments in terms of these plans may conflict with the open-ended nature of urban experimentation.

3. Outcomes

The outcomes of urban experimentation can be more or less substantive, and the contributions to this thematic issue report on a wide range. Substantive outcomes concern positive changes in the urban area where the experiment was conducted. They appear to be more important in larger projects with a major focus on achieving local improvements, rather than drawing lessons to be applied elsewhere. Marrades et al. (2021) find that many outcomes of this type were generated by the experimental redevelopment of the waterfront in Valencia: new uses for buildings and structures, active participation of residents and community organizations, a broadened group of users including young people, and expanded public use of the area. Outcomes may also concern less tangible results that create conditions for positive local change, such as the area development concept and the novel governance structure which were important outcomes of the 'experimentation episode' in the development process described by Wanner et al. (2021).

However, urban experiments are often conducted at a relatively small-scale, with sometimes no or only temporary local effects, and have learning of more broadly applicable lessons as the major goal. These lessons may concern improved designs of innovations, more effective approaches to address certain challenges, or an improved understanding of a problem. The city coordinators interviewed by Evans et al. (2021), for example, were focused on learning how to scale innovations and embed lessons into organizational structures and cultures. The alternative uses of open spaces trialled by the Real-World Lab studied by Räuchle (2021) indicated more effective ways to take residents' perspectives into account and to expand their participation, and to give a greater role to learning and reflection before the start of an actual planning process. In the case described by Pelzer et al. (2021), reflection on a series of artist interventions resulted in a shared understanding among the church managers of the problem, the benefits of the chosen approach, and the values at stake when 'planning for the very long term.'

In larger projects, learning is perhaps not the primary goal, but is certainly an important one. Marrades et al. (2021) report on a manifesto with a guiding framework, an outcome which represents a synthesis of lessons learned regarding their experimental place-based approach to planning. In the Net Zero Initiative of Monash University in Melbourne, also a larger-scale project, the desired outcome is in the first place substantive (precinct-scale decarbonization), but also to learn about the many material, social, and economic aspects of decarbonization of the three sectors that make up the majority of carbon emissions in Australian cities: energy, mobility, and buildings (Sharp & Raven, 2021). However, where learning-from-failure can be, in principle, an important mechanism in small-scale experiments, Sharp and Raven (2021, p. 203) note that "political acceptance of failure remains difficult, and this might be even more challenging at precinct scale, as precincts might be perceived as 'too big to fail,' hence limiting the potential of learning and transformation."

4. Impacts

Whereas most contributions in this thematic issue reported substantive and/or learning outcomes for the cases studied, impacts—actual changes in the practice of urban planning—appear to be scarce thus far. The case of Stockholm might be the exception to the rule, because here the municipality actively facilitates and supports experiments and has adopted urban experimentation as a means to realize its sustainability ambitions (Eneqvist & Karvonen, 2021). Yet, interviews with Stockholm municipal officials revealed that opinions about this are mixed and that still many tensions exist between the experimentation approach and more traditional urban planning practices. This concerns the risk-taking nature of experimentation, the fact that often other actors are in the lead and setting the goals, the problematic relation between experiments and the long-term planning agenda, and possible conflicts with democratic principles and the public good. Except for the contribution by Evans et al. (2021), none of the other case studies report on actual impacts. Evans et al. (2021) found that despite the limited learning potential of EU-funded urban innovation projects, the city coordinators managed to bring about changes in their municipal organizations and equip these better to drive the physical transformation of cities needed for sustainable development. These include creating new cross-cutting, collaborative platforms, units, and functions, as well as changing guiding principles and ways of working.

Scholl and de Kraker (2021) did not study the impacts of Dutch city labs on urban planning practice, but expect that these will be limited given the nature of experimentation in these labs. Urban planning priorities do not play a major role in topic selection, and a structured approach to experimentation and learning is often lacking, as is active dissemination of lessons to the municipality. In the cases studied by Wanner et al. (2021) and Räuchle (2021), a good working relationship with the municipality was maintained. However, in both cases, the opinions of urban planners were mixed, regarding whether urban experimentation would be a meaningful addition to established planning practices (Räuchle, 2021), and regarding whether the successful urban experiment indicated the need for a more collaborative and participatory planning culture (Wanner et al., 2021). Also in the experiment by Lund Cathedral on 'planning for the very long term,' the urban planners were facilitative and sympathetic, but still mostly "unintentionally ignorant" about the principles of the experiment, and thus far no impacts

have been noticed (Pelzer et al., 2021). Finally, Marrades et al. (2021) see great potential for their framework for a Placemaking Living Lab approach to become an integral tool for urban development and support the transformation of traditional planning. However, these future and wider impacts were beyond the confines of their case study.

5. Conclusion

The practices of urban experimentation described in the contributions to this thematic issue generated a wide variety of substantive and learning outcomes, which, according to the authors, represent worthwhile additions or alternatives to the current repertoire of approaches and instruments of urban planning. However, except for the case of Stockholm, large-scale integration of experimentation in established approaches to urban planning was not observed, let alone a complete transformation of urban planning practices. Of course, in most of the cases studied it is too early to draw definite conclusions about such impacts. Yet, the contributions provide some indications of whether such impacts can be expected. Scholl and de Kraker (2021) posit that impacts depend on practices and on *how* urban experiments are conducted. As for characteristics that contribute to impact, the authors mention: a structured approach to experimentation, co-creation of experiments, active and targeted dissemination of lessons learned, and experiments as linking pins between municipal policy goals and the needs of urban society. Several of these aspects relate to the observations of Evans et al. (2021), who concluded that much more impact can be expected when experiments are better designed to answer key learning questions and when frameworks are available to store and share lessons in an organized way. The problem of a disconnect between the goals of urban experiments and the long-term urban development agenda of the municipality is mentioned by both Evans et al. (2021) and Eneqvist and Karvonen (2021). The other contributions do neither support nor disprove these possible relations between practices and impacts, indicating a need for further empirical research.

Several authors, for example Evans et al. (2021), argue that when a transformation of cities is required to address major sustainability challenges, such as climate change, a transformation of established urban planning practices is also needed. This would constitute a trend break, however, in the historical development of urban planning practices. According to Wolfram (2018, p. 106):

> Although the scientific planning discourse may have been dominated by specific ideas for certain periods of time, this has in practice not necessarily resulted in a succession of radical 'paradigm shifts.' Rather, former interpretations have become superimposed, recombined and integrated with new ones, thus shaping complex patterns of urban planning rationalities adopted within national and local institutional contexts, and linked to different sets of (state) competencies, instruments and objectives.

This suggests that "urban planning in practice pursues different rationalities simultaneously and independently, thereby inevitably contributing to development contradictions and conflicts" (Wolfram, 2018, p. 106), which also seems to apply to the new rationality and associated instruments and objectives of urban experimentation. In Stockholm, for example, this new approach sits—somewhat uncomfortably—next to more traditional planning approaches (Eneqvist & Karvonen, 2021), and a similar development has recently been reported for cities in Denmark and Norway (Berglund-Snodgrass & Mukhtar-Landgren, 2020). These authors explain the mixed feelings of urban planners towards urban experimentation, as reported in this thematic issue by Eneqvist and Karvonen (2021), Räuchle (2021), and Wanner et al. (2021), as arising from a conflict between institutional logics (beliefs that shape how individuals act). Wolfram (2018) makes similar points based on a conceptual analysis. Berglund-Snodgrass and Mukhtar-Landgren (2020) observed in their three case studies that urban planners think in a "public sector logic," which deviates at significant points from the "experimental logic" of urban experimentation. Although urban planners adopted various tools and concepts from urban experimentation, they remained skeptical to altering priorities and ways of working in any fundamental way.

As there appear to be considerable barriers to transformation of urban planning approaches within municipal organizations, a better approach may be to establish new organizations dedicated to urban experimentation at the boundary of urban government and society, as has also been suggested by Scholl and Kemp (2016). Such a boundary organization could widely implement urban experimentation to support urban transformation, collaborate where possible with the municipal urban planners, and, in the spirit of 'urban planning by experiment,' continue to challenge these planners to innovate their repertoire with new ideas and instruments (Wolfram et al., 2019).

Conflict of Interests

The authors declare no conflict of interests.

References

Berglund-Snodgrass, L., & Mukhtar-Landgren, D. (2020). Conceptualizing testbed planning: Urban planning in the intersection between experimental and public sector logics. *Urban Planning*, *5*(1), 96–106.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375.

Bulkeley, H., Marvin, S., Palgan, Y. V., McCormick, K., Breitfuss-Loidl, M., Mai, L., . . . Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European Urban and Regional Studies*, *26*(4), 317–335.

Eneqvist, E., & Karvonen, A. (2021). Experimental governance and urban planning futures: Five strategic functions for municipalities in local innovation. *Urban Planning*, *6*(1), 183–194.

Evans, J., Karvonen, A., & Raven, R. (Eds.). (2016). *The experimental city*. Oxon and New York, NY: Routledge.

Evans, J., Vácha, T., Kok, H., & Watson, K. (2021). How cities learn: From experimentation to transformation. *Urban Planning*, *6*(1), 171–182.

Marrades, R., Collin, P., Catanzaro, M., & Mussi, E. (2021). Planning from failure: Transforming a waterfront through experimentation in a placemaking living lab. *Urban Planning*, *6*(1), 221–234.

Pelzer, P., Hildingsson, R., Herrström, A., & Stripple, J. (2021). Planning for 1000 years: The Råängen experiment. *Urban Planning*, *6*(1), 249–262.

Räuchle, C. (2021). Social encounter by experiment? Potentials and pitfalls of real-world labs for urban planning. *Urban Planning*, *6*(1), 208–220.

Scholl, C., & de Kraker, J. (2021). The practice of urban experimentation in Dutch city labs. *Urban Planning*, *6*(1), 161–170.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Sharp, D., & Raven, R. (2021). Urban planning by experiment at precinct scale: Embracing complexity, ambiguity, and multiplicity. *Urban Planning*, *6*(1), 195–207.

Wanner, M., Bachmann, B., & von Wirth, T. (2021). Contextualising urban experimentation: Analysing the Utopiastadt Campus case with the theory of strategic action fields. *Urban Planning*, *6*(1), 235–248.

Wolfram, M. (2018). Urban planning and transition management: Rationalities, instruments and dialectics. In N. Frantzeskaki, K. Hölscher, M. Bach, & F. Avelino (Eds.), *Co-creating sustainable urban futures* (pp. 103–125). Cham: Springer.

Wolfram, M., Borgström, S., & Farelly, M. (2019). Urban transformative capacity: From concept to practice. *Ambio*, *48*(5), 437–448.

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Article

The Practice of Urban Experimentation in Dutch City Labs

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Abstract
'Urban planning by experiment' can be seen as an approach that uses experimentation to innovate and improve urban planning instruments, approaches, and outcomes. Nowadays, urban experiments—interventions in the city with the aim to innovate, learn, or gain experience—are increasingly taking place in the context of Urban Living Labs. In the Netherlands, a certain type of Urban Living Lab, called city labs, is flourishing, and it has been suggested that these labs could make an important contribution to 'urban planning by experiment.' However, previous studies have indicated that this will depend on how experimentation is conducted in these labs. To obtain a more comprehensive picture of the practice of experimentation, we conducted a survey among Dutch city labs, supplemented by individual and group interviews with practitioners from a small subset of the 17 responding labs. We conclude that there is a poor match between the practice of experimentation in Dutch city labs and the characteristics that are considered to support effective 'urban planning by experiment' (i.e., a structured approach to experimentation, co-creation of experiments, active and targeted dissemination of lessons learned, and experiments as linking pins between municipal policy goals and the needs of urban society). This suggests that the current contribution of Dutch city labs to 'urban planning by experiment' is probably quite limited. Further research is needed to determine whether the typical practice of experimentation encountered in the Dutch city labs, i.e., action-oriented, resource-limited, and largely driven by opportunities, is also found in Urban Living Labs elsewhere.

Keywords
city labs; learning; practice; urban experimentation; urban living labs; urban planning innovation

Issue
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1. Introduction

Urban experimentation is *en vogue*. Amongst policymakers, city officials, urban professionals, and scholars alike there is increasing attention for this concept (Evans, Karvonen, & Raven, 2016). Urban experiments can be seen as purposeful interventions in the city with the aim to innovate, learn, or gain experience (Bulkeley & Castán Broto, 2013). They are distinctive from strictly scientific experiments in that they are conducted in real-life settings, are solution-oriented, offer no full control, rely on the mobilization of lay knowledge, and are not easy to replicate (Caprotti & Cowley, 2017). Due to their local scale and limited geographical scope—urban experiments usually focus on a small part of the city, e.g., a neighborhood, street, or even just a single building—urban experiments confront place-based dynamics and deliver place-based knowledge and results (Karvonen & van Heur, 2014).

Various factors appear to have contributed to the current popularity of urban experimentation, including climate change and the associated attention for urban climate adaptation and carbon–neutral cities (Bulkeley & Castán Broto, 2013), as well as recent 'urban agendas' with experimental implementation approaches, for example by Habitat III (Caprotti et al., 2017; Valencia

et al., 2019) and the EU (Pukarthofer, 2019). Also, the recent economic crisis and its effects on urban development and housing and real-estate markets in cities should not be overlooked (Potjer, 2019), nor the already longer-standing neoliberal process of devolution of responsibilities to the local level of the state (Swyngedouw, Moulaert, & Rodriguez, 2002). Overall, urban experimentation can be seen as a way for cities to face profound uncertainty about new development trajectories in new coalitions with local actors (Harmes-Liedtke & Gianetti, 2019).

Whereas considerable attention has been paid in the scientific literature to (urban) experimentation in connection to new approaches in policy development (e.g., McFadgen & Huitema, 2017a, 2017b; van der Heijden, 2016), the specific connection with urban planning is still largely unexplored. To conceptualize the contribution of urban experimentation to urban planning, we therefore mainly draw on the literature on experimental governance, supplemented with findings from two case studies that explicitly consider urban planning (Bisschops & Beunen, 2019; Scholl & Kemp, 2016). Urban planning is here understood as the practices of public authorities—including regulations, procedures, and spatial plans—that aim to steer spatial urban development into a desired direction (Wolfram, 2018).

Already in 1954, John Dewey insisted, in his work on 'democratic experimentalism,' on the importance of experimental knowledge for joint problem solving as a way for government institutions to innovate in response to dysfunctional routines (Sabel, 2012). 'Urban planning by experiment' can thus be seen as an approach that uses experimentation to innovate and improve urban planning instruments, approaches, and outcomes (Scholl & Kemp, 2016). The need for this emerges when the current repertoire can no longer offer effective, ready-made solutions to major challenges. This can be due to new and complex or wicked problems or due to changed conditions, such as an economic recession, more assertive citizens, or a 'retreating' government. The experimental governance literature suggests four different types of contribution from experimentation in this respect (Kronsell & Mukhtar-Landgren, 2018; Laakso, Berg, & Annala, 2017). First, experiments can serve to test new and hopefully more effective approaches and solutions to new or wicked problems before adopting these at a larger scale. In urban planning, this could be experiments with responses to issues like climate change, air pollution, or social inequality. Second, experiments offer a way to deal with increased uncertainty and complexity by following a flexible, case-sensitive approach rather than a rigid, one-size-fits-all procedure. Examples in urban planning concern experiments with an organic development strategy instead of a masterplan or with flexible, alternative financing schemes. Third, when combined with a participatory, co-creative approach, employing urban experiments may produce more effective outcomes that are more widely accepted and more actively supported. With respect to urban planning, examples include the active involvement of local creative professionals, entrepreneurs, and residents in the design and execution of experiments. Finally, all of these contributions may even facilitate system-wide urban sustainability transitions when the lessons from multiple experiments at multiple locations are combined and disseminated. The various impacts on urban planning Scholl and Kemp (2016) identified in their case study of a series of urban experiments in Maastricht (the Netherlands) fit these four types of possible contributions. However, these types are not mutually exclusive and a single experiment may deliver multiple types of contribution, as is shown in the case studied by Bisschops and Beunen (2019). Here, experimentation focused on co-creation of an alternative form of urban planning to support organic redevelopment of a brownfield site; i.e., a combination of the first three types of contribution.

Urban experimentation is increasingly taking place in the context of Urban Living Labs (ULL), defined as geographically-embedded spaces that facilitate and direct explicit experimentation and learning, based on participation and user involvement (Voytenko, McCormick, Evans, & Schliwa, 2016). Bulkeley et al. (2016, p. 13) stress the solution-oriented focus of this experimentation when describing ULL as "purposefully intended to bring together multiple actors that seek to intervene in order to address contemporary urban challenges and foster learning through forms of open and engaged experimentation." Whereas the term ULL was initially reserved for initiatives with a focus on real-life testing of technological innovations, it has now come to encompass a wide variety of urban collaboratives that aim to test novel products, services, or approaches of a technological, social, or institutional nature (Bulkeley et al., 2019). In the Netherlands, a type of ULL is especially flourishing, called city labs ('stadslabs'), which bears features of what Bulkeley et al. (2019) labeled 'civic labs' as well as 'organic (grassroots) labs,' with the municipality or local citizen groups in the lead, respectively, and a strong focus on local urban challenges and solutions, usually with a spatial dimension (de Kraker, Scholl, & Rijkens, 2018).

Considering the role of ULL in urban experimentation and the possible contributions of urban experimentation to urban planning listed above, it should come as no surprise that these Dutch city labs have been attributed an important role in 'urban planning by experiment' (van Uum, 2018). The case study of M-LAB by Scholl and Kemp (2016) suggests that city labs indeed have considerable potential in this respect, but the authors conclude that realization of this potential depends on how experimentation is conducted in city labs. From the successful case of M-LAB, four characteristics can be derived that are important in this respect: (1) a structured approach to experimentation is followed, i.e., experiments are planned in broad outline, based on explicit learning questions; (2) experiments are co-created by a diversity of urban actors; (3) lessons learned from experiments

are actively disseminated to target audiences, such as urban planning professionals, municipal departments, and aldermen; and (4) experiments are positioned at the boundary of municipality and urban society and connect major urban planning challenges with the concerns and ambitions of other urban actors. The extent to which the practice of experimentation in (Dutch) city labs matches these characteristics is not known, however. Surveys of city labs (or ULL more generally) have thus far not paid much attention to their experimentation practices (e.g., Bulkeley et al., 2019; Voytenko et al., 2016). Despite repeated calls for more research on the practices of urban experimentation (Bulkeley et al., 2019; Sengers et al., 2019; Voytenko et al., 2016), only a limited number of case studies has considered these practices, while focusing on certain aspects, such as co-creation (Menny, Palgan, & McCormick, 2018; Puerari et al., 2018), local embeddedness (Frantzeskaki, van Steenbergen, & Stedman, 2018), and dissemination (von Wirth et al., 2019). Moreover, it is not clear how representative these findings are.

To address this gap and to obtain a more comprehensive picture of the practice of experimentation, we conducted a survey among 37 Dutch city labs, supplemented by individual and group interviews with practitioners from a small subset of these city labs. We were interested in particular in how structured their approach is to experimentation, which urban actors are involved, how actively lessons are disseminated, and the nature of their relationship with the municipality with respect to experimentation. In the following sections, we describe our research methods in more detail and present our findings on the practice of urban experimentation in city labs. In the concluding discussion, we assess to what extent this practice matches the characteristics that are thought to support effective 'urban planning by experiment,' discuss possible reasons for the observed poor match and ways to address this, and end with an outlook on further research.

2. Methods

We investigated the practice of urban experimentation among the members of a network of Dutch city labs, which is described below in more detail. The methods of study included a survey addressed to all labs in the network, semi-structured interviews with three of the labs that responded, and two co-design workshops with four of the responding labs. Details of these methods and the analytical framework used are provided below, and short descriptions of the city labs that participated in the interviews and workshops are presented in Supplementary File 1.

2.1. The Network of Dutch City Labs

The network of Dutch city labs consists of all labs that have received a grant from the Creative Industries Fund NL ('Stimuleringsfonds voor de Creatieve Industrie,' from here on called CIF-NL), which is a national fund to support innovation in architecture and urbanism, design, and digital culture (CIF-NL, n.d.-a). With the network, CIF-NL aims to promote the exchange of knowledge and expertise among Dutch city labs. Between 2014 and 2018, CIF-NL launched a series of Open Calls directed at city labs and focusing on new ways of addressing urgent urban development issues. Successful applicants received grants from CIF-NL of around 25,000€ as temporary financial support for their activities (CIF-NL, n.d.-b). Our choice of this research population was based on having access to the network through collaboration with CIF-NL and on the intended role of the city labs in urban planning and development as evident from the Open Call texts (CIF-NL, n.d.-c).

2.2. Analytical Framework

Core concepts in our study of the practice of urban experimentation in Dutch city labs were: experiment; learning; structured approach; co-creation; and boundary position. 'Experiments' in the context of city labs have been defined as innovation projects where the goal is to learn something rather than to achieve a predetermined outcome (Scholl & Kemp, 2016). In our study, we used a less stringent condition, defining an experiment as 'a project or initiative which has learning as a major goal.' This enabled details of the conception of experimenting in the city labs to be studied by asking questions about examples, success, and failure. 'Learning' is the process of acquiring new (or modifying existing) knowledge, skills, or attitudes; learning may lead to behavioral change, but this is not necessarily included in the definition of learning (de Kraker, 2017). City labs involve a variety of actors carrying out a wide range of activities, and, in consequence, many different types of learning can be observed in city labs (Scholl et al., 2017). In our study, we focused on learning as drawing explicit lessons from an experiment with respect to the questions or objectives that drove the experiment, as well disseminating these lessons to target audiences outside the lab. With 'a structured approach to experimentation' we mean that an experiment is planned in broad outline, based on explicit learning questions, and with balanced attention for setting-up, conducting, and learning from experiments, as well as for the connections between these three steps (Scholl & Kemp, 2016; Scholl et al., 2017). It also includes the notion of reflection and well-considered choices with respect to the what, how, why, and with whom questions. 'Co-creation' in the context of city labs has been described as active engagement of diverse urban actors in the various stages of experimentation, including the decision-making processes (Menny et al., 2018). In this study, we operationalized it in terms of involvement of multiple urban actors in decisions and actions with regard to setting-up, conducting, and learning from experiments. Finally, with 'boundary position'

we refer to the interface between the municipality and the urban society (Scholl & Kemp, 2016), which we operationalized in questions about the role of the municipality and other urban actors in decision-making, in particular concerning the focus of experimentation. Overall, these core concepts were operationalized in explicit questions in the survey and specific discussion topics in the interviews and co-design workshops, as detailed below. Processing of the primary data obtained was therefore straightforward without the need for a content analysis with inductive coding.

2.3. Survey, Interviews, and Co-Design Workshops

For the survey, we developed an online questionnaire (in Qualtrics) consisting of 55 open questions divided over five themes: the city lab itself; experimentation in general; setting up experiments; conducting experiments; and learning from experiments (see Supplementary File 2). In addition, 16 statements about experimentation in city labs were presented at the end of the questionnaire, with possible responses ranging from 'strongly agree' to 'strongly disagree' on a 5-point Likert scale, plus a 'not-applicable' option. The issues addressed in the questions and statements concerned details of the approaches taken, the actors involved in decisions and actions, the challenges encountered, and possible areas for support. An invitation e-mail with a link to the survey was sent by the network coordinator of CIF-NL to the 37 Dutch city labs in the network and a reminder e-mail was sent after 15 days. In total, 17 city labs completed or largely completed the survey questionnaire. This rate of response represents 46% of the city labs in the network. However, according to the CIF-NL network coordinator, 10 of the 20 non-respondent city labs were ones that were no longer active, bringing the response rate for active members of the network to 63%. The respondents were all 'lab officials,' usually a coordinator or initiator.

After processing the responses to the questionnaire, the coordinators of three city labs were contacted for a semi-structured telephone interview of about 30 minutes. These three labs were selected as being the most experienced and structured in their approach to experimentation. This concerned Stadslab Water in de Dordtse Ruimte (Dordrecht), Stadslab Nijmegen (Nijmegen), and Stadslab ZOHO (Rotterdam). The interviews aimed at obtaining a more 'narrative' account of experimentation in these labs and focused on the interactions between the lab and the municipality in this respect.

Two half-day co-design workshops were conducted with the coordinators of four city labs. These four had responded positively to an invitation to these workshops at the end of the questionnaire and were able to attend on the proposed dates. This concerned 't Lab van Weert (Weert), Maastricht-LAB (Maastricht), Stadslab Luchtkwaliteit (Rotterdam), and Stadslab Water in de Dordtse Ruimte (Dordrecht). The aim of the co-design workshops was two-fold: to achieve a better understanding of the practice of experimentation in Dutch city labs, and to design together with the participating labs a tool to support city labs in experimentation. In the first workshop, the focus was on identifying the support needs by reflecting on the strengths and weaknesses of an experiment (one 'focal experiment' per lab) and how—in hindsight—a different approach could have improved this experiment. Based on the results, a prototype support tool was developed, which was tested and adapted in the second workshop.

3. Results

The results we present here are mainly based on the survey, supplemented where indicated with findings from the interviews and the co-design workshops.

3.1. Features of the Responding City Labs

Of the 17 responding city labs, five were located in Rotterdam and the other 12 were relatively evenly distributed across the rest of the Netherlands (see Supplementary File 3). The average 'age' of the labs at the time of the survey was 3–4 years and the 'age' range was from 1 to 7 years. About a third of the labs (six) received financial support from the local government and operated under the responsibility of the municipality, while the remaining two thirds (11) operated independently and received funding from a variety of sources or generated some income from activities. Half of the labs (nine) employed one or more paid lab officials, usually the coordinators, while in most of the other labs a financial compensation was paid for free-lance specified services for the lab. For events or projects, all these labs made use of unpaid volunteers. Only two labs relied completely on volunteers. The core team running the lab usually consisted of local creative professionals (e.g., designers, architects, urbanists) and active, engaged residents. Only three of the responding labs indicated that local government officials formed the core team or were part of it.

About half of the labs (eight) had a specific thematic focus, such as sustainability-related issues (renewable energy, climate adaptation, circular economy, air quality), or socio-economic issues (livability, local/social economy, culture). The other half (nine) had no single thematic focus and aimed more broadly at integrated and inclusive bottom-up urban development. Also, in nine of the 17 cases the lab had a geographic focus on a particular district or neighborhood within the city. In the case of the 'independent' city labs, the focus—thematic and/or geographic—appeared to be more the result of contingencies than based on much reflection and/or on research or policy considerations. Only two labs referred explicitly to municipal policy goals when asked about their focus. Overall, labs with a specific thematic focus tended to cover the entire city, whereas labs with a specific geographic focus within the city tended to aim more broadly at integrated urban development (Table 1).

3.2. Experimentation in City Labs

All the labs confirmed that they were conducting experiments, broadly defined in the questionnaire as 'activities that had learning as a major goal.' When asked for examples of activities that matched this definition, over half of the labs (nine) provided clear examples (e.g., see Table 1), whereas for five labs this was unclear and for the other three labs the emphasis in their examples was on different goals, such as agenda-setting, mobilizing citizens, or just implementing plans. The majority of labs (11) also used the term 'experiment' for these activities, while the remainder preferred for various reasons to use more neutral terms, like project or pilot. The overall goal of experimentation was similar for all city labs: to contribute to urban development—within the focal area of the lab—by following a more co-creative, innovative, activating, and participatory approach than usually employed by municipalities and project developers.

In about half of the cases (eight), experiments were initiated by the core team of the lab, and in the other cases by other urban actors, such as active residents, neighborhood networks, and 'city makers' (local creative professionals). The municipality was mentioned specifically as the initiator of experiments in only one case. In most cases, even when the initiative to experiment came from an external urban actor, the core lab team was usually involved in and in charge of all stages of experimentation: coordination; decisions on whom to involve; implementation; and evaluation. As urban actors commonly involved in the experiment in addition to the core team and the initiators, actively engaged residents and city makers were mentioned several times. When asked about urban actors whose involvement was desirable but also difficult to obtain, a large variety of actors was mentioned (residents, entrepreneurs, dissatisfied citizens, banks, developers, municipal agents, etc.), but no clear pattern emerged. Lessons from the experiments were usually shared offline in various ways with the urban actors associated with the lab, and, also, commonly published online, but without a specific target audience in mind. Other city labs in the network constituted the only specifically-mentioned external audience for sharing lessons. The municipality was not mentioned in this respect.

Based on the survey, the city labs' approach to experimentation can be characterized as 'informal.' It is strongly action-oriented, but in a flexible and open way, focused on learning-by-doing. Only a few labs follow a structured approach to setting up, conducting, and learning from experiments. Several labs even labeled such a structured approach as 'bureaucratic.' Almost all labs act opportunistically in selecting the topic, location, approach, partners, duration, and/or timing of an experiment. This dependency on opportunities, including initiatives taken by other urban actors, is often associated with the (very) limited resources of most labs.

3.3. Challenges in Setting Up, Conducting, and Learning from Experiments

When asked about problems and challenges encountered in setting up, conducting, and learning from experiments, a large variety of issues was mentioned, relating to almost every aspect of experimentation (Table 2). Only two issues were clearly mentioned more frequently than other issues. The first issue concerned the funding of the experiments, and acquisition of sufficient funding was also the area that labs most often indicated as in need of support. The second issue concerned various aspects of engaging a wider group of people to support or participate in the experiments beyond the core partners of the lab.

Table 1. Focal areas of 17 Dutch city labs and examples of topics of experimentation.

Thematic focus / Geographic focus	Specific	Not specific
Specific (part of the city)	Buiksloterham (circularity), Impact Lab (social economy), Suikerunie (sustainable business)	Binckhorst, COOL-Zuid, GOUDasfalt, Maashaven, Spijkerlab, ZOHO-Stadslab
Not specific (entire city)	Dordrecht (water/climate), Energiefabriek (energy), Luchtkwaliteitslab (air quality), Nijmegen (livability), Weert (culture)	Stadslab Breda, De Dependance, Maastricht-LAB
Examples	• Local resource recovery from wastewater • Restricted-traffic streets • Sustainability shop • Collective renewable energy generation	• Participatory budgeting • Flexible urban planning rules • Novel ways to engage citizens in urban planning • Trialing urban designs with 1:1 mock-ups

Note: See Supplementary File 3 for the full name and location of the city labs.

Table 2. Problems encountered by Dutch city labs when (A) setting up, (B) conducting, and (C) learning from experiments.

(A) Setting up experiments
- Difficult to reach and maintain wider engagement with experiments (5x)
- Lack of (structural) funding (5x)
- Lack of time
- Acting on opportunities without proper planning and learning goals
- Difficult to create an attractive external image when being a municipal initiative
- Lack of sufficient domain knowledge
- Lack of creative design capacity among residents
- Difficult to determine a scope that is feasible and easy to grasp
- Closed and conservative culture in city and local government

(B) Conducting experiments
- Lack of funding (2x)
- Lack of manpower & time (2x)
- Lack of interest/energy/commitment/time from other parties
- Transcending private interests of participants
- Wrong expectations concerning roles and results
- Collaboration with key players problematic
- Citizens feeling themselves 'abused' as cheap labor
- Difficult to create broad ownership
- Issue too complex
- Lack of professionalization
- No competencies and time for stakeholder mapping
- Ineffective internal communication
- Ineffective external communication
- Slow municipal procedures
- Permits for activities difficult to obtain
- No time to generate publicity

(C) Learning from experiments
- Lack of know-how for monitoring, evaluating, and drawing lessons (3x)
- Lack of support structure for drawing, storing, and transfer of lessons (3x)
- Lack of time for documenting lessons

Note: Each problem was reported only once, unless indicated otherwise.

From the responses to the 16 closed questions at the end of the questionnaire, a similar picture emerges (Supplementary File 4). None of the answers was unanimously supported by all labs, but overall the majority of the labs were positive about the various aspects of experimentation addressed in the questions. The two issues on which a majority of the labs held negative views concerned the financial resources for conducting experiments (Q7) and the ability to engage all relevant parties in the experiments, including the more difficult to reach parties (Q3 and Q4).

Despite the general absence of a structured approach to experimentation, several 'good practices' (as in elements of a structured approach) were reported by multiple labs, such as determining the learning agenda before starting the experiment, evaluating the experiment both during its course and at the end, accepting 'failure' as a learning opportunity, drawing lessons, and following these up. However, the overall approach, also to these activities can be qualified as informal and inconsistent, and this concerns also the various aspects of learning from the experiments: formulation of learning questions or objectives prior to the experiment; how evaluation is conducted; and if and how lessons are documented and shared, and with whom. When asked about the need for support in learning from experiments, the most frequent response concerned support in how to do this in a more structured manner.

The issues that emerged from the co-design workshops with four city labs confirm this. When reflecting on their focal experiments, the participants indicated that the mindset was usually very much 'on the action,' on getting the experiment done, and not in a very reflexive way. This strong action-orientation went at the cost of considering critically before the start whether the experiment was the most appropriate way of achieving the lab's goals, and of making plans for dissemination of lessons and follow-up. The key areas in which city labs needed support, as identified in the workshops, concerned the framing of the experiment, in particular in

relation to municipal policy goals, co-designing the experiment with stakeholders, and learning from experiments in a structured way.

The interviews with the three city labs having the most structured approach to experimentation showed that having this structure was, in itself, not a guarantee for success. The interviewees indicated that the involvement of multiple parties and changing conditions resulted in inconsistent and shifting framing of the experiments in terms of the aims, learning questions, lessons learned, and need for follow-up. Adding to this was the complex relationship of these three city labs with the municipality, as they were independent in principle, but receiving municipal financial support for the experiments at the same time. For example, the lab in Dordrecht successfully conducted experiments on spatial adaptation to increased risks of flooding, but later, when the municipality started a campaign on the issue, the achievements and lessons from these experiments were ignored and the lab participants felt demotivated. The experiments of the city lab in Nijmegen were initially based on citizen initiatives, without connection to the municipality. Recently, however, the lab has sought to strengthen the links with the municipal policy agenda. To achieve this, the lab is now hired by the municipality to play a role as intermediary in a sustainable neighborhood project. Contrary to the city lab, the municipality does not seem to see or frame this new role as an experiment to learn from, and focuses on the substantive outcomes of the project.

4. Discussion

In this section, we first present our key findings and conclusion on the practice of experimentation in Dutch city labs with respect to their potential contribution to 'urban planning by experiment.' We also suggest possible reasons for the poor match between observed practices and the characteristics that are considered to support the contribution of city labs to 'urban planning by experiment,' as well as possible ways to strengthen this contribution. We end with an outlook on the wider implications of this study and future developments.

4.1. The Practice of Experimentation in Dutch City Labs: Key Findings and Conclusion

The studied city labs do see experimenting as a core activity, although it appears that for some city labs, at least, goals other than learning prevail in their activities, such as agenda-setting or mobilizing citizens. Only a few city labs follow a more formally structured approach to experimentation. In most cases, experimentation is in many respects driven by opportunities, which probably has to do with the generally very limited human and financial resources of city labs.

As part of the opportunity-driven approach of most city labs, starting an experiment frequently depends on initiatives of other urban actors, such as local creative professionals or activist residents. In addition to the lab officials, who (help to) set up and coordinate the experiments, other core partners of the lab are usually involved as well, such as engaged volunteers, other interested creative professionals, and—in a few cases—the municipality. City labs strive for wider and active engagement beyond this core group of 'usual suspects,' but find it difficult to involve a large group of residents, including the more critical ones, entrepreneurs, and the municipality when it is not a lab partner. Thus, co-creation of experiments is 'standard practice,' but the diversity of urban actors involved seems rather limited.

Most city labs are actively sharing news about new and running experiments and lessons learned, using various online and offline channels. However, a structured approach to determining the learning goals of the experiments, evaluation, drawing lessons, and disseminating these lessons to defined external target groups is lacking in most city labs. It is therefore uncertain whether all lessons that could be learned from an experiment are made explicit and reach those that could apply them. Notably, municipalities are not targeted when not directly involved in the lab or specific experiments.

All city labs focus in their experiments on the needs of urban society, either by responding to initiatives of citizens and other urban actors, actively listening to residents, or engaging with creative professionals, such as social designers who claim to address the needs of the local communities. Making the connection with the urban planning and development agendas of municipalities appears much less frequently in experimentation practices. Only in a few labs was the municipality an element of the core team, and the municipality was mentioned only once as an external actor initiating an experiment. Moreover, the municipality was considered difficult to involve in experiments and was not mentioned as a target audience for the lessons or learning achieved through experiments. Also, in the interviews, the relationship with the municipality was described as problematic.

Based on these findings, we conclude that there is a poor match between the practice of experimentation in Dutch city labs and the four characteristics that are considered to support effective 'urban planning by experiment' (a structured approach to experimentation, co-creation of experiments, active and targeted dissemination of lessons learned, and experiments as linking pins between municipal policy goals and the needs of urban society). This suggests that the current contribution of Dutch city labs to 'urban planning by experiment' is probably quite limited.

4.2. Possible Explanations

There appear to be three major reasons for the poor match we observed. The first is that many of the studied city labs originate from citizen initiatives (so-called

"organic ULL" in the terminology of Bulkeley et al., 2019), and do not have well-established relationships with the municipality. The second reason is probably also associated with this origin in citizen initiatives and concerns the strong action-orientation in experimentation, which often goes at the cost of spending time on formulating learning questions before moving to action, and taking time for drawing and disseminating the lessons after the action. Moreover, for most city labs the experiments also serve other goals than learning, which are sometimes considered more important (e.g., agenda-setting, mobilization). Also Bulkeley et al. (2019) found that other aims may be more important, such as city branding. The third reason for the poor match is that these city labs are strongly resource-limited (in time, competencies, and funds) and rely on emerging opportunities to conduct experiments. To a large extent this also applies to city labs that are financially supported by municipalities (so-called "civic ULL" in the terminology of Bulkeley et al., 2019), as the financing is normally restricted to providing office space and paying for lab coordination. Whereas Bulkeley et al. (2019) also pointed at the limited resources and improvised funding as being typical of organic ULL, the better funding position they ascribed to civic ULL (and the associated capacity to focus on the priorities of municipal governments) appears to be too optimistic and is probably biased by an overrepresentation of (inter)nationally co-funded demonstration projects in their sample.

4.3. Options to Strengthen the Role of City Labs in 'Urban Planning by Experiment'

One possible avenue for strengthening their role in 'urban planning by experiment' is by paying explicit attention in city labs to a structured approach to setting up, conducting, and learning from experiments. The two co-design workshops described under 'Methods' focused on the development of a tool to support this. This tool, which will be described in detail in a subsequent publication, does not prescribe one particular approach, but aims to support reflection and discussion among the urban actors involved in experimentation in order to develop their own well-considered and agreed-upon plan. The tool does this by asking questions in a logical order about many aspects of experimentation and efficiently supporting reflection and discussion by providing possible answers based on good practices collected in our survey and from the literature. These questions and suggestions also cover issues associated with the other three characteristics: wider involvement of stakeholders; learning and targeted dissemination of lessons; and connecting citizens' needs and initiatives with the local policy agenda.

Whereas developing a more structured approach to experimentation is an option that can be taken up by city labs themselves, other issues, such as lack of resources and poor alignment with the local policy agenda, require action from the side of the local government. To promote this, CIF-NL has recently launched two calls for proposals that aim to strengthen collaborations between municipalities and local creative professionals in city labs (CIF-NL, n.d.-c). These city labs are expected to focus on more bottom-up, creative approaches to current socio-spatial challenges, such as the energy transition, climate adaptation, urban mobility and health, and social inclusion. As municipalities had to be (co-)applicants, these calls have resulted in a series of new or renewed Dutch city labs, in which the municipality is now a core partner. The challenge for these labs will be to strike a balance between, on the one hand, maintaining a good connection with the local urban development agenda and, on the other hand, creating room for novel ideas, open-ended experimentation, and room for failure.

4.4. Outlook

Urban experimentation by city labs could make important contributions to urban planning and enable 'urban planning by experiment.' However, the practice of experimentation in the 17 Dutch city labs studied here generally does not match the characteristics that previous research identified as key for making this contribution. This suggests that the current contribution of Dutch city labs to 'urban planning by experiment' is limited. The studied city labs represent a mix of what Bulkeley et al. (2019) labeled as "organic ULL" (led by citizens) and "civic ULL" (led by municipalities). Both types of ULL are also common in other European countries, like Austria, Sweden, and the UK (Bulkeley et al., 2019). We expect that the typical practice of experimentation encountered in the Dutch city labs, i.e., action-oriented, resource-limited, and largely driven by opportunities, is likely to be found there as well. Of course, further research is needed to ascertain this, but it would imply that with the current practices, the role of ULL in 'urban planning by experiment' will be modest at best in other European countries as well.

For the network of Dutch city labs, initiatives have recently been undertaken to address several issues, such as a more structured approach to experimentation and a more direct relationship with the municipal priorities, which are expected to strengthen the role of city labs in 'urban planning by experiment.' However, follow-up studies will be needed to ascertain this, as there are also risks involved in 'forcing' the current pluralist and rather fuzzy practice of city labs into the mold of 'urban planning by experiment.' As indicated before, the current practice of experimentation relies rather heavily on 'windows of opportunity,' in terms of combinations of creative ideas, motivated residents and engaged professionals, suitable locations, and lack of interest from big market players. Moreover, the lack of a structured approach leaves much room for different interpretations of the experiment and its outcomes, making it possibly interesting for a wider group of actors to be involved than when

the experiment is defined more explicitly and narrowly. In short, a more structured approach with a tighter connection to the local or even national policy agenda might 'drain the energy' from city labs, and thus undermine the very goal it aims to achieve.

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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).

References

Bisschops, S., & Beunen, R. (2019). A new role for citizens' initiatives: The difficulties in co-creating institutional change in urban planning. *Journal of Environmental Planning and Management*, *62*(1), 72–87.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375.

Bulkeley, H., Coenen, L., Frantzeskaki, N., Hartmann, C., Kronsell, A., Mai, L., . . . Voytenko Palgan, Y. (2016). Urban living labs: Governing urban sustainability transitions. *Current Opinion in Environmental Sustainability*, 22, 13–17.

Bulkeley, H., Marvin, S., Palgan, Y. V., McCormick, K., Breitfuss-Loidl, M., Mai, L., . . . Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European urban and regional studies*, *26*(4), 317–335.

Caprotti, F., & Cowley, R. (2017). Interrogating urban experiments. *Urban Geography*, *38*(9), 1441–1450.

Caprotti, F., Cowley, R., Datta, A., Broto, V., Gao, E., Georgeson, L., . . . Joss, S. (2017). The new urban agenda: Key opportunities and challenges for policy and practice. *Urban Research & Practice*, *10*(3), 367–378.

de Kraker, J. (2017). Social learning for resilience in social–ecological systems. *Current Opinion in Environmental Sustainability*, 28, 100–107.

de Kraker, J., Scholl, C., & Rijkens, N. (2018). "En we noemen het: stadslab"—een korte toelichting op het nieuwe fenomeen stadslab ["And we name it city lab": A short note on the phenomenon of city labs]. In W. Didderen (Ed.), *Nieuwkomers: Publicatie naar aanleiding van de 10e Neimed Krimplezing, 2018* [Newcomers: Publication for the 10th Neimed lecture] (pp. 24-33). Retrieved from https://www.neimed.nl/sites/neimed.nl/files/Neimed%20-%20krimplezing%202018%20digitaal.pdf

Evans, J., Karvonen, A., & Raven, R. (Eds.). (2016). *The experimental city*. Oxon and New York, NY: Routledge.

Frantzeskaki, N., van Steenbergen, F., & Stedman, R. C. (2018). Sense of place and experimentation in urban sustainability transitions: The Resilience Lab in Carnisse, Rotterdam, The Netherlands. *Sustainability Science*, *13*(4), 1045–1059.

Harmes-Liedtke, U., & Gianetti, M. S. (2019). The concept of co-creation and related methodologies for generating urban innovations bibliographic systematization. *Technical Report for Deutsche Gesellschaft für Internationale Zusammenarbeit*. http://doi.org/10.13140/RG.2.2.27106.89283

Karvonen, A., & van Heur, B. (2014). Urban laboratories: Experiments in reworking cities. *International Journal of Urban and Regional Research*, *38*(2), 379–392.

Kronsell, A., & Mukhtar-Landgren, D. (2018). Experimental governance: The role of municipalities in urban living labs. *European Planning Studies*, *26*(5), 988–1007.

Laakso, S., Berg, A., & Annala, M. (2017). Dynamics of experimental governance: A meta-study of functions and uses of climate governance experiments. *Journal of Cleaner Production*, *169*, 8–16.

McFadgen, B., & Huitema, D. (2017a). Are all experiments created equal? A framework for analysis of the learning potential of policy experiments in environmental governance. *Journal of Environmental Planning and Management*, *60*(10), 1765–1784.

McFadgen, B., & Huitema, D. (2017b). Experimentation at the interface of science and policy: A multi-case analysis of how policy experiments influence political decision-makers. *Policy Science*, *51*, 161–187.

Menny, M., Palgan, Y. V., & McCormick, K. (2018). Urban living labs and the role of users in co-creation. *GAIA-Ecological Perspectives for Science and Society*, *27*(1), 68–77.

Potjer, S. (2019). *Experimental governance: From the possible to the doable to the new mainstream*. Utrecht: Urban Future Studio, Utrecht University.

Puerari, E., de Koning, J. I., von Wirth, T., Karré, P. M., Mulder, I. J., & Loorbach, D. A. (2018). Co-creation dynamics in urban living labs. *Sustainability*, *10*(6), 1893.

Pukarthofer, E. (2019). Investigating the partnership approach in the EU Urban Agenda from the perspective of soft planning. *European Planning Studies*, *27*(1), 86–105.

Sabel, C. (2012). Dewey, democracy, and democratic experimentalism. *Contemporary Pragmatism*, *9*(2), 35–55.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Scholl, C., Eriksen, M. A., Baerten, N., Clark, E., Drage, T., Essebo, M., . . . Wachtmeister, A. (2017). *Guidelines for urban labs: URB@Exp project 2014–2017*. Vienna: JPI Urban Europe. Retrieved from https://www.maastrichtuniversity.nl/research/msi/research-output/guidelines-urban-labs

Sengers, F., Wieczorek, A. J., & Raven, R. (2019). Experimenting for sustainability transitions: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 153–164.

Stimuleringsfonds voor de Creatieve Industrie. (n.d.-a). Homepage. *Stimuleringsfonds voor de Creatieve Industrie*. Retrieved from https://stimuleringsfonds.nl

Stimuleringsfonds voor de Creatieve Industrie. (n.d.-b). *Voortgangsrapportage AARO-programma's (IenM): stad en regio, stedelijke transformaties, innovatieve vormen van opdrachtgeverschap* [Progress report AARO programs (IenM): City and region, urban transformations, innovative forms of commissioning]. Rotterdam: Stimuleringsfonds voor de Creatieve Industrie. Retrieved from https://content.stimuleringsfonds.nl/files/nvg/i_225/SCI_beleidsplan_tussenrapport_AARO_IenM.pdf

Stimuleringsfonds voor de Creatieve Industrie. (n.d.-c). Urbanisatie [Urbanization]. *Stimuleringsfonds voor de Creatieve Industrie*. Retrieved from https://stimuleringsfonds.nl/urbanisatie

Swyngedouw, E., Moulaert, F., & Rodriguez, A. (2002). Neoliberal urbanization in Europe: Large–scale urban development projects and the new urban policy. *Antipode*, *34*(3), 542–577.

Valencia, S. C., Simon, D., Croese, S., Nordqvist, J., Oloko, M., Sharma, T., . . . Versace, I. (2019). Adapting the Sustainable Development Goals and the New Urban Agenda to the city level: Initial reflections from a comparative research project. *International Journal of Urban Sustainable Development*, *11*(1), 4–23.

van der Heijden, J. (2016). Experimental governance for low-carbon buildings and cities: Value and limits of local action networks. *Cities*, *53*, 1–7.

van Uum, E. (2018). *Pionieren aan de grote maatschappelijke opgaven: Over experimenteren, innoveren en leren met stadslabs en de betekenis daarvan voor de nationale Omgevinsgvisie* [Pioneering for the grand societal challenges: On experimentation, innovation and learning with city labs and its significance for the national Spatial Vision]. Rotterdam: Stimuleringsfonds voor de Creatieve Industrie. Retrieved from https://files.stimuleringsfonds.nl/public/manifest/SCI_MANIFEST.pdf

von Wirth, T., Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019). Impacts of urban living labs on sustainability transitions: Mechanisms and strategies for systemic change through experimentation. *European Planning Studies*, *27*(2), 229–257.

Voytenko, Y., McCormick, K., Evans, J., & Schliwa, G. (2016). Urban living labs for sustainability and low carbon cities in Europe: Towards a research agenda. *Journal of Cleaner Production*, 123, 45–54.

Wolfram, M. (2018). Urban planning and transition management: Rationalities, instruments and dialectics. In N. Frantzeskaki, K. Hölscher, M. Bach, & F. Avelino (Eds.), *Co-creating sustainable urban futures* (pp. 103–125). Cham: Springer.

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Article

How Cities Learn: From Experimentation to Transformation

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Abstract
Cities must change rapidly to address a range of sustainability challenges. While urban experimentation has prospered as a framework for innovation, it has struggled to stimulate broader transformation. We offer a novel contribution to this debate by focusing on what municipalities learn from experimentation and how this drives organisational change. The practicalities of how municipalities learn and change has received relatively little attention, despite the recognised importance of learning within the literature on urban experiments and the central role of municipalities in enabling urban transformation. We address this research gap, drawing on four years of in-depth research coproduced with European municipal project coordinators responsible for designing and implementing the largest urban research and innovation projects ever undertaken. This cohort of professionals plays a critical role in urban experimentation and transformation, funnelling billions of Euros into trials of new solutions to urban challenges and coordinating large public-private partnerships to deliver them. For our respondents, learning how to experiment more effectively and embedding these lessons into their organisations was the most important outcome of these projects. We develop the novel concept of *process learning* to capture the importance of experimentation in driving organisational change. Process learning is significant because it offers a new way to understand the relationship between experimentation and urban transformation and should form the focus of innovation projects that seek to prompt broader urban transformation, rather than technical performance. We conclude by identifying implications for urban planning and innovation funding.

Keywords
experimentation; innovation; municipalities; process learning; urban transformation

Issue
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1. Introduction

Municipalities must address a multitude of challenges relating to climate change, transport, neighbourhood planning, jobs, energy, social inclusion, health, waste, and now Covid-19. In this context, urban experimentation has prospered as a framework to enable innovation and transformation in cities (Caprotti & Cowley, 2017; Hajer & Versteeg, 2019). While the jury is out on whether the experimental turn represents the further hollowing out of the state or a genuine opportunity for more inclusive and innovative urban development (Evans et al., 2019), there is a consensus that, as yet, urban experiments have struggled to drive a broader transformation of cities (Grandin, Haarstad, Kjærås, & Bouzarovski, 2018). Governments and funding bodies question why seemingly successful innovations fail to be adopted at scale. Part of the problem is the tendency for many urban

sustainability challenges to be addressed through competitive project funding. Municipalities design projects to test new solutions relating to energy, mobility, waste, ICT, and so forth with little systematic consideration given to previous results from similar efforts or other places. Externally funded projects are always liable to be unsustainable, as they end once funding runs out. Even municipalities that are adept at developing projects to secure funding often end up with a patchwork of exemplars that are poorly integrated either with each other or policy goals (Cugurullo, 2018; Hodson, Evans, & Schliwa, 2018). As a result, even successful innovation projects struggle to translate into broader urban transformation.

The central argument of this article is that municipal learning constitutes a missing link between urban experimentation and transformation. We build this argument by focusing on how urban innovation projects are designed and enacted by city coordinators, a cohort of professionals employed within municipalities and tasked with developing projects to address place-based sustainability challenges. Capturing the insights of this group is significant to understand how urban experimentation links to transformation, as they play a key role in testing and scaling up innovations across the energy, ICT, transport, and green infrastructure sectors. These innovation projects form the primary vehicle through which governmental funding bodies aim to stimulate broader urban transformation. Drawing on interviews and workshops with city coordinators conducted over a four-year period, we show how learning to experiment more effectively is the most important outcome of urban innovation projects, which, if captured effectively, enables broader transformation.

The article proceeds as follows. We review the literature on how learning has been conceptualised in relation to urban experiments and municipalities, arguing that there is a gap between work focusing on urban experiments and work focusing on learning. We then present findings from research conducted with 18 city coordinators, representing collective experience gathered through almost one billion euros of projects funded through the EU H2020 funding programme. Coordinators recognise the need to design these projects more effectively in order to drive broader transformation and we develop the concept of process learning to show how urban experimentation can reshape organisational practices, structures and relations. The penultimate section discusses ways in which such learning can be supported. We conclude that organisational processes rather than technical performance should form the focus of innovation projects that seek to prompt broader urban transformation, and identify significant priorities for urban planning and innovation funding.

2. Urban Experimentation and Learning

While not necessarily being subject to the same levels of democratic accountability and oversight as the forms of planning and government that it often replaces (Caprotti & Cowley, 2017), experimentation promises a short cut to rapid urban transformation. It is this positive promise of experimentation in a very narrow, practical sense that we unpack in the current article. We understand urban experimentation as a systematic activity devised to generate objective evidence by introducing a measure or solution into an urban environment in a limited and controlled way (Caniglia et al., 2017). Experimentation is valuable in the basic sense of generating evidence about what works, but also in the more ineffable sense of generating buy-in and capacity across a range of organisations that promotes broader urban transformation (Voytenko, McCormick, Evans, & Schliwa, 2016). Besides objective evidence, stakeholders gain subjective personal experience, generating social learning, better decision-making, and legitimising solutions. While these effects have received increasing attention, less work looks how organisations are changed through involvement in experiments. Before considering this question, it is useful to briefly clarify the terminology surrounding urban innovation and experimentation.

A palette of partially overlapping terms and approaches relate to urban innovation that are often used together or interchangeably, including urban experiments, living labs, pilot projects, and demonstration projects. Experimentation is sometimes used for any interaction of users with prototype solutions (Schuurman, De Marez, & Ballon, 2016) or ad-hoc trial and error approaches. The term urban experiment is rarely used in policy or funding briefs, in part due to concerns over being seen to test things on citizens, but also because funding agencies have been keen to decentre innovation funding from the university sector towards implementation. As a result, terms like pilot or demonstration projects tend to predominate from design phase to the evaluation of complex solutions in real environments before market adoption (Thabane et al., 2010). The term pilot project or pilot is often used in EU funded research projects alongside demonstration project and demo. They suggest a similar focus on testing how a technology works in real world environments, either to determine the route to adoption (to pilot) or to convince key stakeholders that it works (to demonstrate). Each involves an element of experimentation, however implicitly, as they are intending to discover something new in an explicit and robust way.

Rather than talk about urban experiments as objects of study, we refer to urban experimentation as an approach and associated set of practices that characterises contemporary urban innovation and the profusion of place-based approaches like pilots, demonstrations, and living labs (Evans, Karvonen, & Raven, 2016; Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013). If cities are to reinvent themselves then municipalities and key organisations across the public and private sector need to experiment with doing things in different ways. We are interested in what cities learn about the

process of urban experimentation, rather than the technical evidence concerning the performance of a specific trial or pilot. Our contention is that moving from a project to changing business as usual relies on how lessons from experimentation are captured and embedded into organisations. The remainder of this section considers how learning has been conceptualised in the literature on urban experimentation and the role of municipalities in this.

Three recent reviews covering approximately 200 publications (of which around half are European in focus) show how key strands of thought position learning in relation to urban experimentation (Kivimaa, Hildén, Huitema, Jordan, & Newig, 2017; Laakso, Berg, & Annala, 2017; Sengers, Wieczorek, & Raven, 2016). Sengers et al. (2016) present a systematic review of the sustainability transitions literature from the 1990s to 2015. Processes related to learning are identified as the main analytical focus of several of the categories, including second order learning relating to niche nurturing processes in niche experiments, social learning processes in bounded socio-technical experiments, and broadening, deepening, and scaling up processes in transition experiments. The capacity and capabilities of municipal actors are not explicitly considered, although can reasonably be postulated to form a critical determinant of urban transitions that depend on the ability of cities to experiment effectively. Kivimaa et al. (2017) review the transition and climate resilience literature, drawing on a transition management framing, and assess empirically described experiments and their objectives, outputs, and outcomes. The review identifies seven categories of outcome, three of which are related to learning: changed discourse linked to strategic vision and rhetoric; policy or institutional change; and changed citizen or consumer habits. The review discusses the need for long term evaluation of transition experiments to be able to share lessons to benefit subsequent experiments but there is little discussion of organisations or how this happens in practice. Laakso et al. (2017) draw similar conclusions in their review of climate governance experiments, suggesting that the lack of models available to those designing, conducting, and evaluating sustainability experiments means that selection of the most suitable experimentation framework or methodological tools is challenging. The review concludes that existing typologies do not provide a holistic picture of the functions and uses of experiments, nor how specific outcomes are achieved. They advocate learning within experiments to provide better understanding to those designing, conducting, and evaluating them, although stop short of identifying specific processes for making this happen within or between organisations.

Overall, while learning is commonly identified as important to urban experimentation it rarely receives explicit treatment. This trend characterises approaches to urban experimentation that see them as niches whose core purpose is to effect higher system or policy change (Ghosh et al., 2016; Smith & Raven, 2012; van den Bosch, 2010; van den Bosch & Rotmans, 2008; Williams, 2016), rather than the transformation of individuals and organisations. As Bögel, Pereverza, Upham, and Kordas (2019, p. 367) state, while organisational realignment is clearly central to transition studies, "this is currently not supported by strong theorization on organisational change." Organisations shape the practices and beliefs of key actors, which in turn constitute the ways in which urban experimentation takes place. Bögel et al. (2019) identify three levels of organisational change: institutionalised logics that frame organisational activity; approaches, methods, and tools; and micro-level factors relating to individual participants. We are interested in how learning can drive change inside municipalities, in particular how micro-level factors like individual experiences in projects can subsequently shape approaches and institutional logics and structures. Returning to urban innovation, McCrory's (2016) review of urban living laboratories and the types of learning that takes place within them identifies a similar set of levels. The living lab approach focuses on involving users as co-creators and experimentation in real-world settings (Almirall, Lee, & Wareham, 2012). There are definitions of living labs both as a design research methodology (Dell'Era & Landoni, 2014) or organizational structure (Voytenko et al. 2016), and living labs are often permanent entities organized by a dedicated organization or local stakeholder ecosystems that host projects in a specific area of innovation. McCrory (2016) views learning as a central component of the urban living laboratory approach and, whilst not interchangeable with collaboration, finds that it tends to be linked to either the group, an organisation, or society more generally. Where experiential learning is a shared experience, it can lead to social learning, which is an important step to what he calls transformational learning. Combining these insights suggests a sequential process through which learning can drive organisational change, although McCrory stops short of considering how this enables broader urban transformation.

To summarise, the literature on urban experiments tends to neglect the specific processes through which learning takes place, while work on organisational change and learning tends to stop short of showing how these processes enable material transformation. By focusing on how experimentation changes municipalities this article aims to bridge these two perspectives. The final point to consider here concerns the degree to which municipalities are a special case among urban organisations. Our focus on urban transformation through experimentation naturally leads us to focus on municipalities, as they play a central role bringing organisations into partnerships to address urban challenges through project-driven approaches (Karvonen, Cook, & Haarstad, 2020). In their study of the role of municipalities in urban living lab projects, Kronsell and Mukhtar-Landgren (2018) identify them as occupying three possible roles: promoter, enabler, and partner.

As with all organisations it is important to note that municipalities comprise a range of functions and divisions, and may occupy different roles sometimes in the same project. Similarly, municipalities differ in terms of their structures, cultures, and powers across different national contexts. Clearly, though, municipalities have governmental capabilities and powers that other urban organisations do not, and are rarely 'just another partner' in urban projects (Jones & Evans, 2006). We are explicitly interested in municipalities as enablers who play a central role in developing and executing innovation projects. Their enabling role means that changing how municipalities operate, specifically making them more effective at experimenting, represents a large potential gain in terms of accelerating urban transformation. That said, the arguments concerning the importance of learning from experimentation and subsequently transforming organisations hold in principle for a range of different types of organisations that commonly engage in urban experimentation, from companies to charities to universities. We return to this point in the penultimate section.

3. Methodology

While most approaches in the field consider learning from urban experiments to be important to broader transformation, this is often considered at a relatively abstract level and neglects the empirics of how this plays out in practice. This oversight resonates with our own experiences leading monitoring and assessment for an urban innovation project called Triangulum, a EU H2020 funded Smart Cities and Smart Communities project which ran from 2015 to 2020. At the start of this project, partners were focused on the technical delivery of their projects, but from two years in they began to talk about the challenges of partnership working and how they were learning to do things in more innovative ways. This was especially the case for city coordinators, who were increasingly concerned that while such learning was the most valuable outcome for them it was not being captured within the formal project. Through a series of workshops and focus groups we explored this to understand what this learning was, how to capture it, and what it meant for cities. In this sense, the topic of municipal learning was co-produced with city coordinators, and we adopted the model of co-production to conduct the subsequent research. Co-production is increasingly common in urban research, especially with municipalities (Simon, Palmer, Riise, Smit, & Valencia, 2018). Including participants in designing and shaping the research led us to a practical and experiential focus, and we adopted a transdisciplinary approach that was led by the research participants (Doucet & Janssens, 2011). The resulting concept of process learning is an attempt to capture a phenomenon that bridges the practice of experimentation, organisational learning, and urban transformation.

The EU's H2020 Smart Cities and Communities urban innovation programme makes a valuable case study to understand the links between urban experimentation and broader transformation. It is long running, having been established in 2014, which means that it is possible to study outcomes and reflect on the experiences of those involved. It is also exceptionally wide ranging, covering all countries eligible for H2020 funding plus observer countries from outside of the European orbit, and involves public bodies, private companies, third sector organisations, and communities. Although focused on testing smart solutions in real urban settings, the goal is to achieve more sustainable cities and the technologies range from energy and ICT through to buildings and mobility and are intended to be monitored in relation to a series of technical, social, economic, and environmental factors. It is also the largest single funding programme in the world focused on urban research and innovation, and has played a substantial role in shaping the ways in which European cities are approaching sustainability (Haarstad, 2017). To date, nine projects have received a total of €210 million funding, including €25 million for the Triangulum initiative. Perhaps most importantly, the H2020 Smart Cities and Communities programme explicitly focuses on funding demonstration projects to prompt broader transformations of cities through what is called replication, meaning market uptake of sustainable innovations across European cities and beyond. This is significant because project partners have first-hand experience trying to use individual demonstration projects to promote broader change. Working with coordinators from Eindhoven, Stavanger, Manchester, Leipzig, Prague, and Sabadell on the Triangulum project it became clear that they play a key role in urban experimentation and transformation. Municipal project coordinators design and implement large-scale urban innovation projects and coordinate large public-private partnerships to deliver them. Most importantly, many have long track records of involvement in urban innovation projects that represent an exceptional repository of knowledge relating to the challenges of translating successful projects into broader changes. Finally, this group seems to be less visible in existing research on urban transformation.

In terms of data collection, we hosted four workshops with municipal coordinators involved in Triangulum between 2016 and 2019. A survey was administered online at the start of the fourth year of the project to identify key outcomes for all project partners including but not limited to the city coordinators. This survey focused on a broader range of processes relating to learning, including data sharing and use for example, but also asked about city-level learning and what kinds of approaches were most effective for sharing knowledge and learning between partners. This survey was followed up with semi-structured interviews with project partners to focus in on the challenges of promoting city-level transformation. Two facilitated workshops explored these issues in more depth. The first was delivered with the Triangulum partnership, bringing together coordinators from each of the six cities involved. A second

workshop, advertised to all nine H2020 Smart Cities and Communities projects, focused on project assessment. It was hosted at the University of Manchester with participants from five other projects, including city coordinators, academics, and other smart city professionals. These projects represented approximately 120 partner organisations working in 30 cities across Europe to demonstrate more than 100 new technologies in real world settings. They also comprised more than €150 million of research and innovation investment from the EU and partners. Every project team agreed that the most important outcomes of the projects related to learning how to experiment more effectively, but that these outcomes were not being captured by formal assessment and evaluation activities. The level of consensus among participants is noteworthy given differences between the municipalities involved and the challenges pertaining to innovation in different sectors. Data collection was completed by seven in-depth interviews carried out remotely in May and June 2020 with city coordinators recruited through earlier workshops (three from Triangulum and four from other H2020 projects). The focus of these semi-structured interviews was to add further depth and rigour to the findings from the facilitated workshops, and all were digitally recorded with permission and fully transcribed to preserve participant anonymity. The qualitative results from the interviews and the workshops have been thematically analysed to identify key themes, commonalities, and differences in opinions across the interviewees and workshop participants.

Overall, this article is based upon four years of in-depth research co-produced with coordinators from five of the nine projects that make up the world's most concerted effort to date to seed urban transformation through place-based innovation projects. The draft paper has been shared with participants as part of the review process to continue the process of co-production, and co-authored with one of the city coordinators with whom these ideas have been discussed since 2016. We now turn to the findings and develop the concept of process learning as a key link between urban experimentation and transformation.

4. Urban Innovation: Reinventing the Wheel and the Need for Effective Experimentation

When asked about their motivations for developing urban innovation projects, our interviewees positioned their innovation projects as an opportunity to invest in city infrastructure and improve the life of their citizens rather than as experiments. As one UK coordinator put it, "when you come at it from a city perspective, you wouldn't necessarily look at it as an experiment. You'd look at it as an opportunity to get some cash to do stuff." An experienced city planner from the Netherlands shared a similar view, saying "I don't think many cities now really see it [sic] as experiments, the economic situation out there is such that they are having to show the real value, not doing experiments for experiment's sake." But while city coordinators did not see their pilot projects explicitly as experiments, they were trying to learn things—most importantly how to implement new solutions at scale. While broader studies have concluded that broader transformation is not a self-evident goal of urban experimentation (Kivimaa et al., 2017; Laakso et al., 2017), for our interviewees it was. A UK coordinator stated, "the real reason to do it is that it's supposed to act as a catalyst to effect city wide change rather than just filling in a bit of a gap on the map." According to one Finnish coordinator, "demonstration projects will be kind of examples that this is possible, concrete examples for other stakeholders and also inside the city organization." Interviewees also identified the need to better design projects to promote local uptake and agreed that an experimental focus would have greatly enhanced their ability to deliver this goal. In terms of project design, interviewees highlighted the need for better ways to find about the results from previous demonstrations. As one Dutch coordinator put it, "if you don't know it, you can't read about it and you will start reinventing the wheel again….You could do it much more scientifically." Our interviewees noted that there is very little learning from elsewhere or use of evidence when designing specific projects. The Dutch coordinator went on to suggest anecdotal evidence tended to inform choices about what to focus on rather than systematic review: "It was not a controlled search for projects that were done before and then analysed and said ok what are the lessons learned if you would take these good examples from the period 2006 to 2012." When learning and inter-city exchange took place, it was based on personal experience and contacts. Individuals learn by taking part in projects and then try to implement their know-how in subsequent projects and persuade others in the city or elsewhere, without frameworks that would help them to store, analyse, and share the insights in a more organised way. Funding opportunities, policy, and local plans provide the context for urban innovation, but specific projects tend to be initiated by entrepreneurial city coordinators. As one UK city coordinator noted, "predominantly it's quite often an individual who's a little bit of an entrepreneur, a bit of a maverick, and prepared to chase the funding." Consortia are built on existing relationships and personal links, and ideas for specific interventions are largely driven by local partners.

Better experimental design to learn from previous demonstrations would enable more effort to be focused on filling key evidence gaps. Scholars are calling for unification of real-life experimentation approaches that would enable better comparison between cities (Robinson, 2016). In environmental sciences, unified approaches have been proposed to design coordinated distributed experiments that would enable to test solutions in different environments (Demuzere, Bechtel, & Mills, 2019; Fraser et al., 2013). Laakso et al. (2017, p. 6)

make a similar argument that it is important to understand the "aims and goals of an experiment, but also the ways the experiment is related to the other experiments and their outcomes…especially at the local level, where a lot of different, overlapping experiments are conducted simultaneously." Demonstration projects are by definition usually deploying technologies at higher technology readiness levels with a large body of existing technical evidence concerning their performance. More often than not, demonstration projects simply repeat assessments of technical performance and fail to fully address the range of social, political, and economic factors that determine its ability to be adopted more widely. For example, existing e-cargo bike interventions have demonstrated demand for inner city delivery from businesses using a leasing model, and proven carbon savings and operator satisfaction. An individual city developing its own e-cargo bike project may decide not to experiment with leasing or purchasing, and not to monitor km travelled or operator satisfaction. They may instead focus on secure bike storage and maintenance services and identify what skills and organisational changes are required for such a scheme to be adopted by key stakeholders in their city. In relation to ensuring the replicability of urban innovations, it makes better sense to test a similar technical solution with similar stakeholders in similar cities in different countries than to test different solutions with different types of stakeholders across different urban contexts. While demonstrations, pilots, interventions, and so forth are often used interchangeably in both policy and practice, each indicates a subtly different end goal. In that pilots are concerned with finding a route for others to follow they would logically follow on from demonstration projects that seek simply to show something works.

It makes intuitive sense to describe past projects more analytically and store the evidence in a database so that it is easier for cities to access previous results and design interventions that build on past work (Sengers et al., 2016). The EU's Smart City Information System used templates to capture impact evidence from all smart city interventions funded through the H2020 programme, while private sector initiatives like Babel host business cases based on impact evidence and financial performance. Such attempts have met with limited success. Speaking about the European Commission, the Dutch coordinator stated that although "they have spent so much money…they cannot get the cities to tap into that knowledge base….It seems too difficult. It seems that everybody starts from scratch." The broader funding environment contributes to this oversight as it uses specific projects to drive market replication, overlooking the political context within which organisations adopt solutions. Initiatives like Smart City Information System and Babel that seek to provide comparable technical summaries of different technologies struggle to capture the governance context within which projects took place, or how organisations must change to enable different kinds of innovations to be successfully adopted. As one city official asked:

> We've done all these demos [projects], what have we learnt?…We're doing all these experiments and we know the technology is going to work, but it's the actual operation and commercialisation that's stopping it happening at a bigger scale….Can we design a demo [project] to focus on the scaling, not the technical [performance]?"

Cities do experiment and learn, but implicitly and without a clear methodology or dedicated resources for capturing learning. Significant time and resource are wasted reinventing the wheel, often repeating tests of technical performance, at the expense of learning how to change. The next section looks at how cities learn to experiment more effectively.

5. Process Learning: The Missing Link

The most important benefits from involvement in large-scale urban innovation projects identified by city coordinators concerned how to undertake experimentation. As a UK coordinator put it, "a lot of the lessons that we've learnt are how not to do it again." Similarly, a Finnish coordinator noted, "I learned everything from zero….I know there have been similar projects before but nobody ever collected the basic information the basic steps—what is needed, who to contact….I am amazed that nobody ever invented the basic thing that you should really document also [sic] the processes." Coming to the end of a five-year H2020 smart city project, another coordinator noted that:

> Processes are what we know so far, the data is a little bit inconclusive and hasn't had the full evaluation that's probably required for us to be able to use that effectively, but in terms of processes [we know] what works and what doesn't work.

A UK coordinator went further, suggesting that while their smart city project appeared as a set of technological pilots, it actually constituted a "deep examination of their municipal processes" and systems of organization within the city. This type of result from projects can be called process learning, whereby organisations learn new processes that enable them to experiment more effectively. Ensuring that individual experiences are captured as learning and embedded into organisational processes was identified as a key priority by coordinators. Learning most commonly started with individual experiences among those directly involved in projects. City coordinators understood the importance of ensuring continuity of staff between projects to retain learning, and highlighted the importance of sharing these insights across departments. As one UK coordinator noted, "we try to make sure those lessons and processes are continuing through

to other departments." A common insight involved translating the results from individual projects into the day-to-day operations of cities through including operational units in innovation projects. The nature of urban innovation is such that "the people that have set up some of these cities, the mavericks, it becomes their little project and they aren't the right people necessarily to be able to take it to that commercialisation and scale." One example given was that a project on active transport needs to include highway engineers if specific project results relating to things like cycle infrastructure are to result in changes across the city. Clearly this becomes more challenging the larger and more byzantine a municipality is.

Coordinators highlighted different ways in which they were embedding lessons into their organisations as new processes. In Leipzig, lessons related to the need to enable collaborative working with organisations from across the city and provide platforms to enable data to be exchanged between different siloes within the municipality. These were embedded as organisational change through the creation of a cross sectoral Digital City Unit, which has subsequently rolled out city-wide policy and strategy. Stavanger similarly created a smart city office, and Sabadell recognised the importance of being able to bring different parts of the municipality together and created an over-arching smart city platform. In this case, learning how to experiment more effectively created new processes that were embedded as organisational change and have subsequently accelerated urban transformation. More than three quarters of the coordinators highlighted the importance of changing structures to enable collaboration within municipalities. As one German coordinator put it, "you need a change of the mind-set and that you need to change structures within the municipality, how municipalities are working together….For example, E-mobility we are not responsible unit within the city so I can't just carry out the project." In other cities, process learning occurred through cultural rather than structural change. Softer approaches involved convincing city administrators of the benefits of innovation, and embedding principles and normalising new ways of working. Eindhoven created ambassadors within their organisation who were involved with the project but based in other departments to act as "the stepping stones" leading from the project to a broader change in culture and governance. The Prague coordinator developed training and a public exhibition of work to drive broader cultural changes within the municipality derived from the practical experience of doing things in a different way through urban innovation projects. Similarly, the Norwegian coordinator noted that the change of mind-set among local politicians derived from the demonstration of a "new methodology'' to achieve the city's goals. A final example from the UK involved working with external agencies, in this case the UK Design Council, to develop a structured project development approach that could then be rolled out within relevant departments. As these examples show, the concept of process learning provides a way to understand how individual and group learning can be translated into organisational change, ranging from training and cultural messaging to the adoption of new tools, to actual changes to the structures of organisations. Alternative approaches to process learning reflect different municipal structures and bureaucracies. For example, smaller cities like Stavanger and Sabadell are often more easily able to work jointly across their operations, and create new structures to enable this. In each case the municipality itself was strongly engaged in the project. Larger cities like Prague, which are split into relatively autonomous districts, tended to rely more heavily on culture change and influencing local politicians, and are often represented by a part of the municipality specifically engaged in innovation.

Process learning enables physical transformation by changing organisational practices that commonly prevent new solutions being adopted at scale (Smink, Negro, Niesten, & Hekkert, 2015). One of the UK coordinators described the challenge of deploying a smart grid that was designed to share energy across the estates of three different organisations. The key barrier was the lack of contractual framework to govern shared control of the system, including risk and liability in terms of failures and outages, and legacy costs of maintenance. This work stream spent four years out of a five-year project resolving contractual and trust, rather than technical, issues. These challenges relate to organisational structures and practices, and unblocking them requires new processes to enable deeper collaboration. As one Dutch coordinator recognised, "technologies do not operate in a vacuum.'' By bringing cities into contact with new technologies, experimentation enables different organisations to understand how they need to change in order to accommodate an intervention. Organisations need to change if they are to accommodate new solutions at scale and be physically transformative (Bulkeley, Castán Broto, & Edwards, 2015), and in this sense urban experiments are inevitably governance experiments even if they are not conceived as such (Rocle & Salles, 2018). Given this fundamental tenet of the socio-technical approach, it is perhaps surprising that more attention has not been paid to the ways in which organisations need to reshape themselves in response to material interventions, whether they be e-bikes, smart grids, or sustainable logistics hubs.

6. Taking Learning Seriously

Process learning was simultaneously highlighted as the most beneficial outcome for cities involved in urban innovation projects, and yet it is almost entirely absent from official project monitoring and evaluation. One problem is that it is simply assumed to happen. When asked about the importance of organisations learning to do things in new ways, one senior figure from an EU funding body simply stated that they expected learning to

"happen anyway." As a German coordinator of two consecutive H2020 projects stated, "I think it is still a little bit underestimated….We really didn't have the chance to really talk about the city situation in each city on the official agenda." While there is increasing recognition in the literature that progress cannot be assessed solely by specific measurable results like reductions in carbon emissions (Laakso, 2017; Mickwitz, Hildén, Seppälä, & Melanen, 2011), innovation in practice is increasingly driven by quantifiable key performance indicators capturing direct impacts. When it comes to scaling up and broader urban transformation, a narrow focus on market-driven replication hides the range of processes that are required to articulate technical solutions into different urban contexts. Funding schemes position commercial markets and technical performance as the motor of change in cities, but pay little attention to how cities develop new organizational processes. City coordinators learn that replication is not so much about technical performance but the approach to smart city governance that enables them:

> The devil isn't so much in the technology—you can get it working—but the devil is in the stakeholders….We never bothered too much with these questions and for me, these questions are really essential and this should be the start.

As a German city coordinator noted:

> You have to understand what the background of the city is and what is their framework they are working in. It's not just writing the template for use cases and "handing" them over to another city and then they can do it.

The realisation among city coordinators was that this final step required "another way of looking at municipalities and local government" that goes beyond policy papers and business models. The concept of process learning can support this area of work by showing how specific projects can drive new municipal governance models. One coordinator spoke of the need for new "city models" that present evidence-based cases for changing how municipalities operate. McGuirk, Dowling, Brennan, and Bulkeley (2015) identified a similar process in relation to carbon management in Australia, whereby cities were using urban experiments to test new governance practices and partnerships. The idea of city models is closer to the notion of urban transformation that our analysis has generated, based on a model of organisational change driven by successful innovation projects. In terms of rapid urban transformation, understanding the evidence for and value of new city models represents an important future area of research (Grandin et al., 2018; Sengers et al., 2016).

Learning from other cities was identified as a critical prompt to change organisational practices and culture. For example, "seeing how other cities approach things and how they think—seeing [your] counterpart and how they react—normalising things" was identified as key. As one coordinator from the UK stated, "face to face sharing and learning is huge….Those things I think are invaluable and I really don't know how you measure it." She went on to give a concrete example of how their city learned from others with a strategic unit dealing with smart city and digital transformation issues to develop their own equivalent unit. Learning between cities provides space for:

> Those who are of the mind-set that they don't want to stand up all the time on a smart city expo platform and say how wonderful they are, they actually want to sit in a room and solve the issues and talk more openly.

The lack of attention paid by researchers to city-to-city learning may reflect a bias in political science approaches that primarily view individual interventions through the lens of scaling up or impacting higher levels of policy making. Focusing on learning within and between cities suggests a flatter set of relations, whereby "a variety of agencies are involved in allowing relatively localised interventions…to travel from one place to another, or become implemented across a wider variety of territorial and governance contexts" (Bouzarovski & Haarstad, 2019, p. 265). Interviewees identified the importance of sharing between cities across the whole project life-cycle—before, during, and after projects. Rather than cities each trying to do this with increasingly stretched resources, new governance arrangements are required to pool resources and expertise. Coordinators identified working with standard setting organisations, forming networks, and adopting a lead/follower model as other strategies to enable city-to-city learning.

Governance arrangements with the ability to organise innovation in specific city-regions are critical to facilitate broader uptake of new solutions (Kroll, 2015). Examples include Regional Innovation Councils in Norway, or in relation to health, Medical Innovation Centres in the Czech Republic. These governance arrangements bring cities, universities, NGOs, and businesses together at the regional level to promote innovation. Coordinators identified this direction of travel, pointing to emergent initiatives like Eindhoven Brainport and Stavanger Smart Region. Although in their infancy, such arrangements should enable the design of more effective innovation projects by marshalling existing evidence and previous local experience in a systematic fashion. Partners would not need to reinvent the wheel in terms of collaborative processes and relationship building, and would be able to more easily contribute their expertise. Further, such arrangements would support trans-local networks to effectively share insights between cities (Bouzarovski & Haarstad, 2019). Taking one element of the quadruple helix, local universities would be ideally placed to curate the knowledge base

on local demonstrations and lessons and set it within its global context. The question of how universities are fulfilling this kind of role more effectively has begun to receive attention (Cocchia & Dameri, 2016; Karvonen, Martin, & Evans, 2018; Trencher, Bai, Evans, McCormick, & Yarime, 2014; Trencher, Yarime, & Kharrazi, 2013), but the practicalities of how these experiences can more effectively drive organisational change in the sector has not.

7. Conclusions: From Experimentation to Transformation

Our findings show process learning is necessary to translate successful urban innovation projects into broader transformation. Process learning involves learning to experiment more effectively and embedding new processes into organisations to enable them to change how they engage with cities. Capturing such learning is hard (which is why it has not been done), but important. The concept of process learning informed the European Innovation Platform for Smart Cities and Communities Smart City Guidance Package (Borsboom-van Beurden, Kallaos, Gindroz, Costa, & Riegler, 2016) and the challenge of capturing it has been taken up by the European Smart Cities and Communities task group on monitoring and evaluation. While city coordinators were loath to call their projects experiments, they recognised that a more explicit consideration of experimental design would generate more focused evidence to drive local uptake. The curation of local expertise, evidence, and experience as well as coordination across different cities and countries could be done more efficiently and effectively by broader, regional governance arrangements. Ideally, this would entail dedicated professionals focusing on designing experiments to drive transformation and capturing, sharing, and applying the resulting lessons.

Our analysis holds five implications for urban planning and innovation funding. First, municipalities need to capture learning to transform their operations. From a funding perspective this involves recognising business models are only part of the solution and include explicit requirements to justify the selection of innovation projects to test new governance models, and require work streams to robustly assess failures. Second, monitoring and evaluation should use qualitative methods to capture process learning and organisational change. A broader approach may mitigate the dangers of narrowly conceived technology projects reproducing or exacerbating existing inequalities and power imbalances (Cowley & Caprotti, 2019). Capturing impacts is important but, as many urban funding programmes have found, positive impacts do not necessarily stimulate broader change. Third, funding before and after innovation projects would support more effective experimentation and leverage value out of completed projects in terms of ensuring process learning is captured and shared. Fourth, funding may need to migrate from the project level to the (city-)regional level in order to support regional innovation partnerships and efficient and effective innovation ecosystems. For municipalities, such umbrella networks would generate useful and transferable evidence and lessons, but require a shift towards a more formal model of inter-city collaboration. Universities and research institutes have a role to play here, and it is useful to ask how they might change more fundamentally in order to enable more effective transdisciplinary knowledge co-production. Finally, while the overall findings of this article are remarkably consistent across different kinds of cities and municipalities, the details of exactly how municipalities are structured, the powers they have, and the local governance arrangements in which they operate clearly shape how they engage in experimentation and the degrees of freedom they have to subsequently change. Understanding and capturing the dynamics of municipal transformation presents an important topic for further study.

Overall, our findings highlight an intriguing tension. The goal of urban innovation is to stimulate the transformation of cities, but little attention is paid to how innovation changes the organisations that make them up. We have focused on municipalities as the central players in urban innovation projects, but the point extends across the range of organisations that make up the quadruple helix. Organisations must change in order to be able to make use of new technologies and enable their uptake, otherwise even highly successful technical demonstrations will remain stranded. That we argue for a greater role for municipalities may not be surprising given our focus on city coordinators, but this emphasis should be set against the reality that market-driven models of urban transformation have not fully delivered the required rate of change over the past decade. Our cities still need transforming and the problem of why even successful projects tend not to be taken up widely has not yet been solved. Funding bodies and companies have underestimated the importance of organisational transformation as the twin of physical transformation. In many cases they have simply assumed that organisations will change. Evidence from more than two decades of significant investment into urban innovation suggests that they do not. The process by which municipal organisations learn and change is surely a key ingredient of urban transformation and should be considered more centrally by funding instruments and researchers.

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Conflict of Interests

The authors declare no conflict of interests.

References

Almirall, E., Lee, M., & Wareham, J. (2012). Mapping living labs in the landscape of innovation methodologies. *Technology Innovation Management Review*, *2*(9).

Bögel, P., Pereverza, K., Upham, P., & Kordas, O. (2019). Linking socio-technical transition studies and organisational change management: Steps towards an integrative, multi-scale heuristic. *Journal of Cleaner Production*, *232*, 359–368.

Borsboom-van Beurden, J., Kallaos, J., Gindroz, B., Costa, S., & Riegler, J. (2016). *Smart city guidance package: A roadmap for integrated planning and implementation of smart city projects*. Brussels and Trondheim: European Innovation Partnership on Smart Cities and Communties (EIP-SCC) and Norwegian University of Science and Technology.

Bouzarovski, S., & Haarstad, H. (2019). Rescaling low-carbon transformations: Towards a relational ontology. *Transactions of the Institute of British Geographers*, *44*(2), 256–269.

Bulkeley, H., Castán Broto, V., & Edwards, G. A. S. (2015). *An urban politics of climate change: Experimentation and the governing of socio-technical transitions*. London: Routledge.

Caniglia, G., Schäpke, N., Lang, D. J., Abson, D. J., Luederitz, C., Wiek, A., . . . von Wehrden, H. (2017). Experiments and evidence in sustainability science: A typology. *Journal of Cleaner Production*, *169*, 39–47.

Caprotti, F., & Cowley, R. (2017). Interrogating urban experiments. *Urban Geography*, *38*(9), 1441–1450.

Cocchia, A., & Dameri, R. P. (2016). Exploring smart city vision by university, industry and government. In F. D'Ascenzo, M. Magni, A. Lazazzara, & S. Za (Eds.), *Blurring the boundaries through digital innovation: Lecture notes in information systems and organisation* (Vol. 19; pp. 259-270). Cham: Springer. https://doi.org/10.1007/978-3-319-38974-5_20

Cowley, R., & Caprotti, F. (2019). Smart city as anti-planning in the UK. *Environment and Planning D: Society and Space*, *37*(3), 428–448.

Cugurullo, F. (2018). Exposing smart cities and eco-cities: Frankenstein urbanism and the sustainability challenges of the experimental city. *Environment and planning A: Economy And Space*, *50*(1), 73–92.

Dell'Era, C., & Landoni, P. (2014). Living lab: A methodology between user-centred design and participatory design. *Creativity and Innovation Management*, *23*(2), 137–154.

Demuzere, M., Bechtel, B., & Mills, G. (2019). Global transferability of local climate zone models. *Urban Climate*, *27*, 46–63.

Doucet, I., & Janssens, N. (Eds.). (2011). *Transdisciplinary knowledge production in architecture and urbanism: Towards hybrid modes of inquiry* (Vol. 11). Cham: Springer.

Evans, J., Karvonen, A., Luque-Ayala, A., Martin, C., McCormick, K., Raven, R., & Palgan, Y. V. (2019). Smart and sustainable cities? Pipedreams, practicalities and possibilities. *Local Environment*, *24*(7), 557–564.

Evans, J., Karvonen, A., & Raven, R. (2016). *The experimental city: New modes and prospects of urban transformation*. London and New York, NY: Routledge.

Fraser, L. H., Henry, H. A. L., Carlyle, C. N., White, S. R., Beierkuhnlein, C., Cahill, J. F., . . . Turkington, R. (2013). Coordinated distributed experiments: An emerging tool for testing global hypotheses in ecology and environmental science. *Frontiers in Ecology and the Environment*, *11*(3), 147–155.

Ghosh, D., Sengers, F., Wieczorek, A. J., Ghosh, B., Roy, J., & Raven, R. (2016). Urban mobility experiments in India and Thailand. In J. Evans, A. Karvonen, & R. Raven (Eds.), *The experimental city: New modes and prospects of urban transformation* (pp. 122-136). London and New York, NY: Routledge.

Grandin, J., Haarstad, H., Kjærås, K., & Bouzarovski, S. (2018). The politics of rapid urban transformation. *Current Opinion in Environmental Sustainability*, *31*, 16–22.

Haarstad, H. (2017). Constructing the sustainable city: Examining the role of sustainability in the 'smart city' discourse. *Journal of Environmental Policy and Planning*, *19*(4), 423–437.

Hajer, M., & Versteeg, W. (2019). Imagining the post-fossil city: Why is it so difficult to think of new possible worlds? *Territory, Politics, Governance*, *7*(2), 122–134.

Hodson, M., Evans, J., & Schliwa, G. (2018). Putting urban experiments into context: Integrating urban living labs and city-regional priorities. In S. Marvin, H. Bulkeley, L. Mai, K. McKormick, & Y. Voytenko-Palgam (Eds.), *Urban living labs*: *Experimenting with city futures* (pp. 37–51). London: Routledge.

Jones, P., & Evans, J. (2006). Urban regeneration, governance and the state: Exploring notions of distance and proximity. *Urban Studies*, *43*(9), 1491–1509.

Karvonen, A., Cook, M., & Haarstad, H. (2020). Urban planning and the smart city: Projects, practices and politics. *Urban Planning*, *5*(1), 65–68.

Karvonen, A., Martin, C., & Evans, J. (2018). University campuses as testbeds of smart urban innovation. In C. Coletta, L. Evans, L. Heaphy, & R. Kitchin (Eds.), *Creating smart cities* (pp. 104–118). London: Routledge.

Kivimaa, P., Hildén, M., Huitema, D., Jordan, A., & Newig, J. (2017). Experiments in climate governance: A systematic review of research on energy and built environment transitions. *Journal of Cleaner Production*, *169*, 17–29.

Kroll, H. (2015). Efforts to implement smart specialization in practice: Leading unlike horses to the water. *European Planning Studies*, *23*(10), 2079–2098.

Kronsell, A., & Mukhtar-Landgren, D. (2018). Experimental governance: The role of municipalities in urban living labs. *European Planning Studies*, *26*(5), 988–1007.

Laakso, S. (2017). Giving up cars: The impact of a mobility experiment on carbon emissions and everyday routines. *Journal of Cleaner Production*, *169*, 135–142.

Laakso, S., Berg, A., & Annala, M. (2017). Dynamics of experimental governance: A meta-study of functions and uses of climate governance experiments. *Journal of Cleaner Production*, *169*, 8–16.

McCrory, G. (2016). *Learning hard or hardly learning? Exploring process of experiential, transformative and social learning in an urban living lab* (Master thesis). Lund University, Lund, Sweden.

McGuirk, P., Dowling, R., Brennan, C., & Bulkeley, H. (2015). Urban carbon governance experiments: The role of Australian local governments. *Geographical Research, 53*(1), 39–52.

Mickwitz, P., Hildén, M., Seppälä, J., & Melanen, M. (2011). Sustainability through system transformation: Lessons from Finnish efforts. *Journal of Cleaner Production*, *19*(16), 1779–1787.

Nevens, F., Frantzeskaki, N., Gorissen, L., & Loorbach, D. (2013). Urban transition labs: Co-creating transformative action for sustainable cities. *Journal of Cleaner Production*, *50*, 111–122.

Robinson, J. (2016). Thinking cities through elsewhere: Comparative tactics for a more global urban studies. *Progress in Human Geography*, *40*(1), 3–29.

Rocle, N., & Salles, D. (2018). "Pioneers but not guinea pigs": Experimenting with climate change adaptation in French coastal areas. *Policy Sciences*, *51*(2), 231–247.

Schuurman, D., De Marez, L., & Ballon, P. (2016). The impact of living lab methodology on open innovation contributions and outcomes. *Technology Innovation Management Review*, *6*(1).

Sengers, F., Wieczorek, A., & Raven, R. (2016). Experimenting for sustainability transitions: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 153–164.

Simon, D., Palmer, H., Riise, J., Smit, W., & Valencia, S. (2018). The challenges of transdisciplinary knowledge production: From unilocal to comparative research. *Environment and Urbanization*, *30*(2), 481–500.

Smink, M., Negro, S., Niesten, E., & Hekkert, M. (2015). How mismatching institutional logics hinder niche–regime interaction and how boundary spanners intervene. *Technological Forecasting and Social Change*, *100*, 225–237.

Smith, A., & Raven, R. (2012). What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy*, *41*(6), 1025–1036.

Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L., . . . Goldsmith, C. (2010). A tutorial on pilot studies: The what, why and how. *BMC Medical Research Methodology*, *10*(1), 1.

Trencher, G., Bai, X., Evans, J., McCormick, K., & Yarime, M. (2014). University partnerships for co-designing and co-producing urban sustainability. *Global Environmental Change*, *28*, 153–165.

Trencher, G., Yarime, M., & Kharrazi, A. (2013). Co-creating sustainability: Cross-sector university collaborations for driving sustainable urban transformations. *Journal of Cleaner Production*, *50*, 40–55.

van den Bosch, S. (2010). *Transition experiments: Exploring societal changes towards sustainability* (Doctoral disseration) University of Rotterdam, Rotterdam, The Netherlands.

van den Bosch, S., & Rotmans, J. (2008). *Deepening, broadening and scaling up: A framework for steering transition experiments* (KCT essay No. 2). Rotterdam: Knowledge Centre for Sustainable System Innovations and Transitions.

Voytenko, Y., McCormick, K., Evans, J., & Schliwa, G. (2016). Urban living labs for sustainability and low carbon cities in Europe: Towards a research agenda. *Journal of Cleaner Production*, *123*, 45–54.

Williams, J. (2016). Can low carbon city experiments transform the development regime? *Futures*, 77, 80–96.

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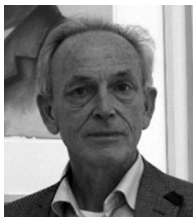

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Article

Experimental Governance and Urban Planning Futures: Five Strategic Functions for Municipalities in Local Innovation

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Abstract
Experimental governance is increasingly being implemented in cities around the world through laboratories, testbeds, platforms, and innovation districts to address a wide range of complex sustainability challenges. Experiments often involve public-private partnerships and triple helix collaborations with the municipality as a key stakeholder. This stretches the responsibilities of local authorities beyond conventional practices of policymaking and regulation to engage in more applied, collaborative, and recursive forms of planning. In this article, we examine how local authorities are involved in experimental governance and how this is influencing their approach to urban development. We are specifically interested in the multiple strategic functions that municipalities play in experimental governance and the broader implications to existing urban planning practices and norms. We begin the article by developing an analytic framework of the most common strategic functions of municipalities in experimental governance and then apply this framework to Stockholm, a city that has embraced experimental governance as a means to realise its sustainability ambitions. Our findings reveal how the strategic functions of visioning, facilitating, supporting, amplifying, and guarding are producing new opportunities and challenges to urban planning practices in twenty-first century cities.

Keywords
collaboration; experimental governance; experimentation; municipalities; urban planning

Issue
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1. Introduction

Cities around the world are embracing experiments as a means to achieve their sustainability goals. Various stakeholders engage in experiments to demonstrate that improved urban futures are possible through laboratories, testbeds, platforms, and innovation districts (Bulkeley & Castán Broto, 2013; Bulkeley et al., 2019; Evans, Karvonen, & Raven, 2016; Kivimaa, Hildén, Huitema, Jordan, & Newig, 2017; Scholl & Kemp, 2016; Sengers, Wieczorek, & Raven, 2019). Cities are framed as both the loci of societal challenges and critical locales to trial solutions, and have been described as "seedbeds for local innovation niches" (Wolfram & Frantzeskaki, 2016, p. 144). Experiments inform new modes of experimental governance to address complex sustainability issues at the local level (Bulkeley & Castán Broto, 2013; Evans et al., 2016) and provide opportunities to "try out pathways to these desirable futures" (Meadowcroft, 2009, p. 325). Urban experiments vary in purpose, scope, and size but tend to share several common characteristics that combine sustainability, innovation, co-creation, and learning with a place-based focus (Bulkeley et al., 2016; Evans & Karvonen, 2014). The aim of experiments is to "design, test and learn from innovation in real time in order to respond to particular societal, economic and

environmental issues in a given urban place" (Bulkeley et al., 2016, p. 13).

Experiments frequently involve collaborations between local governments, private companies, academia, and civil society to satisfy external funding requirements and to address the complexity of contemporary urban challenges (van der Heijden, 2018). Municipalities are key actors in these partnerships and often lead the experimental actions in cities (Bulkeley & Castán Broto, 2013; van der Heijden, 2015; Warbroek & Hoppe, 2017). This is logical as local governments have multiple resources at their disposal as well as long-standing experience and state-sponsored authority to govern urban development processes. Recent research has highlighted the various ways that local authorities contribute to urban experiments (Bulkeley & Kern, 2006; Kronsell & Mukhtar-Landgren, 2018; Mukhtar-Landgren, Kronsell, Voytenko Palgan, & von Wirth, 2019). However, the broader strategic functions of the municipality beyond individual experiments requires further scrutiny to understand how experimental governance is informing urban planning practices. Experimental governance includes both vertical approaches (i.e., top-down and bottom-up) and horizontal strategies to navigate particular social, institutional, and physical conditions (Laakso, Berg, & Annala, 2017). This involves governing through experimental practices rather than experimenting with the governance system itself.

In this article, we draw upon literature from urban studies, policy analysis, and political science to develop an analytic framework of strategic functions performed by local authorities in experimental governance. We then apply this framework to Stockholm—a municipality that has embraced experimental governance to achieve its sustainability ambitions—to understand how these functions influence urban planning. The focus is not on isolated experiments but rather on how these activities collectively influence practices of governance and urban planning (Frantzeskaki, Hölscher, Wittmayer, Avelino, & Bach, 2018; Karvonen, 2018). In other words, we are looking beyond individual interventions to examine how municipalities contribute to broader processes of local innovation through experimental governance. The study addresses the following research question: What strategic functions do municipalities perform in experimental governance? The findings highlight the multiple ways that local authorities contribute to experimental governance and how this is influencing existing practices of urban planning.

2. Experimental Governance and the Strategic Functions of Municipalities

Municipalities are traditionally structured as hierarchical, vertical, and sectorised organisations with a strong silo orientation that uses formal rules to control and stabilise collective interests (Agger & Sørensen, 2018; Lundquist, 1998; March & Olsen, 1989). They act to develop and change cities through established mechanisms of governance (e.g., master planning, policy making, regulations) while working carefully to minimise risks and avoid making mistakes (Torfing, 2012). In contrast, experimental governance recasts the role of local governments from a vertical, hierarchical structure with clearly defined responsibilities to a more horizontal, collaborative structure with fluid, distributed responsibilities (Pierre, 2011). Collaboration is a cornerstone of experimental governance where different actors contribute in multiple ways to develop synergistic solutions that cannot be achieved by a single actor (Nyström, Leminen, Westerlund, & Kortelainen, 2014). As Berkhout et al. (2010, p. 262) note, "experiments typically bring together new networks of actors with knowledge, capabilities and resources, cooperating in a process of learning."

The collaborative character of experimental governance has significant influence on the work of public authorities. Previous studies have defined the actions of local governments in individual experiments. Notably, Kronsell and Mukhtar-Landgren (2018) studied urban living labs and found that municipalities play multiple roles that vary over time and between municipal departments within the same lab. Specifically, they found that municipalities operate as enablers, partners, and promotors. Meanwhile, Bulkeley and Kern (2006) focused on climate experiments and the ability of local governments to influence experimental outcomes. They found that municipalities govern by authority, provisioning, and enabling, as well as through self-governance. This study builds upon the results of these previous studies to describe the broader strategic functions of municipalities in experimental governance. These strategic functions are directly related to the contributions of public authorities to urban planning processes (Pierre & Sundström, 2009; Warbroek & Hoppe, 2017). We developed an analytic framework that includes four functions inspired by the previous research and then complemented these with a fifth function to address the local government as the guardian of the public good (Lundquist, 1998). It is important to note that local governments are seldom coherent actors with clear visions and targets. Instead, they are comprised of "different departments, individuals, and political interests that need to cooperate, and ignore, compete, and struggle with each other" (Hölscher, Avelino, & Wittmayer, 2018, p. 147). Thus, the strategic functions that municipalities play in all processes are rarely coherent and can at times be contradictory.

In the following paragraphs, we summarise five strategic functions performed by local authorities in experimental governance: visioning, facilitating, supporting, amplifying, and guarding. These functions are derived from contemporary discourses on experimental governance, collaborative governance, and urban innovation. We selected these functions because they describe many ways that municipalities contribute to the various phrases of experimentation as well as urban development more generally. The purpose of the

framework is to characterise the broader implications of experimental governance beyond the actions of a single experiment. The resulting categories can then be used to analyse how local governments engage in and contribute to experimental governance, from initial visions and implementation of experiments to the application of the experimental findings and the steering of urban development processes. It is important to note that the framework is designed as a heuristic tool to analyse the influence of municipalities on experimental governance. The identified functions are not intended to be comprehensive or mutually exclusive but instead can be combined and extended in various ways.

2.1. Visioning

A primary function for municipalities is to frame values, norms, and perceptions (Kickert & Koppenjan, 1997). Visionary planning is a long-standing practice for local authorities to promote a clear trajectory for a desired collective future (Pierre & Sundström, 2009). Municipalities use visions to position their context-specific issues within a policy area, to formulate problems, to assemble different departments around a specific policy, to communicate the municipality's position to other organisations, and to facilitate collaboration and engagement (Bulkeley & Kern, 2006; Mey, Diesendorf, & MacGill, 2016; Mukhtar-Landgren & Smith, 2019). The vision is a tool for change within the local government (Brorström, 2015) with respect to "shaping the playing field" (Warbroek & Hoppe, 2017, p. 2). Other stakeholders can inform shared visions, but municipalities are frequently the drivers of visioning processes to steer local stakeholders towards long-term collective urban planning goals.

2.2. Facilitating

Beyond the promotion of long-term shared visions, municipalities facilitate engagement between urban stakeholders while maintaining and nurturing experiments (Hölscher et al., 2018; Mey et al., 2016; Pierre, 2011). It is commonplace for local governments to lead experimental activities and to facilitate the interactions among the stakeholders (Agranoff & McGuire, 2001; Kronsell & Mukhtar-Landgren, 2018) by building trust, developing contacts, identifying resources, and maintaining a common agenda (Kickert & Koppenjan, 1997). The local government also serves as a meta-governor to link experimental actions with conventional governance tools and to ensure the coherence of municipal actions (Jessop, 1997) by enabling and coordinating the actions of stakeholders (Bulkeley & Kern, 2006).

2.3. Supporting

Closely related but distinct from facilitating is the function of supporting. This is a more passive function that involves provisioning and assisting rather than leading (Bulkeley & Kern, 2006). The municipality provides services, resources, and infrastructure to assist with experiments as well as permits and other types of administrative support where they have authority and influence (Mey et al., 2016; Warbroek & Hoppe, 2017). In some instances, municipalities provide buildings, open spaces, and infrastructure networks to serve as physical venues where experiments can be conducted (Kronsell & Mukhtar-Landgren, 2018; Mey et al., 2016). The supporting function is attractive for municipalities who lack the resources or expertise to lead on experiments but still want to contribute. However, the passive character of supporting results in less control over the experimental agenda and a reduced ability for the local authority to align the experiments with shared long-term visions.

2.4. Amplifying

A key expectation of urban experiments is to upscale and replicate results (Kern, 2019; Lam et al., 2020). Municipalities are often responsible for applying experimental results to new policies, guidelines, and regulations, and can also use experimental results to reorganise their internal operations by establishing new protocols and procurement requirements (Mey et al., 2016). Here, the local government serves as a role model for other organisations (referred to as "self-governing" in Bulkeley & Kern, 2006) while also influencing market conditions for the adoption of new technologies (i.e., electric vehicles, photovoltaics). Finally, municipalities promote their experimental findings to higher levels of government (regional, national, and international) and to other cities through information sharing and knowledge exchange (Mey et al., 2016). Here, amplifying activities involve the circulation of knowledge among global networks and feed into competitive rankings and awards that are used by cities for reputation building and external promotion (de Jong, Joss, Schraven, Zhan, & Weijnen, 2015; Vanolo, 2017).

2.5. Guarding

A critical function of public authorities in urban experiments is to protect public values (Kronsell & Mukhtar-Landgren, 2020; Raven et al., 2019). The collaborative approach to experimental governance has a tendency to blur power relations and decision-making responsibilities, with important implications to democratic accountability (Karvonen, 2018; Pierre, 2011). Experiments disrupt traditional planning approaches (Agger & Sørensen, 2018) and these changes reinforce the mandate of the local government as "the guarantor of public values" (Bryson, Crosby, & Bloomberg, 2014, p. 445). This includes an obligation to safeguard public welfare while "balancing short run interests against a long-run, 'greater good' perspective" (Nalbandian, 1999, p. 194). The municipality is charged with ensuring that

experiments address the most relevant issues (Scharpf, 1999) and align with the existing set of local policies. Guarding involves protecting and promoting collective values such as democracy, legality, impartiality, transparency, and rule of law, all of which are unique to the public sector (Lundquist, 1998). As such, guarding cannot be easily performed by other actors.

The five strategic functions of municipalities in experimental governance are summarised in Table 1. The functions embody different types of expertise, aims, and target audiences. There are multiple synergies and tensions between these functions and they are shared across different individuals and departments through the various experimentation phases. A municipality could perform all these functions simultaneously and have a significant influence on experimental governance or only perform a single function and allow other actors to drive the experimental agenda.

3. Methodology

To apply the framework of strategic functions as described above, we conducted a deductive case study of experimental governance in Stockholm. Swedish municipalities have an explicit and strong mandate for self-governance with significant responsibilities for urban planning that include a planning monopoly and extensive land ownership (Montin & Granberg, 2007; Rutherford, 2008). Stockholm is the largest city in Sweden and actively participates in global networks such as C40 and ICLEI to realise their sustainability ambitions. More importantly, the municipality promotes collaborative experiments in their strategies and engages with universities as well as a range of local, national, and international companies to develop high-profile demonstration sites, laboratories, and testbeds throughout the city (City of Stockholm, 2020a). The Stockholm municipal government can be understood as a typical case study (Flyvbjerg, 2006) of how local governments around the world are engaging in experimental governance to realise their environmental, economic, and social goals. While the experiments are specific to this particular context, the general strategy and ethos of experimental governance is similar in many cities.

For this study, we gathered empirical data through a desk-based analysis of publicly accessible documents and websites and a review of all externally funded projects in Stockholm from 2010 to 2018 to identify those that involved experiments. We then used this secondary data to identify and recruit relevant respondents with knowledge about the municipal functions in experimental governance. We conducted semi-structured interviews with 12 municipal officials (Table 2) between June and December 2019, including 10 in-person and two video conference interviews that lasted from 60 to 90 minutes. We audio recorded and transcribed the interviews and then analysed the collected data by applying the five municipal functions through coding via qualitative data analysis software (Nvivo). All direct quotations are translated from Swedish.

4. Findings and Analysis

In the following sub-sections, we provide a brief overview of experimental governance in Stockholm and then present findings of the five strategic functions, and reflect on how they influence urban planning practices in the city.

4.1. Experimental Governance in Stockholm

The City of Stockholm has a long-standing commitment to sustainable urban development as well as a tradition of partnerships with industry and academia, and more recently, an ambition to be the smartest city in the world (City of Stockholm, n.d.-b). Stockholm's Comprehensive Plan states that the municipality "actively encourages companies and institutions to use the city's land and operations as a testbed for new innovations" (City of Stockholm, 2018, p. 58f). A prominent example of a municipal experiment is the high-profile environmental showcase, Hammarby

Table 1. Five strategic functions of municipalities in experimental governance.

	Visioning	Facilitating	Supporting	Amplifying	Guarding
Expertise	Collective leadership	Networking and driving	Administration and assistance	Knowledge translation and application	Democracy and representation
Aims	Define and achieve shared goals	Initiate and steer experiments	Support experiments	Apply and upscale experimental results	Protect democratic values
Target audience	Experimental partners and local constituents	Experimental partners	Experimental partners	Municipalities, national government, global networks	Local constituents

Table 2. List of Stockholm respondents.

R1	Innovation strategist	R7	Mobility specialist
R2	Innovation strategist	R8	Mobility specialist
R3	Innovation strategist	R9	Sustainable planning specialist
R4	Environmental strategist	R10	Platform developer
R5	Innovation strategist	R11	ICT specialist
R6	Smart city specialist	R12	Smart city developer

Sjöstad, an eco-district that achieved global acclaim beginning in the mid-1990s (Iveroth, Vernay, Mulder, & Brandt, 2013; Rutherford, 2020). More recent examples of experiments, testbeds, and platforms include the European Smart Cities Lighthouse demonstration project GrowSmarter (GrowSmarter, n.d.), the Royal Seaport mixed-use Brownfield re-development (City of Stockholm, 2020b), and the Urban ICT Arena, a public-private digital testbed (City of Stockholm, n.d.-a). Together, these projects and programmes illustrate the City of Stockholm's embrace of experimental governance to realise its long-term goals.

The City of Stockholm's approach to experimental governance is exemplified by different modes of collaboration, many of which involve long-term collaborations with local universities and international businesses (Solesvik, 2017). These collaborations were initially established to promote the city and develop the regional economic base. More recent partnerships have broadened the agenda to focus on solving common challenges together under the banner of sustainable urban development. Several of the respondents emphasised this more strategic collaboration focus. An innovation strategist (R1) noted: "We have had collaboration before, but mostly from a growth and business perspective, in order to establish the industry here. It was not about solving our challenges, but now…it's a completely different way of working, more strategic." Another innovation strategist (R3) claimed that "we need to use it [experimentation] strategically to reach a goal." This points towards an expansion of collaboration activities beyond entrepreneurialism to focus on collective problem-solving (Kivimaa et al., 2017).

The respondents had different opinions about experimental governance as an alternative to traditional planning processes (Agger & Sørensen, 2018). One respondent (R9) recognised the utility of experiments, stating that "we need to experiment. We don't always have the excellent competence, but we can offer the city as an arena for research." Another respondent (R7) added that experimental governance is promoted by the municipal leadership: "It is a message that is conveyed from the top management. We want to see the city as a testbed and we should dare to test new solutions." This reflects a specific framing of the city as a site of innovation as promoted by municipal leaders. Other respondents were more sceptical of experimental governance due to the various risks involved. An environmental strategist (R4) highlighted the risks, arguing that "you can't experiment within the built environment. And you can't experiment with tax money either." Thus, experimental governance is contested among those who initiate and engage in innovation activities.

4.2. Visioning

The visionary function is used to develop a roadmap to achieve desired futures and to strategise on the creation of spaces for action (Brorström, 2015; Gaffikin & Sterrett, 2006). The City of Stockholm's visions are summarised in documents such as Vision 2040 and the Comprehensive Plan as well as programmes related to environmental protection and digitalisation, among many others (City of Stockholm, 2015, 2018, 2020c). The visionary function allows the municipality to set the agenda for experimental governance while exerting its authority to protect its long-standing position as the lead actor in planning processes (Bulkeley & Kern, 2006). The vision documents provide guidance when considering which particular experiments to support. As an innovation strategist (R1) succinctly noted, "the policy documents steer our actions." This implies that the traditional planning approach continues to be at the core of experimental governance with an emphasis on realising long-term collective goals. The same respondent went on to note that public actors have a special function among other partners:

> There is a need for public representatives, at both the local and regional level, to take the lead in the discussions about challenges. We need to decide which issues are prioritised. We should have that role, not the companies. By doing so, we create clear conditions for the companies to act upon.

This perspective positions the municipality as the leader of experimental governance to define the direction of specific interventions as well as the broader trajectory of innovation in the city. Another respondent (R2) worried that the visions for experimental governance are actually set by other actors and this reduces the influence of the local government: "Unfortunately, I believe that the initiatives to a very, very large extent come from outside actors." In other words, the inclusion of multiple actors results in less control of urban development processes by the public authority (Pierre, 2011). This has the potential to rearrange decision making capacities among urban stakeholders with fundamental implications to

urban planning practices. Several of the respondents emphasised that visioning is not so much about establishing long-term goals (as is commonplace in traditional urban planning) but is rather about problem identification and solution generation. "We need to push issues more clearly, steer towards our long-term challenges and be the problem owners from beginning to end. We cannot just open up a place for others to play, we must take it back to us" (R4). In other words, they recognised the tensions between long-term, collective visions and short-term goals that can be achieved through particular experimental activities.

At the same time, several respondents were frustrated with existing goals because they tend to be too broad and lack prioritisation. This illustrates a disconnect between experimental governance and traditional urban planning. One innovation strategist (R2) argued that the goals "include everything, we can do everything" while another innovation strategist (R3) added that "the goals don't give direction." The lack of prioritisation is further compounded by the large number of goals that make it difficult to orient and focus. For example, a respondent (R2) noted, "When I worked in elderly care, we had 130 goals to achieve in a year. How do you prioritise them? It becomes 'goal obfuscation."' Another respondent (R1) stated that, "We don't even know by ourselves what is the most important thing to do, so it's exciting when companies say that they know." In this sense, experimental governance provides an opportunity to cut through the multitude of existing goals and 'cherry-pick' those that can be readily addressed through experimentation. This selection process prioritises some goals over others while opening up a space for other actors to set the experimental agenda (Karvonen, Evans, & van Heur, 2014). Thus, the visionary function allows the municipality to reinforce its position as the driver of urban development while the experimental activities tend to focus in on specific interventions that favour a select number of long-term planning goals while ignoring others.

4.3. Facilitating

Beyond visioning, the respondents provided multiple insights on how the municipality facilitates experimental governance. Facilitating involves a combination of leadership and intermediation to steer partnerships and to ensure that various stakeholders are working towards shared aims and objectives. The facilitator is the catalyst of experimental governance and actively works to connect the stakeholders and keep them on track (Hölscher et al., 2018; Kronsell & Mukhtar-Landgren, 2018). The local government is a logical stakeholder to take on the facilitative function, but evidence from Stockholm highlights multiple challenges related to existing organisational structures and a general lack of competence in facilitation.

The strongest form of facilitation extends the visionary function of municipalities by positioning them as the leaders of experimental activities. They not only set the agenda for experiments but also ensure that the relevant actors are continuously engaged (Kronsell & Mukhtar-Landgren, 2018, describe this as a promotor role). As one respondent (R4) noted, "We have to come in and take command here, to control things." This reinforces the municipality as the most influential actor of urban development processes while supporting the work of other actors in achieving shared goals. An innovation strategist (R5) provides a concrete example of this, stating that "we have an ambition to apply for external funding in order to help the construction companies, we want to help pave the road to get them started."

In addition to leading, facilitating is also about having an overview of and an ability to link the relevant actors to one another. A mobility specialist (R7) suggested that the municipality functions as an intermediary to facilitate connections between stakeholders: "We are something of a neutral platform. It is logical that we as a municipality connect actors and push the different sectors." Local governments manage the internal connections between local actors and the external connections to other municipalities with similar challenges and aims (R4). Some of the respondents see themselves as facilitators on an individual level, referring to themselves as orchestrators (R10), process leaders and networkers (R7), and collaborators (R4). An innovation strategist (R5) summarised this by stating that "there is a need to have people employed by the city that work for better collaboration between business, academia, and the city." Thus, facilitating involves both leading agendas and connecting up stakeholders in strategic ways.

4.4. Supporting

In addition to actively facilitating experimental governance, the municipality provides passive support through the provision of services, resources, and infrastructure (Kronsell & Mukhtar-Landgren, 2018). The respondents largely take this work for granted, noting that there is nothing special or controversial about providing buildings, roads, permits, and the built environment for experimental activities. "If we want an environment around the City of Stockholm that is open to research, then we have to deliver, we have to open up," noted an innovation strategist (R3). A mobility specialist (R7) continued: "We have given these actors a different type of dispensation so that they can perform tests."

The respondents largely agreed that the duty of the municipality is to support actions that have the potential to improve the city as a whole as long as it contributes to their overarching visions and goals. A concrete example of this is the designation of specific parts of the city as testbeds. One respondent (R9) reflected on the Urban ICT Arena, noting: "We have stated that the urban development in Kista will be used as a testbed to develop and test new ideas." Here, the municipality provides the foundation upon which experimental actors can conduct

their activities but does not play an active part in day-to-day activities. Instead, they leave these activities to other stakeholders and only provide support when needed.

The municipality also contributes to experimental governance by writing letters of support for researchers who are submitting external funding applications. Letters of support demonstrate that the proposed research project has the explicit endorsement of the public authority. An innovation strategist (R1) was not pleased with this supportive activity, stating that: "They want us to join, but we should not play the legitimising role just for others to get funding." The respondent continued by expressing a similar dissatisfaction with merely supporting experiments, arguing that "we cannot just make a street available. If we are about to spend our time and use our city as a testbed, then we also need to benefit from it. It is about prioritising some projects and not others." This highlights the inherent tensions in the supporting function as they relate to the responsibility and influence of the local government (Karvonen et al., 2014). The respondents see the supporter function as a necessary but insufficient way for the municipality to participate in experimental governance. They interpret supportive work as simultaneously unproblematic and dissatisfying, suggesting the need for more deliberative reflection when deciding if a proposed experiment should be supported and if so, what type of support should be provided by the municipality and through which departments and individuals.

4.5. Amplifying

The amplifying function focuses on upscaling and transferring the results of experiments through replication and diffusion (Kern, 2019; Lam et al., 2020). The respondents recognised the ambitions to learn from experiments and apply them to the city more broadly but also stressed that these processes tend to be difficult and do not happen automatically. Some respondents were optimistic about the implementation of successful experimental results through existing budget allocation procedures. "We will come up with the ideas and then test and validate them. If they are good, then we decide in the budget process how it should be prioritised throughout the city" (R1). Another respondent (R9) adopted a more critical perspective on this process, noting that "we sometimes believe so much in the budget document, but not everything can be implemented through it, especially not those things that require organisational change."

Several of the respondents highlighted significant organisational challenges to internal upscaling and implementation. An innovation strategist (R1) concluded that "we are bad at it. We need to be much better. But we can't really. We don't have the skills for upscaling and spreading" (R1). Other respondents had similar critiques: "It happens, but it is arbitrary and person dependent'' (R7); "It is an overall problem within the city, to internalise the learning" (R5); "We don't have an internal organisation for our knowledge generation'' (R3); "And it is a matter of power, which becomes tricky when it becomes an individual responsibility rather than an organisational one" (R4). This highlights multiple gaps between generating experimental results and applying them to broader urban planning processes and structures.

A key challenge of upscaling involves the translation of results from time-limited experiments into permanent organisational structures (Hodgson, Fred, Bailey, & Hall, 2019). An innovation strategist (R5) argued that "it is not only about upscaling; it is about implementation, to avoid another project result on the shelf." This perspective recognises that experiments are not an end in themselves but rather serve to inform broader urban development processes. Here, there is a clear disconnect between experiments and traditional modes of urban planning and development. Experiments are often initiated by individuals without an explicit strategy to embed the findings into the overall organisation, resulting in a tenuous connection to other municipal activities. To address this, an innovation strategist (R2) suggested that:

> When starting a project, a larger round-table conversation would be needed in the organisation. Does this meet our needs and goals? Do we have the opportunity? Then we would have a structure for this innovation idea or lab to grow afterwards.

In other words, there is a need for more deliberate and reflective processes of learning in experimental governance to link short-term experimental interventions to long-term urban planning processes (McFarlane, 2011; Wolfram, van der Heijden, Juhola, & Patterson, 2019).

The large and heterogeneous character of local governments also hampers the amplification of experimental results. An environmental strategist (R4) noted: "It is the wrong department that has driven the project. The result is not customisable to the rest of the organisation." Thus, the appropriate municipal actors need to be included from the start in the design and execution of the experiments as well as in the application of the experimental results. Another problem with the limitation and scale of experiments is that similar solutions are often appropriate for different departments, but the departments fail to recognise that they have related problems. As a smart city strategist (R12) explained:

> The needs are very similar, but [municipal departments] don't know each other, or have a city overview. This results in the creation of individual solutions…which often end up being too expensive for a single department. When others discover the positive result, it is too late, it is not scalable.

This reflects back on the shared visions and a lack of alignment across municipal departments (Hölscher et al., 2018).

The empirical findings from Stockholm reveal that the amplifying function was of critical importance to the municipality, but that there are numerous organisational challenges regarding learning, scaling, and implementation. Previous research has shown the need to connect experiments to on-going processes and institutional settings in order to implement results effectively (Bos & Brown, 2012). The overall sense of frustration regarding the amplifying function highlights the challenges that need to be addressed before the local government can use their multiple levers of governance (Bulkeley & Kern, 2006) to benefit from the outcomes of experiments. Specifically, amplifying requires commitment and planning from the early stages of experimentation rather than being considered as an afterthought.

4.6. Guarding

The guarding function, where the local government protects minority interests and public values, is relevant in all phases of experimentation, from problem formulation to implementation and generation of results. The function serves as the moral backbone of experimental governance to ensure that public values are maintained when engaging in innovation activities. The respondents recognised the unique responsibility of the public actor to promote democracy and transparency in experimental partnerships while also forwarding citizen perspectives and adopting a holistic overview (Bryson et al., 2014). Experiments are often about testing something new and by design; this challenges the existing *modus operandi* (Agger & Sørensen, 2018). A platform developer (R10) succinctly stated: "How can we open up to enable all these new activities without compromising integrity, democracy, transparency and publicity? This is where the municipality is central." The same respondent added: "The municipality has a special role, definitely. Now everyone is working with sustainability and the challenges we have in society. But a publicly funded actor…this should be its number one mission: democracy, sustainability, and resource efficiency." Another respondent (R2) added that "it is not the actor with the biggest wallet or most people behind it that wins; we also have to consider the democratic implications." This resonates with long-standing tenets of urban planning to ensure that urban development activities are beneficial to all residents (Montin & Granberg, 2007; Pierre & Sundström, 2009).

To guard public interests, the respondents emphasised that the municipality is responsible for ensuring that different interests are balanced and that collaborating companies are not given preferential treatment (Nalbandian, 1999). One smart city strategist (R11) argued:

> We must guarantee that companies with whom we partner don't get priority to information, and favoured positions in building the smart city. We cannot only define the process of how to technically test something, but also how to do it in a legally responsible way.

Another respondent (R2) described a specific meeting with a technology company: "I met an entrepreneur who had done a super cool technical gadget that could monitor everything. But the problem is that they had not considered any regulations and issues of integrity at all." Thus, the municipality serves as the litmus test for public suitability and collective benefits of proposed experiments.

Relatedly, the local government is positioned to advocate for all citizens and to ensure similar input from and benefits to different citizen groups: "The municipality is particularly responsible for inviting citizens and their perspectives" (R10) and "must ensure that different solutions are suitable for all groups in society" (R7). An innovation strategist (R2) concluded that "there are lots of wonderful things out there, but if that doesn't mean increased quality of life for our citizens, then we shouldn't do it." This reflects the widespread understanding of the local government as the 'voice of the people' (e.g., Scharpf, 1999) and the guardian of democratic values.

The guarding function is complicated by the fact that local governments have vast and differentiated operations, with responsibilities for welfare as well as business development and the built environment. This can produce conflicts between municipal goals when working on experiments. As one respondent (R7) noted:

> We must raise and discuss conflicting objectives. Some solutions work from one perspective but may not work for other reasons. We are constantly confronted with conflicting objectives; we need to see the city as a whole, and try to explain that to other actors.

Thus, being a guardian requires a comprehensive overview of the city (similar to the amplifying function), a commitment to resolving conflicts between multiple stakeholders (similar to the facilitating function), and the protection of the collective values of all citizens. Unlike the previous four strategic functions, the guarding is exclusive to municipalities and embodies the government's democratic commitment to their constituents.

5. Conclusions

The aim of this article was to examine the multiple strategic functions played by municipalities in experimental governance. We began by developing an analytic framework of strategic local government functions inspired by previous research on urban experiments but with a new focus on the broader processes of experimental governance. We then applied this framework to study contemporary experimental governance practices in Stockholm to understand how the municipality

performs these functions in practice and, in turn, how this challenges the local government on multiple fronts (Berglund-Snodgrass & Mukhtar-Landgren, 2020). These functions are not new to municipalities but the recent emphasis on urban experimentation reframes and combines them in important ways. This is particularly evident in the amplifying function and its emphasis on upscaling and replication. The respondents recognised the importance of these activities but also noted multiple challenges to capitalising on experimental results.

Meanwhile, traditional planning activities related to visioning, facilitating urban development processes, and guarding the public good are recognised as natural and self-evident to municipal officials, but are often underemphasised in the empirical findings on experimental governance. The visioning function is recognised as important but difficult to perform because it requires prioritisation among many municipal goals while guarding the public good is a function that is unique to public actors. In all of these functions, the respondents stressed the importance of having a broad overview of different departments within the municipal government to ensure that experiments benefit all citizens and to avoid disruptions and negative impacts to existing services. In addition, they recognised the enduring challenges of connecting up experimental governance activities with broader municipal aims and objectives.

The empirics in this study are limited to municipal representatives who are driving innovation activities. It would also be helpful to understand how other stakeholders both within and outside of the municipality interpret the work of the local government in experimental governance. Additionally, the study is based on one municipality and it would be useful to conduct further research to compare and contrast the findings in Stockholm with other cities to see how size, location, governance structures, and historical development patterns influence experimental governance processes. We would expect that the strategic functions of municipalities would have vary by context and might include additional functions that we have not identified here. Finally, all of the functions described in the article are portrayed as constructive and it would be useful to consider the ways that municipalities actively discourage experimental governance by regulating or obstructing. This might highlight some of the agonistic aspects of experimental governance and how the different functions contradict one another.

Overall, the insights on experimental governance in Stockholm reveal a multitude of overlapping and reinforcing functions for local governments that draw upon conventional modes of governance as well as emergent modes of experimental governance. Experimental governance is not replacing conventional governance per se but is instead extending and enhancing how urban planning draws upon discrete interventions to inform long-term policies and regulations (Karvonen, 2018). Through visioning, facilitating, supporting, amplifying, and guarding, municipalities are influencing the interventions of experimental stakeholders while also making subtle but important changes to the governance of cities and regions. These functions will have important and long-lasting implications on the urban planning practices of the twenty-first century.

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Conflict of Interests

The authors declare no conflict of interests.

References

Agger, A., & Sørensen, E. (2018). Managing collaborative innovation in public bureaucracies. *Planning Theory*, *17*(1), 53–73.

Agranoff, R., & McGuire, M. (2001). Big questions in public network management research. *Journal of Public Administration Research and Theory*, *11*(3), 295–326.

Berglund-Snodgrass, L., & Mukhtar-Landgren, D. (2020). Conceptualizing testbed planning: Urban planning in the intersection between experimental and public sector logics. *Urban Planning*, *5*(1), 96–106.

Berkhout, F., Verbong, G., Wieczorek, A. J., Raven, R., Lebel, L., & Bai, X. (2010). Sustainability experiments in Asia: Innovations shaping alternative development pathways? *Environmental Science & Policy*, *13*(4), 261–271.

Bos, J. J., & Brown, R. R. (2012). Governance experimentation and factors of success in socio-technical transitions in the urban water sector. *Technological Forecasting and Social Change*, *79*(7), 1340–1353.

Brorström, S. (2015). Implementing innovative ideas in a city: Good solutions on paper but not in practice? *International Journal of Public Sector Management*, *28*(3), 166–180.

Bryson, J. M., Crosby, B. C., & Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. *Public Administration Review*, *74*(4), 445–456.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375.

Bulkeley, H., Coenen, L., Frantzeskaki, N., Hartmann, C., Kronsell, A., Mai, L., . . . Voytenko Palgan, Y. (2016). Urban living labs: Governing urban sustainability transitions. *Current Opinion in Environmental Sustainability*, *22*, 13–17.

Bulkeley, H., & Kern, K. (2006). Local government and the governing of climate change in Germany and the UK. *Urban Studies*, *43*(12), 2237–2259.

Bulkeley, H., Marvin, S., Voytenko Palgan, Y., McCormick,

K., Breitfuss-Loidl, M., Mai, L., . . . Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European Urban and Regional Studies*, *26*(4), 317–335.

City of Stockholm. (2015). *Vision 2040: A Stockholm for everyone*. Stockholm: City of Stockholm. Retrieved from https://international.stockholm.se/globalassets/vision-2040_eng.pdf

City of Stockholm. (2018). *Översiktsplan: Stockholm city plan*. Stockholm: City of Stockholm. Retrieved from https://vaxer.stockholm/globalassets/tema/oversiktplan-ny_light/english_stockholm_city_plan.pdf

City of Stockholm. (2020a). Innovation. *City of Stockholm*. Retrieved from https://start.stockholm/om-stockholms-stad/sa-arbetar-staden/innovation

City of Stockholm. (2020b). Norra Djurgårdsstaden [Royal seaport]. *City of Stockholm*. Retrieved from https://vaxer.stockholm/omraden/norra-djurgardsstaden

City of Stockholm. (2020c). Så arbetar staden [How the city works]. *City of Stockholm*. Retrieved from https://start.stockholm/om-stockholms-stad/sa-arbetar-staden

City of Stockholm. (n.d.-a). Urban ICT Arena. *City of Stockholm*. Retrieved from https://smartstad.stockholm/urban-ict-arena

City of Stockholm. (n.d.-b). *Strategi för Stockholm som smart och uppkopplad stad: Bilaga 1: Strategi* [Strategy for Stockholm as a smart and connected city: Appendix 1: Strategy]. Stockholm: City of Stockholm. Retrieved from https://smartstad.stockholm/wp-content/uploads/sites/10/2019/09/Bilaga-1-Strategi-for-en-smart-och-uppkopplad-stad-Stockholms-stad.pdf

de Jong, M., Joss, S., Schraven, D., Zhan, C., & Weijnen, M. (2015). Sustainable–smart–resilient–low carbon–eco–knowledge cities: Making sense of a multitude of concepts promoting sustainable urbanization. *Journal of Cleaner Production*, *109*(C), 25–38.

Evans, J., & Karvonen, A. (2014). 'Give me a laboratory and I will lower your carbon footprint!': Urban laboratories and the governance of low-carbon futures. *International Journal of Urban and Regional Research*, *38*(2), 413–430.

Evans, J., Karvonen, A., & Raven, R. (2016). *The experimental city*. London: Routledge.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, *12*(2), 219–245.

Frantzeskaki, N., Hölscher, K., Wittmayer, J. M., Avelino, F., & Bach, M. (2018). Transition management in and for cities: Introducing a new governance approach to address urban challenges. In N. Frantzeskaki, K. Hölscher, M. Bach, & F. Avelino (Eds.), *Co-creating sustainable urban futures: A primer on applying transition management in cities* (pp. 1–40). Cham: Springer.

Gaffikin, F., & Sterrett, K. (2006). New visions for old cities: The role of visioning in planning. *Planning Theory & Practice*, *7*(2), 159–178.

GrowSmarter. (n.d.). Lighthouse city: Stockholm. *GrowSmarter*. Retrieved from https://grow-smarter.eu/lighthouse-cities/stockholm

Hodgson, D., Fred, M., Bailey, S., & Hall, P. (Eds.). (2019). *The projectification of the public sector*. London: Routledge.

Hölscher, K., Avelino, F., & Wittmayer, J. M. (2018). Empowering actors in transition management in and for cities. In N. Frantzeskaki, K. Hölscher, M. Bach, & F. Avelino (Eds.), *Co-creating sustainable urban futures: A primer on applying transition management in cities* (pp. 131–158). Cham: Springer.

Iveroth, S. P., Vernay, A. L., Mulder, K. F., & Brandt, N. (2013). Implications of systems integration at the urban level: The case of Hammarby Sjöstad, Stockholm. *Journal of Cleaner Production*, *48*, 220–231.

Jessop, B. (1997). Capitalism and its future: Remarks on regulation, government and governance. *Review of International Political Economy*, *4*(3), 561–581.

Karvonen, A. (2018). The city of permanent experiments? In B. Turnheim, P. Kivimaa, & F. Berkhout (Eds.), *Innovating climate governance: Moving beyond experiments* (pp. 201–215). Cambridge: Cambridge University Press.

Karvonen, A., Evans, J., & van Heur, B. (2014). The politics of urban experiments: Radical change or business as usual? In M. Hodson & S. Marvin (Eds.), *After sustainable cities?* (pp. 116–127). London: Routledge.

Kern, K. (2019). Cities as leaders in EU multilevel climate governance: Embedded upscaling of local experiments in Europe. *Environmental Politics*, *28*(1), 125–145.

Kickert, W. J. M., & Koppenjan, J. F. M. (1997). Public management and network management: An overview. In W. J. M. Kickert, E. H. Klijn, & J. F. Koppenjan (Eds.), *Managing complex networks: Strategies for the public sector* (pp. 35–61). London: Sage.

Kivimaa, P., Hildén, M., Huitema, D., Jordan, A., & Newig, J. (2017). Experiments in climate governance: A systematic review of research on energy and built environment transitions. *Journal of Cleaner Production*, *169*, 17–29.

Kronsell, A., & Mukhtar-Landgren, D. (2018). Experimental governance: The role of municipalities in urban living labs. *European Planning Studies*, *26*(5), 988–1007.

Kronsell, A., & Mukhtar-Landgren, D. (2020). Experimental governance of smart mobility: Some normative implications. In A. Paulsson & C. H. Sørensen (Eds.), *Shaping smart mobility futures: Governance and policy instruments in times of sustainability transitions* (pp. 119–135). Bingley: Emerald.

Laakso, S., Berg, A., & Annala, M. (2017). Dynamics of experimental governance: A meta-study of functions and uses of climate governance experiments. *Journal of Cleaner Production*, *169*, 8–16.

Lam, D. P. M., Martín-López, B., Wiek, A., Bennett, E.

M., Frantzeskaki, N., Horcea-Milcu, A. I., & Lang, D. J. (2020). Scaling the impact of sustainability initiatives: A typology of amplification processes. *Urban Transformations*, *2*, 1–24.

Lundquist, L. (1998). *Demokratins väktare: ämbetsmännen och vårt offentliga etos* [The guardians of democracy: The officials and our public ethos]. Lund: Studentlitteratur.

March, J. G., & Olsen, J. P. (1989). *Rediscovering institutions: The organizational basis of politics*. New York, NY: Free Press.

McFarlane, C. (2011). *Learning the city: Knowledge and translocal assemblage*. Oxford: Wiley-Blackwell.

Meadowcroft, J. (2009). What about the politics? Sustainable development, transition management, and long term energy transitions. *Integrating Knowledge and Practice to Advance Human Dignity*, *42*(4), 323–340.

Mey, F., Diesendorf, M., & MacGill, I. (2016). Can local government play a greater role for community renewable energy? A case study from Australia. *Energy Research & Social Science*, *21*, 33–43.

Montin, S., & Granberg, M. (2007). *Moderna kommuner* [Modern municipalities]. Malmö: Liber.

Mukhtar-Landgren, D., & Smith, G. (2019). Perceived action spaces for public actors in the development of mobility as a service. *European Transport Research Review*, *11*(1), 32.

Mukhtar-Landgren, D., Kronsell, A., Voytenko Palgan, Y., & von Wirth, T. (2019). Municipalities as enablers in urban experimentation. *Journal of Environmental Policy & Planning*, *21*(6), 718–733.

Nalbandian, J. (1999). Facilitating community, enabling democracy: New roles for local government managers. *Public Administration Review*, *59*(3), 187–197.

Nyström, A-G., Leminen, S., Westerlund, M., & Kortelainen, M. (2014). Actor roles and role patterns influencing innovation in living labs. *Industrial Marketing Management*, *43*(3), 483–495.

Pierre, J. (2011). *The politics of urban governance*. Basingstoke: Palgrave.

Pierre, J., & Sundström, G. (2009). *Samhällsstyrning i förändring* [Societal governance in change]. Stockholm: Liber.

Raven, R., Sengers, F., Spaeth, P., Xie, L., Cheshmehzangi, A., & de Jong, M. (2019). Urban experimentation and institutional arrangements. *European Planning Studies*, *27*(2), 258–281.

Rutherford, J. (2008). Unbundling Stockholm: The networks, planning and social welfare nexus beyond the unitary city. *Geoforum*, *39*(6), 1871–1883.

Rutherford, J. (2020). *Redeploying urban infrastructure: The politics of urban socio-technical futures*. Cham: Palgrave Macmillan.

Scharpf, F. W. (1999). *Governing in Europe: Effective and democratic?* Oxford: Oxford University Press.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Sengers, F., Wieczorek, A. J., & Raven, R. (2019). Experimenting for sustainability transitions: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 153–164.

Solesvik, M. Z. (2017). The Triple Helix model for regional development and innovation: Context of Nordic countries. *Forum Scientiae Oeconomia*, *5*(4), 5–21.

Torfing, J. (2012). Samarbejdsdrevet innovation i den offentlige sektor: Drivkræfter, barrierer og behovet for innovationsledelse [Collaborative innovation in the public sector: Drivers, barriers and the need for innovation management]. *Scandinavian Journal of Public Administration*, *16*(1), 27–47.

van der Heijden, J. (2015). The role of government in voluntary environmental programmes: A fuzzy set qualitative comparative analysis. *Public Administration*, *93*(3), 576–592.

van der Heijden, J. (2018). City and subnational governance. In A. Jordan, D. Huitema, H. van Asselt, & J. Forster (Eds.), *Governing climate change: Polycentricity in action?* (pp. 81–96). Cambridge: Cambridge University Press.

Vanolo, A. (2017). *City branding: The ghostly politics of representation in globalising cities*. London: Routledge.

Warbroek, W. D. B., & Hoppe, T. (2017). Modes of governing and policy of local and regional governments supporting local low-carbon energy initiatives: Exploring the cases of the Dutch regions of Overijssel and Fryslân. *Sustainability*, *9*(1), 1–36.

Wolfram, M., & Frantzeskaki, N. (2016). Cities and systemic change for sustainability: Prevailing epistemologies and an emerging research agenda. *Sustainability*, *8*(2), 144.

Wolfram, M., van der Heijden, J., Juhola, S., & Patterson, J. (2019). Learning in urban climate governance: Concepts, key issues and challenges. *Journal of Environmental Policy & Planning*, *21*(1), 1–15.

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Article

Urban Planning by Experiment at Precinct Scale: Embracing Complexity, Ambiguity, and Multiplicity

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Abstract
Urban living labs have emerged as spatially embedded arenas for governing urban transformation, where heterogenous actor configurations experiment with new practices, institutions, and infrastructures. This article observes a nascent shift towards experimentation at the precinct scale and responds to a need to further investigate relevant processes in urban experimentation at this scale, and identifies particular challenges for urban planning. We tentatively conceptualise precincts as spatially bounded urban environments loosely delineated by a particular combination of social or economic activity. Our methodology involves an interpretive systematic literature review of urban experimentation and urban living labs at precinct scale, along with an empirical illustration of the Net Zero Initiative at Monash University in Melbourne, Australia, which is operationalising its main campus into a living lab focussed on precinct-scale decarbonisation. We identify four processual categories relevant to precinct-scale experimentation: embedding, framing, governing, and learning. We use the empirical illustration to discuss the relevance of these processes, refine findings from the literature review and conclude with a discussion on the implications of our article for future scholarship on urban planning by experiment at precinct scale.

Keywords
experimentation; governance; net zero; precinct; urban living labs; urban planning

Issue
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1. Introduction

Reports of cities aiming to reach net zero targets by 2050 or before are increasingly heard in global climate discourse. According to the United Nations Framework Convention on Climate Change's (2020) Race to Zero, in 2020 more than 450 cities have committed to net zero targets. Arguably, such ambitions will require major transformations in urban infrastructures, institutions, and behaviours that move well beyond business-as-usual. Planning tools such as scenarios, land use controls, regulatory standards, and design overlays are very useful but less effective in situations of high complexity, deep uncertainty, and ambiguity about the future, as they rely on assumptions and conditions to be reliably known and predictable. Radical sustainability ambitions such as net zero cities have never been realised, which suggest the need for different approaches that are more explorative, adaptive, learning-based, and evolutionary in nature. Experimentation is a key approach that cities globally have embraced to navigate such complex and ambiguous contexts, yet it remains often at the fringes of mainstream urban planning scholarship and practice (Honey-Rosés, 2019; Nyseth, Ringholm, & Agger, 2019). The net result is that mainstream urban planning still largely operates within a 'predict and provide' paradigm that is incapable of overcoming deep unsustainability.

Experimentation has been a focal point of transition studies scholarship in relation to grassroots

innovations (Seyfang & Smith, 2007), reflexive governance (Kemp & Loorbach, 2006), path-breaking innovation (Smith & Raven, 2012), and sustainable development (van den Bosch, 2010). City governments and other urban actors have increasingly started to integrate experimental approaches such as 'urban experiments' or 'urban living labs' in their planning portfolios. In academic writing, living labs have been explored as multi-actor arenas for experimentation that utilise processes of social learning and participant co-creation for socio-technical innovation at the local scale (Liedtke, Welfens, Rohn, & Nordmann, 2012; Puerari et al., 2018). Urban living labs have been conceptualised as spatially embedded arenas for experimentation where new practices and infrastructures are tested and operationalised in diverse forms ranging from emerging, grassroots initiatives to large-scale, planned, and corporate-led projects across multiple cities (Bulkeley et al., 2016; Evans, Karvonen, & Raven, 2016; Voytenko, McCormick, Evans, & Schliwa, 2016). Some contributions use 'transition management' as a process-oriented approach to mobilise and empower city stakeholders in reflexive urban governance experiments (Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013). Others argue more generally that urban living labs enable participants to design, test, and learn in real-world contexts (McLean, Bulkeley, & Crang, 2016; von Wirth, Fuenfschilling, Frantzeskaki, & Coenen, 2019). Scholarly work has also started to report and reflect on the challenges and limitations of such approaches from various perspectives (Evans & Karvonen, 2014).

Ambitions for urban living labs are beginning to appear at a precinct scale (or related scales such as district or neighbourhood; Marvin, Bulkeley, Mai, McCormick, & Palgan, 2018). We tentatively conceptualise precincts as spatially bounded urban environments loosely delineated by a particular (combination of) social or economic activity, such as a university precinct, a retail precinct, a technology precinct, or a residential precinct, but also mixed precincts that combine business, residential, entertainment, and dining functions, for instance. From an urban planning perspective, the precinct scale represents a functional scale at which the planning and construction of infrastructure is routinely organised. For instance, a residential precinct requires different kinds of transport, energy, and building infrastructures than a technology precinct.

In the context of net zero transitions, we observe nascent interest from urban actors to move beyond the scale of individual buildings or sectorally-bounded infrastructures to articulate precinct-scale ambitions for net zero futures.

Our proposition here is that experimentation at the precinct scale indeed offers an appropriate scale for urban planning experimentation, but this requires key processes to operate beyond one-off initiatives and projects through 'aggregation activities' that build over time (Geels & Raven, 2006). In a similar vein, emerging debates on 'portfolios of experiments' (Torrens & von Wirth, 2020) point towards the need to explore the enabling conditions and processes across multiple experiments and domains and across time-frames that go beyond those of single, 'projectified' experiments. While relatively much is known about the conditions and processes within experimentation, taking a longer-term, multi-initiative, and multi-domain perspective increases complexities and ambiguities in the governance of experimentation. As such, we believe that urban planning by experiment at the precinct scale has the potential to deliver integrative urban transformation, yet acknowledge that the processes and challenges related to precinct scale urban experimentation remain under-researched and under-articulated.

The aim of this article is to identify what are likely to be relevant conditions and processes in urban experimentation at the precinct scale, identify the particular challenges at this scale for urban planning, as well as suggest important knowledge gaps that can inform a future planning research and practice agenda. This article responds to the following research question: What are the relevant processes, challenges, and future research implications for precinct-scale urban experimentation?

This article is structured as follows. In Section 2 we describe our methodology and provide an overview of the empirical illustration of the Net Zero Initiative (NZI), at Monash University in Melbourne, Australia, which is decarbonising its domestic campuses and operationalising its main campus into a precinct-scale living lab. In Section 3 we present the results of our literature review of urban living labs through a precinct-scale lens by analysing key processes of experimentation: embedding, framing, governing, and learning. We use the empirical illustration to discuss the relevance and refine findings from the literature review. In Section 4 we discuss the implications of our article for future scholarship on urban planning by experiment at precinct scale and present a short conclusion.

2. Methodology

We explored urban experimentation and urban living labs at precinct scale following an interpretive systematic literature review. The academic literature was extracted following a thorough, scientifically robust, and transparent methodology. A qualitative-style, interpretative approach was utilised due to the broad applicability of the subject area, with iterative refinement needed, as interrelated concepts were uncovered in the literature. Our analysis suggests the types of challenges that may occur at this scale for urban planning by experiment. Our analytical scheme is tentative and intended to generate future propositions and empirical verification, as the practice and research on the deliberate planning, design, and enactment of precinct-scale experimentation is still early-stage. Hence, we acknowledge that the results of our literature review are predominantly

based on research on urban experimentation that did not explicitly take a precinct-scale perspective. Our systematic review is therefore developed with a perspective to not only generate a state-of-the-art understanding of potentially relevant processes for precinct-scale experimentation, but also inform a future research and practice agenda deliberately concerned with precinct-scale experimentation. We return to this in the discussion section.

First, we performed a search for articles in Scopus, one of the major bibliometric abstract and citation databases of peer-reviewed academic publications. We selected Scopus due to its larger journal coverage despite its bias towards Natural Sciences over Social Sciences (Mongeon & Paul-Hus, 2016). A language specification was applied, with all articles being included in the review process being written in English. No restriction was applied to date of publication. Key words were selected to capture various permutations of living lab experimentation at the appropriate scale: ("living lab" OR "living laboratory" OR experiment OR experimentation) AND (transition OR transformation OR planning) AND (socio-technical OR sustainability) AND (urban OR precinct OR district OR neighbourhood OR neighborhood). The search terms were chosen based on our framing of the study on urban planning by experiment at precinct scale. We limited our search string primarily to cover the sustainability transitions and urban studies literatures where research on urban experimentation has been most thriving. The key words needed to appear in titles or keywords or abstracts. This search string yielded 325 articles.

Next, we extracted basic data from the Scopus search including title, author/s, abstract, year published, journal, and tags. This data was exported as a RIS file and imported into Covidence, the systematic review management platform. The abstracts were then screened for relevance in Covidence based on explicit reference to real-world experimentation or urban living labs at the precinct, district, test-bed, or neighbourhood scale. We excluded articles that made no reference to experimentation or living labs, or did not appear to have any explicit implications for urban planning given that our study is explicitly focused on urban planning by experiment. After abstract screening, we were left with 90 articles on the subject of urban living labs that matched our inclusion criteria. Using our own assessment, we identified additional prominent articles about experimentation and urban living labs, which were not found by the protocol-driven search of the Scopus database. All articles were read in full and we used a manual concept-driven coding approach to extract data that appeared in the included articles. 19 articles did not contain relevant or significant findings or meet the inclusion criteria on full reading and these do not appear in the results section. We coded for themes related to processes of experimentation at precinct scale and urban experimentation more broadly. During coding, and based on our own understanding of intellectual roots and developments in this literature, we identified prominent themes to describe key processes of experimentation.

Through an iterative process of reading, preliminary categorisation, testing tentative categories with our own observations in our empirical illustration, and further analytical refinements, we attempted to achieve methodological rigour and robustness as best as possible, taking into consideration the emergent and explorative nature of the research question and empirical phenomenon (Grodal, Anteby, & Holm, 2020). Through our literature review of urban living labs in geographically distinct areas like 'precincts' (Wiktorowicz et al., 2018), 'districts' (Martin et al., 2019), 'test-beds' (Levenda, 2018), or 'neighbourhoods' (Audet, Segers, & Manon, 2019), we identified four processual categories relevant to precinct-scale experimentation: *embedding*, *framing*, *governing*, *and learning* (see for similar approaches to categorisation, for instance, Bulkeley et al., 2016; Geels & Raven, 2006; Kemp, Schot, & Hoogma, 1998; Kiss et al., 2020). We specifically searched for data related to challenges for experimentation at precinct scale. We use these conceptual categories to explore how experimentation unfolds at the precinct scale.

In addition to the literature review we have used Monash University's NZI as an empirical illustration to refine our conceptual and literature-driven analytical procedures. For the illustration, we relied on selective policy documents and grey literature, and ongoing involvement in operationalising the urban living lab in question. This is not a conventional case study as its purpose is to illustrate some of the conceptual findings from the review, but not to test them. The illustration is not based on systematically collecting and reviewing all relevant materials, but on a selective engagement and participation with the initiative. Hence, this article's results are, from a methodological perspective, only resting on the interpretive systematic literature review. We introduce the empirical illustration below.

2.1. NZI Empirical Illustration

Monash University is the largest in Australia and a significant consumer of energy, with more than 70,000 student enrolments and over 150 buildings spread across its domestic campuses. The NZI is a $135M program that is transforming Monash University's four Australian campuses to become net zero in terms of carbon emissions by 2030, in line with the Paris Agreement targets. Monash University is using its campuses as a living lab with a primary focus on its main campus in Clayton (Metropolitan Melbourne), to research, develop, and implement the NZI through a range of socio-technical innovations, with a view of both learning-how-to-do organisational decarbonisation and with an ambition to shape best practice in the transition towards net zero emissions locally and internationally.

The NZI program includes a range of measures including energy efficiency upgrades such as LEDs,

high-performing building facades, and more efficient appliances. Campus electrification is occurring through replacement of gas boilers with electric heat pumps and building thermal precincts to more efficiently provide heating and cooling. Thousands of solar panels have been installed and a renewable energy power purchase agreement has been signed to buy rights to electricity and large-scale renewable energy certificates generated by a local wind farm (Monash University, 2018). An on-site 100% renewable electricity microgrid, including 1 MWh of battery storage, has been commissioned as a real-world demonstration of a transactive energy market solution (Khorasany, Azuatalam, Glasgow, Liebman, & Razzaghi, 2020).

The NZI is envisioned to be replicated in other universities and organisations within and beyond the local precinct level. The NZI provides the opportunity to research how new technologies, governance arrangements, policies, business models, and behavioural interventions can be translated and scaled to accelerate urban decarbonisation efforts through socio-technical innovations deployed on site. We use the tentative results from the literature review to reflect on, and explore their relevance for understanding how, key processes of experimentation are being carried out as the NZI moves from its foundational activities focussed on capital investment in renewable infrastructure to broaden its focus and incorporate research activities through the establishment of a precinct-scale living lab situated in the broader 'Monash Technology Precinct' (MTP). In the next section we refer to the NZI in four text boxes through our lens of precinct-scale processes.

3. Results: Urban Living Labs at Precinct Scale—An Overview

Urban living labs have emerged as sites of experimental governance across a range of themes including the built environment, smart technologies, energy, and transportation systems. There is no agreed definition of experimentation in the literature, reflecting the diversity of conceptual frameworks and epistemological traditions. Transition scholars have conceptualised certain geographically bounded urban living labs as 'enclaves' to describe how experimentation takes place in niches that take advantage of spatial segregation to foster innovation under protected conditions (McCormick & Hartmann, 2017). Design studies scholars frame experimentation through its capacity to democratise innovation using participatory approaches that foreground open-ended processes that invite wide collaboration with a multiplicity of stakeholders (Hillgren, Seravalli, & Emilson, 2011). For some in city planning, 'trial-and-error urbanism' can lead to better planning outcomes (Dotson, 2016), while others acknowledge the creative logic of experimentation is at odds with the ethos of the public planning profession which prioritises the need to maintain "order, control and stability in urban development" (Berglund-Snodgrass & Mukhtar-Landgren, 2020, p. 103).

3.1. Embedding

Urban living labs are fundamentally characterised as embedded sites for exploring complex urban challenges and possible solutions where discrete sets of actors are empowered to address specific challenges at a more "manageable scale" (Voytenko et al., 2016, p. 47). The process of *embedding* is key to understanding experimentation in urban living labs and other transition arenas that are typically situated within a geographical area and tied to a particular local context that provides for a certain symbolic meaning or "sense of place" (van Steenbergen & Frantzeskaki, 2018). According to von Wirth et al. (2019, p. 232), embedding involves the adoption of the "design, approach or outcomes" of experimentation into local structures or communities of practice. We define the process of embedding as anchoring urban experimentation in formal and informal institutions within a particular locale, with a view to potentially transform them to achieve intended sustainability outcomes (see Box 1 for empirical illustration). Institutions can refer to both place-specific (e.g., precinct development schemes) as well as sectoral institutions (such as energy or transport policies).

Examples of embedding from the literature include the Resilience Lab in Carnisse (Rotterdam), a four-year place-making experiment that was embedded in discourses of 'urban deprived neighbourhoods,' through which new place-meanings were developed related to community empowerment via a deep understanding of neighbourhood dynamics to build trust-based relationships (Frantzeskaki, van Steenbergen, & Stedman, 2018). Manor House PACT, a three-year community-led project in London was embedded within a 'protected space' through partner organisation support which enabled the community to address local urban sustainability challenges through connections to food, green spaces, health, and employment within the context of seeking to build a 'green economy' (Astbury & Bulkeley, 2018). Living Lab, The Neighborhood (Malmö), a transdisciplinary research lab initiated by researchers to empower migrant communities, was embedded in institutional contexts of fostering design for social innovation and the City of Malmö's ambition to become a 'knowledge city' and 'regional growth engine' (Cho, 2018). Challenges that we observe in the literature regarding embedding relate to the often short-term nature of urban living labs, enabled through project-based funding, which sits in contrast with the time needed for breaking into structural conditions underpinning conventional approaches to urban planning (Berglund-Snodgrass & Mukhtar-Landgren, 2020).

The literature on urban experimentation reveals that embedding takes place through temporary alignment with existing organisational settings and structures (Raven et al., 2019). Embedding can be strengthened

Box 1. Embedding the NZI.

The NZI is situated in Clayton, 20km south-east of Melbourne's central business district (CBD) and embedded within a number of education, health, research, and innovation agglomerations at a state and local level. The region surrounding Monash University is referred to as the *Monash National Employment and Innovation Cluster* (MNEIC), in the suburbs of Clayton and Huntingdale which supports approximately 75,000 jobs and contributes over $9.4 billion to the Victorian economy each year (Victorian Planning Authority, 2017). At a local level, the MTP forms the core of the MNEIC cluster and has been identified as a Specialised Activity Centre and designated as a Technology Precinct in Metropolitan Melbourne (City of Monash, 2008). The MTP encompasses major institutions like Monash University, Monash Medical Centre and Children's Hospital, the future Victorian Heart Hospital, CSIRO, the Australian Synchrotron, and is home to various global business offices. The NZI is thus embedded within organisational visions and strategies of the university as well as in the MNEIC cluster planning framework as Victoria's leading non-CBD employment hub, and in the MTP under the state-based Plan Melbourne and Monash Planning Scheme, which zones land use under the MTP (Department of Environment, Land, Water and Planning, 2020).

We observe processes of anchoring in the NZI empirical illustration through interactions between actors that include Monash University, the Victorian Government, local councils, other research institutions, and major businesses that form part of the MTP. We interpret the NZI empirical illustration as a 'hybrid forum' or place where a variety of organisational actors can collaborate and undertake translation activities "that contribute to the durability of anchoring" the precinct living lab into existing and newly established or transformed institutional arrangements (Elzen et al., 2012, p. 15; Raven et al., 2019). By operationalising its main campus as a living lab within the MTP, the university is using the NZI to create an environment that enables "industry partnerships, research collaborations, and the development of technology prototypes" (Monash University, 2018). This focus on industry collaboration and technology development creates an opportunity for the NZI living lab to anchor net zero transformation within broader institutional settings and planning schemes related to employment, economic growth, innovation, place-making, and social development.

however through long-term processes of 'anchoring' when policy entrepreneurs and other institutional change agents create new links and rules between novel socio-technical innovations and existing institutions, in boundary-crossing forums between emerging niche contexts and an incumbent regime context (Elzen, van Mierlo, & Leeuwis, 2012; Mintrom & Luetjens, 2017; Smith & Raven, 2012).

3.2. Framing

From transition studies we know that *framing* is an important process of experimentation that uses problem structuring, visioning, articulating expectations, storytelling, and narrating as strategic devices to orient and steer actors towards a desirable change trajectory (Loorbach, 2010; Nevens et al., 2013). According to transition scholars, narratives of change can have material consequences by working to reframe the action space of urban transformation and create opportunities to challenge dominant framings and institutions (Longhurst et al., 2016). Narratives of place can mobilise action and engender new opportunity contexts, social relations, and webs of meanings between actors undertaking local experiments (Frantzeskaki et al., 2018). We define framing as processes that situate the precinct-scale experiment in particular ways, by using stories and visions to foreground certain problems and propose specific actors, solutions, logics, or governance approaches in an attempt to influence the scope or direction of transformative pathways (see Box 2 for empirical illustration).

From the literature we observe that visioning was used in spatial planning projects like the urban living lab in the university town of Stellenbosch in South Africa. Stakeholders from the university and municipality including researchers, citizens, students, and professionals were enrolled in a participatory process culminating in the development of a draft spatial development framework around the vision of Stellenbosch as a "compact, inclusive and sustainable town" (Davies & Swilling, 2018, p. 101). To contextualise transition experiments aimed at fighting climate change at the local level, a not-for-profit in Montréal worked with citizens to co-create desirable visions of the future to support community greening and the revitalisation of laneways within a neighbourhood setting (Audet et al., 2019). Challenges that we observe in the literature regarding framing include that top-down processes can bracket out collective visioning and democratic engagement as Levenda (2018) observes in relation to the Pecan Street smart grid test-bed in Austin, which worked with early adopters to implement a 'technological fix' that reduced the agency of participants to consumers and foreclosed possibilities for energy system change.

3.3. Governing

Experimentation is constituted by enabling transformative modes of urban *governing*, which refers to collaborative partnerships, mobilising resources, and orchestrating new institutional arrangements between diverse actors in the municipal, private sector, NGO,

Box 2. Framing the NZI.

We observe three distinct visions related to framing the NZI: 1) net zero leadership; 2) innovation through partnerships; and 3) economic growth and job creation. Monash University was the first in Australia to commit to an energy reduction target and put forward an ambitious vision of "leading the way to a 100% renewable energy future" (Monash University, 2018). Monash is one of two Victorian universities in the Group of Eight (Go8), an elite network of the highest ranked research universities in Australia. As Australia's largest university and Go8 member, Monash has pursued a frontrunner position by showcasing its sustainability and market leadership in driving net zero transformation through commitments to decarbonising its four Australian campuses (ClimateWorks Australia, 2017). The 'net zero leadership' framing is significant because it emulates trailblazers like Stanford University (2019) which has transformed its campus into a living lab for sustainability and places Monash ahead of other Go8 competitor universities with similar plans to achieve carbon or energy neutrality. This leadership positioning also aligns with science-based targets and global policy commitments agreed to in the Paris Agreement to pursue a path towards reaching net zero CO_2 emissions by the middle of this century to limit warming to 1.5°C (Intergovernmental Panel on Climate Change, 2018).

Monash University has developed a related "innovation through partnerships" vision for the MTP which capitalises on its sustainability credentials but foregrounds "connection," "deep partnerships" and "breaking down boundaries" as key goals (Sloan, 2018). This framing speaks to a desire to strengthen collaboration with major health, research, and innovation institutions in the precinct. The precinct itself is situated within the broader National Employment and Innovation Cluster, which planners have attempted to position as Melbourne's second CBD. The Victorian Planning Authority, a State Government statutory authority that reports to the Minister for Planning, has developed its own distinct vision for the MNEIC centred on economic growth and job creation through "place-making, transformative transport projects and urban renewal investment" to establish the cluster as a destination with "the highest job density outside of a capital city CBD in Australia" (Victorian Planning Authority, 2017, p. 4). This economic growth and job creation vision is a direct response to Melbourne's growing population which is projected to reach 10 million people by 2050. These three distinct but related framings point towards a challenge in balancing the desire for a clear and shared framing about the future to guide planning, directionality, investments, and action, versus keeping multiple pathways open in light of navigating complex governance realities and future uncertainties.

and community sectors (Bulkeley & Castán Broto, 2013; see Box 3 for empirical illustration). As mentioned, living labs are context dependent and embedded within specific institutional configurations, actor networks, and local governance structures (Raven et al., 2019). While experimentation offers potential for more participatory approaches to governing, it also runs the risk of maintaining the status quo depending on the purpose, which actors get to play a role, and whether intended goals are achieved (Hildén, Jordan, & Huitema, 2017).

From the literature, we observe governing processes at play in the U-lab Bologna which saw the University and Municipality work together with students, the local community, and disadvantaged people

Box 3. Governing the NZI.

Governing of the NZI includes the development of a strategic roadmap as part of its 'Net Zero Emissions Strategy,' informed by initial analysis of net zero emissions pathways and long-term projection of baseline emissions. The roadmap recommends operational actions to achieve the net zero target including passive house standards for new buildings, and procurement criteria to encourage emerging technology pilots (ClimateWorks Australia, 2017). We observe characteristics of polycentric governance in the establishment of the NZI living lab whose steering group is comprised of academic and professional staff across research institutes, faculties, facilities management, and enterprise functions of the university. Polycentric governance can refer to decision-making across various levels whether spatial, modal, or domains of action (Jordan et al., 2015). Governance of the NZI living lab is coordinated by an interdisciplinary team of university staff at different levels across research, education, and operations. One challenge we observe is how to involve other actors in governing experimentation beyond the living lab at the broader scale of the MTP. The current governance of the NZI as a living lab for net zero precinct experimentation remains primarily an effort of a number of committed individuals within the university. We observe a need for intermediary actors with the potential to enable a broader shift towards a more distributed, long-term, and portfolio-focused approach to experimentation within the precinct. This could be pursued by establishing new institutional arrangements, and mobilising existing university-industry-policy relations, such as working collaboratively with the Victorian Planning Authority and City of Monash to harmonise net zero targets across the entire precinct via the Monash Planning Scheme.

in co-design experiments for urban management in the care of public spaces. These actors were also enrolled in co-planning activities by helping to define the action plan for the broader district agenda with a view to ensuring greater accessibility of cultural heritage and public spaces (Gianfrate, Djalali, Turillazzi, Boulanger, & Massari, 2020). Intermediaries can also play a significant role in urban experimentation and refer to NGOs, government or semi-government agencies that connect actors at different scales. Gustafsson and Mignon (2020) have shown how municipalities in Sweden used intermediation to translate international or national climate visions into local action through performing local experiments, task delegation, and creating coalitions in the context of local energy infrastructure.

Challenges that we observe in the literature regarding governing include the reproduction of existing structural inequalities through exclusion of community actors in experimentation whose lives are affected by the outcomes of smart city infrastructure upgrades (Evans & Karvonen, 2014). Similarly, direct community engagement is sometimes lacking or pushed to the margins of smart-sustainable urban development where the impetus for change comes from municipal actors rather than pressure from civil society (Martin et al., 2019). State-led urban living labs have used top-down governance processes to undertake 'strategic experimentation' in line with national priorities. Smart Nansha, a smart city trial located in the Guangzhou Municipality of southern China, centred its governance around an "Industrial-Academic-Research Alliance" with regulators in the municipal or provisional government holding administrative power over membership and funding (Mai, 2018).

3.4. Learning

Learning is another key process of experimentation that actors in urban living labs and other arenas rely on to reveal a "variety of options" and to reframe "problems and solutions" via interaction between stakeholders (Loorbach, 2010, p. 168). Urban living labs are social learning environments that require ongoing monitoring to understand the impacts of experimentation and evaluation of the results of activities in order to make adjustments based on iterative feedback (see Box 4 for empirical illustration). Social learning strives for change beyond the individual via interactions between actors through "communities of practice" (Reed et al., 2010, p. 4). As boundary objects, urban living labs can also facilitate reflexive learning by drawing on "constructive ambiguity" and "interpretive flexibility" to allow for openness to failure and knowledge co-creation (von Wirth, Frantzeskaki, & Loorbach, 2020).

From the literature, we observe how the Livewell Yarra living lab, a low-carbon community trial in Melbourne, used social learning to empower residents to take actions to reduce carbon emissions at a personal, household, and community level through small group discussion, peer-support, and goal setting (Sharp & Salter, 2017). Concept House Village Lab, a test-bed for sustainable building technologies in Rotterdam, reveals how situated learning can emerge through the participation of students and researchers in real-world contexts and how experimentation can become institutionalised by integrating lab-based courses into university curricula (von Wirth et al., 2019). Double-loop learning played a significant role in the eco-district of Western Harbour in Malmö by enabling planning departments to become "learning organisations" by acknowledging results, learning from mistakes, and reassessing strategies to adjust the course of action (Fitzgerald & Lenhart, 2016, p. 376).

Challenges that we observe in the literature relate to how learning and translation in urban living labs can be more about contextualising transitions, such as the case with the Resilience Lab Carnisse, where the impact of experimentation related to "learning on what needs to change, how it can be changed and what one's own role is in this change process," rather than regime transformation (Frantzeskaki et al., 2018, p. 1057). Bulkeley

Box 4. Learning the NZI.

The NZI living lab is using learning to both undertake and evaluate experiments that will take place through various forms, including material interventions (e.g., on-site demonstrations), social or economic interventions (e.g., introducing probes and prototypes), or virtual interventions (e.g., through digital interactive design). The experiments will be focused on the three areas that together make up the majority of carbon emissions in Australian cities: energy, mobility, and buildings. Monitoring is critical for living labs and supports transition management processes by creating qualitative and quantitative measurements, communicating what has been learned through this to partners, stakeholders, and other participants, and enabling researchers to adjust the process as needed (Palgan, McCormick, & Evans, 2018). In terms of the NZI living lab, the objects for monitoring include: 1) the precinct itself—metrics of decarbonisation, physical changes in the precinct, macro developments, and niche changes; 2) the actors involved in the living lab—their experiences and activities; 3) the living lab experiments—for new knowledge and insights about what works, when, and why (not); and 4) the overall transition process—its outputs, outcomes, and impacts, rate of progress, and barriers (Luederitz et al., 2017). The NZI must contend with coordination and facilitation challenges to enable learning and translation across multiple sectors (energy, mobility, and built environment) and long-term time-frames given the initiative's goal of university-wide decarbonisation by 2030.

et al. (2019, p. 334) make a similar point in relation to constrained experimentation where the focus tends to be on social or material reconfiguration within a building, district, or project with less emphasis on "translating the societal learning from such programmes into wider sustainability transitions."

4. Discussion: Challenges and Implications for Future Research

In this section we discuss key challenges and related implications of our analysis for future research on urban planning by experiment at precinct scale. A first observation we make is that following from our analysis, there is generally a need to better understand conceptually and practically how urban planning by experiment at the precinct scale is different from existing approaches to urban experimentation. In this article, we have reviewed the literature on urban experimentation to understand the state-of-the-art, but acknowledged that this literature is likely to be at the beginning of what experimentation at the precinct scale is. Hence, we deliberately started our investigation by positioning our framework of embedding, framing, governing, and learning in and through experimentation at precinct scale as tentative. To further articulate our framework, we draw inspiration from debates in the literature regarding project-based experimentation versus precinct-scale experimentation that aggregates across multiple projects, domains, and longer time-frames (Geels & Raven, 2006; Torrens & von Wirth, 2020). Table 1 provides a proposition of what sets precinct-scale experimentation aside from the current, often one-off-project-approach to urban experimentation. The main proposition that we propose is that urban planning by experiment at the precinct scale needs to consider experimentation as an ongoing effort across multiple projects, domains, and longer time-frames, implying that forms of embedding, framing,

Table 1. Processes of 'project-based' vs 'precinct-scale' urban planning by experiment.

Process category	Project-based urban planning by experiment	Precinct-scale urban planning by experiment
Embedding	Refers to the processes and conditions that enable a project to become spatially and institutionally anchored in a particular place and organisational setting, e.g., by aligning the experiment temporarily with existing structures and procedures.	Refers to a portfolio approach to experimentation within a precinct, i.e., to the processes and conditions that embed continuous experimentation over longer time-frames in particularly territories and organisational settings, e.g., through establishing a dedicated place-based, intermediating actor/s that coordinates experimentation across single projects, domains, and time-frames.
Framing	Entails the articulation of narratives, visions, expectations, or discourses that enables the formulation and legitimation of a specific solution. Often narrowly referring to a particular societal challenge but not necessarily considering the experiment in relation to other challenges and solutions.	Entails a multi-domain, multi-challenge, and multi-solution articulation of narratives, visions, expectations, or discourses which considers the ambiguities, uncertainties, multiple pathways, futures, and problem definitions that are part and parcel of the precinct experience.
Governing	Relates to bringing together a limited number of heterogenous actors in a project, providing a budget, developing a project plan, and executing the plan with fairly clear role division of actors involved.	Strategically focussed, yet complex and ambiguous, requiring navigation of complex social and organisational settings, with fluid boundaries of who is involved (regularly changing actor constellations), and acknowledging the limited controllability of precinct planning processes (distributed and polycentric governance), drawing on strategic budgets as well as opportunistic resource opportunities as they emerge through actors coming in and out of the processes.
Learning	Multi-dimensional and reflexive, but necessarily limited to specific issues, predefined through project plans, and limited budget availability. Learning is social but focussed on those involved in the project.	Strategically focussed, yet distributed and organic, requiring substantial coordination and facilitation to enable learning across multiple domains, initiatives, and long-term time-frames. Learning is inward and outward focussed, with a view to enable sharing lessons within the precinct, as well as translating, networking, and connecting them with initiatives and scales elsewhere.

governing, and learning will be more emergent, distributed, dynamic, and ambiguous in nature. Future empirical and conceptual work could consider these features in more detail.

Second, we observe that experimentation through urban living labs still often takes place at the fringe of mainstream urban planning practices, can be short-term in nature (Sharp & Salter, 2017), funded through temporary budgets (Greer, von Wirth, & Loorbach, 2020), and driven by progressive urban actors in otherwise conventional planning regimes (Karvonen, Evans, & van Heur, 2014). With such incentives and in such contexts, urban living labs are sometimes more interested in delivering short-term results and reconfiguring socio-material practices rather than shifting regimes (Bulkeley et al., 2019). Experimentation is indeed not a silver bullet to replace all current practices, but what this does suggest is that it requires a much better understanding of how experimentation relates to other, more mainstream techniques in urban planning, such as best-practice construction, urban modelling, or cost-benefit and risk analysis. We argue therefore that urban planning regimes themselves must transform in order to empower the practice of precinct-scale experimentation. For instance, if the notion of complete decarbonisation, as implied in the concept of 'net zero' is to become a reality, net zero thinking needs to become embedded in each and every aspect of urban planning, whether that is in the institutional frameworks driving urban planning, the risk investment tools that financial institutions use for financing urban infrastructures, or the strategic orientations of major providers of urban technologies such as buildings, roads, or energy systems. Despite that precincts are a common scale in urban planning practice, their net zero transformation depends on changes in the broader governance, decision-making, and power hierarchies across scales, public policy portfolios, and industrial sectors. A key question for a program of work on precinct-scale transitions is under which (political, social, economic, or otherwise) conditions precinct-scale change advocates are actually able to have significant impact (Doren, Runhaar, Raven, Giezen, & Driessen, 2020). Cycling in Amsterdam, which was in decline in the 1970s, provides an example of how niche actors used urban experimentation through illegal bike lanes and pressure for greater community consultation to normalise mass cycling and radically transform the regulatory regime and physical space in that city (Savini & Bertolini, 2019).

Third, the ability to integrate reflexivity, learning, and failure in urban planning experimentation remains a challenge, but is critical in processes of transformative innovation like the shift towards net zero emission cities (Turnheim & Sovacool, 2020). City labs, for instance, occupy a boundary position that enable diverse stakeholders to trial urban planning by experiment with highly uncertain outcomes where: "There is potential for failure, but on the other hand, there is the potential to discover something highly innovative" (Scholl & Kemp, 2016, p. 95). Nevertheless, political acceptance of failure remains difficult, and this might be even more challenging at precinct scale, as precincts might be perceived as 'too big to fail,' hence limiting the potential of learning and transformation. We also note that failure is not a black-and-white outcome of urban experimentation, but subject to interpretative flexibility (Bijker, 1987). While low-carbon city experiments might eventually not live up to their stated ambitions, unfulfilled promises (also known as failures) can yield important lessons to help drive future planning improvements, as a recent analysis of Masdar City makes clear (Griffiths & Sovacool, 2020). A future research agenda could focus on understanding and unpacking relationships between experimentation, learning from failure, and political liability in a way that enables transformation rather than stagnation.

Fourth, we observe that community engagement is another important aspect of governing precinct-scale experimentation and can support inclusion through diverse participation (Wiktorowicz et al., 2018). Maintaining a balance between top-down (Mai, 2018) and bottom-up (Gianfrate et al., 2020) participation remains difficult but important for enabling transparency, inclusiveness, and direct communication (den Hartog et al., 2018). Community engagement is often undertaken in instrumental ways in urban planning, but the creation of meaningful spaces for deliberation and learning about needs, desires, limitations, inequalities, etc. emerging from experimentation are normatively important, too. Recent work on green infrastructure projects in Europe suggests that citizen participation can shape shared commitment in early stages but that power imbalances between local authorities and community actors remains an ongoing challenge (Willems, Molenveld, Voorberg, & Brinkman, 2020). Design-led interventions using participatory methods has the potential to democratise experimentation in urban planning yet evidence of its capacity to shape decision-making remains ambivalent (Nyseth et al., 2019). Future research could investigate how to further enrol community engagement in urban planning by experiment to democratise precinct-scale governance and help navigate the complex social realities at work at this scale. We specifically point towards the potential of exploring new cross-overs between urban experimentation and disciplines such as design anthropology that are concerned with understanding and creating tools for "how processes of renewal and change are lived, experienced and represented" (Pink, 2012, p. 2).

Finally, the multiplicity of frames, actor networks, and institutions at the level of a precinct makes urban experimentation challenging. The NZI empirical illustration reveals the complexity of embedding and framing within a socio-spatial context constituted by a university campus, technology precinct, and innovation cluster that sit within a broader planning scheme. Appreciating the multiplicity of urban infrastructures, schemes, framings, initiatives, solutions, and future visions at precinct scale

can shed light on whether experimental processes and governance arrangements are fragmented and mutually hostile (competing), parallel and loosely-coupled (co-existing), or symbiotic and mutually-reinforcing (complementary; Hodson, Geels, & McMeekin, 2017). Even within apparent singular socio-technical fields such as 'net zero' there is a high degree of diversity, uncertainty, and ambiguity in appraising what 'good looks like' in the future of the precinct. As warned elsewhere, caution must be taken to assume upfront objective status for the sustainability of particular experiments or solutions (Raven et al., 2017). There is a need for more research into how such necessary open-ended processes embracing multiplicity align with and challenge conventional planning processes organised around prediction, stability, and control.

5. Conclusion

This article identified four processual categories relevant to precinct-scale experimentation: embedding, framing, governing, and learning. We developed our discussion of results through a systematic literature review and an empirical illustration of the NZI, a living lab based at a university campus that is part of a broader technology precinct. We suggest a number of fruitful areas for future research including portfolio focussed approaches to urban planning by experiment, shifting of urban planning regimes, constraints on reflexive learning and failure, opportunities for greater community engagement, and embracing multiplicity in precinct-scale experimentation. We hope that this article contributes towards future scholarship on processes and challenges of urban planning by experiment and the role of precinct-scale experimentation within the broader portfolio of urban planning practices.

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Conflict of Interests

The authors declare no conflict of interests.

References

Astbury, J., & Bulkeley, H. (2018). Bringing urban living labs to communities: Enabling processes of transformation. In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 106–125). London and New York, NY: Routledge.

Audet, R., Segers, I., & Manon, M. (2019). Experimenting the sustainability transition in Montreal laneways The Nos milieux de vie! Case Study. *Canadian Journal of Urban Research*, *28*(2), 46–57.

Berglund-Snodgrass, L., & Mukhtar-Landgren, D. (2020). Conceptualizing testbed planning: Urban planning in the intersection between experimental and public sector logics. *Urban Planning*, *5*(1), 96–106.

Bijker, W. E. (1987). The social construction of Bakelite: Toward a theory of invention. In W. E. Bijker, T. P. Hughes, & T. J. Pinch (Eds.), *The social construction of technological systems: New directions in the sociology and history of technology* (pp. 159–187). Cambridge, MA: MIT Press.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375.

Bulkeley, H., Coenen, L., Frantzeskaki, N., Hartmann, C., Kronsell, A., Mai, L., & Palgan, Y. V. (2016). Urban living labs: Governing urban sustainability transitions. *Current Opinion in Environmental Sustainability*, *22*, 13–17.

Bulkeley, H., Marvin, S., Palgan, Y. V., McCormick, K., Breitfuss-Loidl, M., Mai, L., & Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European Urban and Regional Studies*, *26*(4), 317–335.

Cho, E. J. (2018). Transforming a neighborhood into a living laboratory for urban social innovation: A comparative case study of urban living labs. In P. L. Rau (Ed.), *International conference on cross-cultural design* (pp. 275–285). Cham: Springer.

City of Monash. (2008). *Urban design guidelines: Monash Technology Precinct (Monash Specialised Activity Centre)*. Melbourne: City of Monash. Retrieved from https://www.monash.vic.gov.au/files/assets/public/building-amp-planning/planning-permits-amp-applcations/other-guidelines/urban-design-monash-technology-precinct-guidelines.pdf

ClimateWorks Australia. (2017). *Net zero emissions strategy: Monash University* (Unpublished report). Melbourne: ClimateWorks Australia.

Davies, M., & Swilling, M. (2018). Intermediation and learning in Stellenbosch's urban living lab. In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 91–105). London and New York, NY: Routledge.

Department of Environment, Land, Water and Planning. (2020). *Monash planning scheme*. Melbourne: Department of Environment, Land, Water and Planning. Retrieved from https://planning-schemes.delwp.vic.gov.au/schemes/monash

den Hartog, H., Sengers, F., Xu, Y., Xie, L., Jiang, P., & de Jong, M. (2018). Low-carbon promises and realities: Lessons from three socio-technical experiments in Shanghai. *Journal of Cleaner Production*, *181*, 692–702.

Doren, D., Runhaar, H., Raven, R. P. J. M., Giezen, M., & Driessen, P. (2020). Institutional work in diverse

niche contexts: The case of low-carbon housing in the Netherlands. *Environmental Innovation and Societal Transitions*, *35*, 116–134.

Dotson, T. (2016). Trial-and-error urbanism: Addressing obduracy, uncertainty and complexity in urban planning and design. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *9*(2), 148–165.

Elzen, B., van Mierlo, B., & Leeuwis, C. (2012). Anchoring of innovations: Assessing Dutch efforts to harvest energy from glasshouses. *Environmental Innovation and Societal Transitions*, *5*, 1–18.

Evans, J., & Karvonen, A. (2014). 'Give me a laboratory and I will lower your carbon footprint!': Urban laboratories and the governance of low-carbon futures. *International Journal of Urban and Regional Research*, *38*(2), 413–430.

Evans, J., Karvonen, A., & Raven, R. P. J. M. (Eds.). (2016). *The experimental city*. London: Routledge.

Fitzgerald, J., & Lenhart, J. (2016). Eco-districts: Can they accelerate urban climate planning? *Environment and Planning C: Government and Policy*, *34*(2), 364–380.

Frantzeskaki, N., van Steenbergen, F., & Stedman, R. C. (2018). Sense of place and experimentation in urban sustainability transitions: The Resilience Lab in Carnisse, Rotterdam, The Netherlands. *Sustainability Science*, *13*(4), 1045–1059.

Geels, F. W., & Raven, R. P. J. M. (2006). Non-linearity and expectations in niche-development trajectories: Ups and downs in Dutch biogas development (1973–2003). *Technology Analysis & Strategic Management*, *18*(3/4), 375–392.

Gianfrate, V., Djalali, A., Turillazzi, B., Boulanger, S. O., & Massari, M. (2020). Action-research towards a circular urban system for multi-level regeneration in historical cities: The case of Bologna. *International Journal of Design & Nature and Ecodynamics*, *15*(1), 5–11.

Greer, R., von Wirth, T., & Loorbach, D. (2020). The diffusion of circular services: Transforming the Dutch catering sector. *Journal of Cleaner Production*, *267*, 121906.

Griffiths, S., & Sovacool, B. K. (2020). Rethinking the future low-carbon city: Carbon neutrality, green design, and sustainability tensions in the making of Masdar City. *Energy Research & Social Science*, *62*, 101368.

Grodal, S., Anteby, M., & Holm, A. L. (2020). Achieving rigor in qualitative analysis: The role of active categorization in theory building. *Academy of Management Review*. Advance online publication.

Gustafsson, S., & Mignon, I. (2020). Municipalities as intermediaries for the design and local implementation of climate visions. *European Planning Studies*, *28*(6), 1161–1182.

Hildén, M., Jordan, A., & Huitema, D. (2017). Special issue on experimentation for climate change solutions editorial: The search for climate change and sustainability solutions—The promise and the pitfalls of experimentation. *Journal of Cleaner Production*, *169*, 1–7.

Hillgren, P. A., Seravalli, A., & Emilson, A. (2011). Prototyping and infrastructuring in design for social innovation. *CoDesign*, *7*(3/4), 169–183.

Hodson, M., Geels, F. W., & McMeekin, A. (2017). Reconfiguring urban sustainability transitions, analysing multiplicity. *Sustainability*, *9*(2), 299.

Honey-Rosés, J. (2019). A review of field experiments in planning and urban research. *Planning Practice & Research*, *34*(5), 558–572.

Intergovernmental Panel on Climate Change. (2018). Summary for policymakers. In V. Masson-Delmotte, P. Zhai, H.-O Pörtner, D. Roberts, J. Skea, P. R. Shukla, . . . T. Waterfield (Eds.), *Global warming of 1.5°C: An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Geneva: World Meteorological Organization.

Jordan, A. J., Huitema, D., Hildén, M., van Asselt, H., Rayner, T. J., Schoenefeld, J. J., & Boasson, E. L. (2015). Emergence of polycentric climate governance and its future prospects. *Nature Climate Change*, *5*(11), 977–982.

Karvonen, A., Evans, J., & van Heur, B. (2014). The politics of urban experiments: Radical change or business as usual? In S. Marvin & M. Hodson (Eds.), *After sustainable cities* (pp. 104–115). London: Routledge.

Kemp, R., & Loorbach, D. (2006). Transition management: A reflexive governance approach. In J. P. Voss, D. Bauknecht, & R. Kemp (Eds.), *Reflexive governance for sustainable development* (pp. 103–130). Cheltenham and Northampton, MA: Edward Elgar.

Kemp, R., Schot, J., & Hoogma, R. (1998). Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management. *Technology Analysis & Strategic Management*, *10*(2), 175–195.

Khorasany, M., Azuatalam, D., Glasgow, R., Liebman, A., & Razzaghi, R. (2020). Transactive energy market for energy management in microgrids: The Monash Microgrid case study. *Energies*, *13*(8), 2010.

Kiss, B., van der Jagt, A. P. N., Dorst, H., Bulkeley, H., McCormick, K., & Raven, R. P. J. M. (2020). *Greening infrastructures through urban experimentation: Exploring the politics of nature-based solutions*. Manuscript in preparation.

Levenda, A. M. (2018). Urban living labs for the smart grid: Experimentation, governmentality and urban energy transitions. In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 52–73). London and New York, NY: Routledge.

Liedtke, C., Welfens, M. J., Rohn, H., & Nordmann, J. (2012). LIVING LAB: User-driven innovation for sus-

tainability. *International Journal of Sustainability in Higher Education*, *13*(2).

Longhurst, N., Avelino, F., Wittmayer, J., Weaver, P., Dumitru, A., Hielscher, S., & Elle, M. (2016). Experimenting with alternative economies: Four emergent counter-narratives of urban economic development. *Current Opinion in Environmental Sustainability*, *22*, 69–74.

Loorbach, D. (2010). Transition management for sustainable development: A prescriptive, complexity-based governance framework. *Governance*, *23*(1), 161–183.

Luederitz, C., Schäpke, N., Wiek, A., Lang, D. J., Bergmann, M., Bos, J. J., & Farrelly, M. A. (2017). Learning through evaluation: A tentative evaluative scheme for sustainability transition experiments. *Journal of Cleaner Production*, *169*, 61–76.

Mai, L. (2018). Placing sustainability in communities: Emerging urban living labs in China. In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 210–230). London and New York, NY: Routledge.

Martin, C., Evans, J., Karvonen, A., Paskaleva, K., Yang, D., & Linjordet, T. (2019). Smart-sustainability: A new urban fix? *Sustainable Cities and Society*, *45*, 640–648.

Marvin, S., Bulkeley, H., Mai, L., McCormick, K., & Palgan, Y. V. (Eds.). (2018). *Urban living labs: Experimenting with city futures*. London and New York, NY: Routledge.

McCormick, K., & Hartmann, C. (Eds.). (2017). *The emerging landscape of urban living labs: Characteristics, practices and examples*. Rotterdam and Vienna: Governance of Urban Sustainability Transitions (GUST) and Urban Europe.

McLean, A., Bulkeley, H., & Crang, M. (2016). Negotiating the urban smart grid: Socio-technical experimentation in the city of Austin. *Urban Studies*, *53*(15), 3246–3263.

Mintrom, M., & Luetjens, J. (2017). Policy entrepreneurs and problem framing: The case of climate change. *Environment and Planning C: Politics and Space*, *35*(8), 1362–1377.

Monash University. (2018). *The Net Zero initiative*. Clayton: Monash University. Retrieved from https://www.monash.edu/__data/assets/pdf_file/0020/1140365/Monash-Net-Zero-Brochure.pdf

Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics*, *106*(1), 213–228.

Nevens, F., Frantzeskaki, N., Gorissen, L., & Loorbach, D. (2013). Urban transition labs: Co-creating transformative action for sustainable cities. *Journal of Cleaner Production*, *50*, 111–122.

Nyseth, T., Ringholm, T., & Agger, A. (2019). Innovative forms of citizen participation at the fringe of the formal planning system. *Urban Planning*, *4*(1), 7–18.

Palgan, Y. V., McCormick, K., & Evans, J. (2018). Urban living labs: Catalysing low carbon and sustainable cities in Europe? In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 21–36). London and New York, NY: Routledge.

Pink, S. (2012). *Situating everyday life: Practices and places*. London: SAGE Publications.

Puerari, E., De Koning, J. I., von Wirth, T., Karré, P. M., Mulder, I. J., & Loorbach, D. A. (2018). Co-creation dynamics in urban living labs. *Sustainability*, *10*(6), 1893.

Raven, R. P. J. M., Ghosh, B., Wieczorek, A., Striling, A., Ghosh, D., Jolly, S., . . . Sengers, F. (2017). Unpacking sustainabilities in diverse transition contexts: Solar photovoltaic and urban mobility experiments in India and Thailand. *Sustainability Science*, *12*(4), 579–596.

Raven, R. P. J. M., Sengers, F., Spaeth, P., Xie, L., Cheshmehzangi, A., & de Jong, M. (2019). Urban experimentation and institutional arrangements. *European Planning Studies*, *27*(2), 258–281.

Reed, M. S., Evely, A. C., Cundill, G., Fazey, I., Glass, J., Laing, A., & Stringer, L. C. (2010). What is social learning? *Ecology and Society*, *15*(4).

Savini, F., & Bertolini, L. (2019). Urban experimentation as a politics of niches. *Environment and Planning A: Economy and Space*, *51*(4), 831–848.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, *16*(4), 584–603.

Sharp, D., & Salter, R. (2017). Direct impacts of an urban living lab from the participants' perspective: Livewell Yarra. *Sustainability*, *9*(10), 1699.

Sloan, K. (2018). The Monash Precinct: Joining the dots to build for the future. *Monash Lens*. Retrieved from https://lens.monash.edu/@global-leaders-week/2018/09/18/1360337/monash-precinct-a-vision-for-the-future

Smith, A., & Raven, R. P. J. M. (2012). What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy*, *41*(6), 1025–1036.

Stanford University. (2019). University as a living lab. *Sustainable Stanford.* Retrieved from https://sustainable.stanford.edu/campus-action/university-living-lab

Torrens, J., & von Wirth, T. (2020). Strategies for redressing projectification in urban experimentation: On portfolios and ecologies. In *Proceedings of the 11th International Sustainability Transition Conference Governance in an Era of Change: Making Sustainability Transitions Happen* (pp. 2941–2959). Vienna: Vienna University of Economics and Business and Austrian Institute of Technology.

Turnheim, B., & Sovacool, B. K. (2020). Exploring the role of failure in socio-technical transitions research. *Envi-*

ronmental Innovation and Societal Transitions, *37*, 267–289.

United Nations Framework Convention on Climate Change. (2020). Race to Zero campaign. *United Nations Framework Convention on Climate Change*. Retrieved from https://unfccc.int/climate-action/race-to-zero-campaign#eq-1

van den Bosch, S. (2010). *Transition experiments: Exploring societal changes towards sustainability* (Doctoral dissertation). Rotterdam: Erasmus University Rotterdam.

van Steenbergen, F., & Frantzeskaki, N. (2018). The importance of place for urban transition experiments: Understanding the embeddedness of urban living labs. In S. Marvin, H. Bulkeley, L. Mai, K. McCormick, & Y. V. Palgan (Eds.), *Urban living labs: Experimenting with city futures* (pp. 231–247). London and New York, NY: Routledge.

Victorian Planning Authority. (2017). *Monash national employment and innovation cluster: Draft framework plan (March 2017)*. Melbourne: Victorian Planning Authority. Retrieved from https://vpa-web.s3.amazonaws.com/wp-content/uploads/2017/03/Monash-NEIC-framework-plan_March2017_WEB.pdf

von Wirth, T., Frantzeskaki, N., & Loorbach, D. (2020). Urban living labs as inter-boundary spaces for sustainability transitions? In G. de Roo, C. Yamu, & C. Zuidema (Eds.), *Handbook on planning and complexity* (pp. 237–257). Cheltenham: Edward Elgar Publishing.

von Wirth, T., Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019). Impacts of urban living labs on sustainability transitions: Mechanisms and strategies for systemic change through experimentation. *European Planning Studies*, *27*(2), 229–257.

Voytenko, Y., McCormick, K., Evans, J., & Schliwa, G. (2016). Urban living labs for sustainability and low carbon cities in Europe: Towards a research agenda. *Journal of Cleaner Production*, *123*, 45–54.

Wiktorowicz, J., Babaeff, T., Breadsell, J., Byrne, J., Eggleston, J., & Newman, P. (2018). WGV: An Australian urban precinct case study to demonstrate the 1.5 C agenda including multiple SDGs. *Urban Planning*, *3*(2), 64–81.

Willems, J. J., Molenveld, A., Voorberg, W., & Brinkman, G. (2020). Diverging ambitions and instruments for citizen participation across different stages in green infrastructure projects. *Urban Planning*, *5*(1), 22–32.

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Article

Social Encounter by Experiment? Potentials and Pitfalls of Real-World Labs for Urban Planning

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Abstract
This article explores the potential of real-world labs (RWLs) and real-world experiments (RWEs) to be a fruitful addition to established approaches in urban planning in Germany. While transdisciplinary and transformative RWLs rooted in socio-ecological sustainability studies have become an important tool for experimenting with innovative solutions for environmental challenges in cities, RWLs aimed at improving social cohesion in neighbourhoods and fostering a communal life characterised by dialogue and solidarity are rare. To this latter aim, this article contributes with research experience from a transdisciplinary RWL on cooperative urban open space development seeking to foster social cohesion in super-diverse neighbourhoods in Germany. This article analyses the contradictory perceptions of the local stakeholders involved as regards the potentials of RWEs to be a meaningful addition to established planning practices. This article makes it clear that there is greater proximity between urban planning theory, practice, and RWEs than initially assumed. Nevertheless, RWEs have considerable potential as a positive complement to established approaches to urban planning and as a means of experimenting with open-ended encounter formats in neighbourhoods.

Keywords
encounter; neighbourhoods; real-world experiment; real-world lab; social cohesion; urban planning

Issue
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1. Introduction

Cities today face a multitude of ecological, social, and economic problems—both new and old—and, as a result, urban practitioners and researchers are searching for new, transformative strategies to understand and solve these problems. Urban labs and experiments in their different variations seem to hold great potential for informing and re-directing established urban planning approaches. Derived from earlier experiences in socio-ecological sustainability studies, a new methodological approach called the real-world laboratory (RWL), which provides the research infrastructure for real-world experiments (RWEs), has also become established in urban planning and development in Germany (Bulkeley et al., 2019; Schäpke et al., 2017, pp. 28–45; Schneidewind, 2014; Scholl & Kemp, 2016, pp. 89–91).

As this relation between experiments and the city—as one aspect of the overarching 'experimental turn' in the social and economic sciences—has recently been attracting increasing attention in scientific discourse, opinions on how to assess this relationship and its effects in urban planning have multiplied. On the one hand, research notes the "absence of experiments in planning" (Honey-Rosés & Stevens, 2019, p. 267). According to this line of thinking, it is largely unclear whether far-reaching effects can be achieved at all through experimental approaches in urban development. On the other hand, "city labs are seen as vehicles for innovation in urban planning processes" (Scholl & Kemp, 2016, p. 89) and experimental methods using participatory and activating elements are said to be commonplace in urban planning theory and practice (Kanning, 2018, pp. 7–8). Here, "the experiment with its co-creative dogmas seems to

be a perfect fit for current governance policies in urban planning" (Jacobsen, 2018, p. 36; see Caprotti & Cowley, 2017; Evans, Karvonen, & Raven, 2016). Indeed, even if urban labs have become an established tool in urban development, the relationship between RWLs/RWEs and urban development/urban planning still seems to be under-researched in both the conceptual and empirical perspective.

This knowledge gap concerning the potentials and pitfalls of transdisciplinary and transformative RWLs in urban planning becomes even more apparent when the various RWL topics are considered: While a broad array of urban labs has been experimenting with innovative solutions for environmental challenges in cities, so far little attention has been paid to 'social' RWLs aiming, e.g., at improving the social cohesion in neighbourhoods (Räuchle & Schmiz, 2020). This is surprising insofar as the management of ethnic or social diversity has become a central topic of urban policy-making not only in Germany but also across Europe within the last decade, leading to a broad variety of 'mixing' and 'social cohesion' policies and interventions in urban planning and development (Lapina, 2016; Phillips, 2015).

The article at hand critically questions the potentials and pitfalls of RWLs on social cohesion in urban planning. The specific aim of this study is to analyse to what extent urban local stakeholders *perceive* RWLs and RWEs as a potential for urban planning, using an RWL project focused on cooperative urban open space development as a tool to foster social cohesion in super-diverse neighbourhoods in Germany as a case study.

The article proceeds as follows: The following sections outline the theoretical and conceptual relationship between urban planning, RWLs, and RWEs (Section 2) before the case study and methods of this article are set out (Section 3). Then, this article discusses the urban stakeholders' perception of RWLs/RWEs as an additional tool for urban planning along three aspects: firstly, it asks if an RWL is interesting for urban planning content-wise (Section 4), or secondly, in terms of the methodological design (Section 5), and thirdly, it explores how RWLs can enrich governance arrangements in urban planning (Section 6). Finally, the practical value of RWLs/RWEs as a tool for urban planning is critically questioned (Section 7).

2. Theorising the Relationship between RWLs, RWEs, and Urban Planning

The conceptual and empirical relationship between urban labs and urban development/planning has not yet been definitively elucidated and depends on very different dimensions, e.g., on the planning object, but also on the lab definition itself (e.g., Scholl & Kemp, 2016). For the case of this article, urban labs are primarily defined as RWLs, a specific conceptual-empirical phenomenon in Germany and one form of an urban lab (for the relation between RWLs and other forms of urban labs cf. Schäpke et al., 2017). RWLs describe transdisciplinary research institutions that are established to conduct RWEs in a spatially delimited social context (Schneidewind, 2014). RWLs aim to initiate transformation processes and to establish scientific as well as social learning processes (Parodi et al., 2016). RWLs are essentially normative because they explicitly pursue social goals (Defila & Di Giulio, 2018). Determining—in a first step—the theoretical-conceptual relation between RWLs, RWEs, and urban planning, and thereby developing a clear definition of RWEs, can help shed light on the potentials and pitfalls of RWLs in urban planning more systematically. In the following section, I examine current literature on these aspects.

2.1. Approaching RWEs

RWEs' characteristics become more apparent in comparison with traditional lab experiments (Beecroft, Trenks, Rhodius, Benighaus, & Parodi, 2018; Parodi et al., 2016, pp. 15-16; Puttrowait, Dietz, Gantert, & Heynold, 2018). Taking the latter as a reference point, an RWE is defined as follows: (1) It is embedded in a specific spatial, physical, social, economic, political, and, in the end, societal 'real-world' context. Thus, it is more exposed to 'external' factors that are, in turn, more difficult to control than in lab experiments; (2) Although RWEs can be repeated, like a lab experiment can, these permanently changing contexts make it more difficult or even impossible to observe cause-and-effect relationships between dependent and independent variables; (3) As a result, the possibility to generalise the results is much more limited than in lab experiments; (4) Furthermore, the RWE's transdisciplinary methodology requires its co-design and co-production with actors from civil society, local government/administration, business, etc. (Renn, 2018). This calls for a continuous methodological reflection of the research process with all participants; (5) Moreover, the RWE as the RWL's key instrument, which per se pursues transformative goals, consciously aims at initiating social change. Within the framework of RWLs, RWEs are intended to generate knowledge that guides action to achieve normative goals.

This is, however, an ideal-typical definition of RWEs. It is still unclear whether the term 'experiment' is at all appropriate given the strong deviations from lab experiments and its inflationary, often unreflective use in social sciences (Karvonen & van Heur, 2014; May & Perry, 2016). At best, a RWE represents a hybrid form of experiment, as it moves between knowledge production (describe/explain) and knowledge application (change/transform) as well as controlled and situation-specific framework conditions (Beecroft et al., 2018; Schneidewind, 2014, p. 2). With this ideal-type of RWE in mind, the question arises, whether and how RWLs and their experiments can be integrated into urban planning theory.

2.2. The Relation between RWLs and Urban Planning in General Perspective

Very simplified, urban planning constitutes the opposite of an experimental approach to urban issues: Planning means to make final, risk-averse decisions for future action in the sense of a master plan, based on reliable knowledge about the actual state, the set goals, and the effects of the used instruments (e.g., Müller-Ibold, 1996, p. 32). Once a plan has been approved and its implementation has begun, the planning process ends. This, too, is an ideal-typical definition which does not necessarily correspond to 'real-world' urban planning. The relation between RWLs, their experiments, and urban planning processes depends to a large extent on the conceptual approach to urban planning (cf. Albrechts, 1991; Yiftachel, 1989).

Applying a rational, technocratic-hierarchical understanding of planning, a transdisciplinary and reflective dimension in urban planning is likely to be 'underdeveloped' and, in conceptual terms, RWEs can hardly be integrated into this type of planning (Banovetz, 1971; Healey, 1983). However, considering rather recent planning theory, linear-hierarchical stringent approaches to planning no longer seem to exist, having instead been replaced by a modern, communicative-performative ideal of planning (Danielzyk & Sondermann, 2018; Healey, 1996, 1997; Mackrodt & Helbrecht, 2013). Here, planning seems to consist only of open, incremental, communicative negotiations and collaborations of different actors in networks (Danielzyk & Sondermann, 2018, p. 964; Karow-Kluge, 2008; Knieling, 2018). The planner itself becomes a moderator between different interest groups (Olesen, 2018). In any case, in its modern understanding, planning is highly flexible as it, in the face of context-specific challenges, adapts its procedures and instruments correspondingly (Dorstewitz, 2014, p. 433). Some theorists, but also practitioners, even model urban planning—according to the critical-rationalist falsification criterion—as a trial-and-error process in which the plan as a hypothesis and its implementation as an experiment are in a continuous feedback loop (Deutscher Städtetag, 2013; Dorstewitz, 2014, p. 433). Lastly, conceptually and terminologically, RWEs and urban planning merge in the notion of 'performative planning,' particularly when 'performative' and 'experimental' are used as synonyms (cf. Altrock, 2014). This, of course, does not mean that urban planning is only limited to moderating processes. Urban planning is definitely based on planning guidelines, both in terms of strategy and content.

Comparing RWEs and urban planning, experiments are reversible and not designed for the long term; they use urban spaces only temporarily. Furthermore, they do not anticipate urban futures through the rational use of available knowledge that, in turn, melts into an urban development plan (Schäfers, 1992, p. 232). In principle, RWEs are in line with a planning approach that takes subjective values and local traditions to a greater extent into account than technocratic-hierarchical planning approaches (Othengrafen & Reimer, 2018). However, there is one main difference: Urban planning aims to intervene in urban spaces and change them, whereas RWEs, in a first step, aim at revealing and explaining (causal) relationships between different dimensions in urban spaces. Only in a second step shall RWEs have a transformative effect in urban spaces.

2.3. The Relation between RWLs and Urban Planning along Different Dimensions

Taking a deeper look at the German conceptual debate on RWLs, the main points of discussion revolve around the goals of RWLs, the types of knowledge needed and produced in RWLs, as well as the instruments that are used to generate this knowledge. Elucidating the relationship between RWLs and urban planning along these dimensions, similarities and differences are revealed.

2.3.1. Objectives

Urban RWLs and urban planning share common objectives when it comes to changing urban spaces. Both charge urban space with meaning in accordance with normative goals that are—in the case of urban planning—laid down in German planning law. These normative-legal goals correspond to those of the political support programmes with which most RWLs in Germany are financed and, with that, express specific paradigms of societal change: sustainability, ecological urban redevelopment, social cohesion, integration, etc. (Räuchle & Schmiz, 2020). Ultimately, it depends on the different RWLs and urban planning projects in which concrete values, i.e., objectives are to be realised. This observation leads to the question of knowledge: What do urban RWLs and urban planning need to know to pursue these goals successfully?

2.3.2. Types of Knowledge

In addition to knowledge about the urban context (system knowledge) and their own normative goals (target knowledge), RWLs need and produce, with RWEs, knowledge about how to achieve the set goals (transformation knowledge; Beecroft et al., 2018, p. 79; CASS & ProClim, 1997, p. 15). RWEs, however, never create 'secure' knowledge, but only 'safe' ignorance/not-knowing: From a critical-rationalist point of view, RWEs' hypotheses cannot be proven (verified), but only refuted (falsified). These experiments are therefore described as "metaphors for consciously dealing with ignorance" (Groß, 2017, p. 21). They must be 'open' regarding their results and contain a high degree of uncertainty. 'Success'—however it may be defined—is not guaranteed in these experiments. Yet, 'learning by failing' may also produce useful knowledge.

This, ultimately, also applies to urban planning. Planning almost always takes place under uncertainty as

soon as, in addition to the built environment, immaterial facts become, as system knowledge, part of urban planning projects (Abbott, 2005). By forecasting future developments, an urban development plan simplifies this knowledge so that in face of future imponderables, target knowledge is also uncertain. Finally, urban planning also works with uncertain transformation knowledge because the effects of the used instruments on urban spaces cannot be estimated precisely.

2.3.3. Instruments

In principle, urban development takes place, firstly, through legal instruments (binding legal provisions), secondly, through economic, exchange-based instruments (legally binding but terminable contracts) and thirdly, through communicative-informative, persuasive instruments (convincing arguments). Mainly between this last group of 'informal' urban planning instruments, e.g., neighbourhood development concepts, and RWLs, there is clear proximity. RWLs then can be easily integrated into planning projects in cities. Here, RWEs can be used as instruments that produce not only participatory, 'theoretical' transformation knowledge, but also practical, tested knowledge, opening urban planning to the "unplanned" (Drobek & Tran, 2017, p. 103). In sum, it seems that communicative instruments and methods in urban planning can be largely transferred to or adapted to RWLs—and vice versa (Eckart, Ley, Häußler, & Erl, 2018, pp. 131–145).

2.4. Analysing the Relation between RWEs and Urban Planning from the Perspective of Local Planning Cultures

Even if, from a theoretical-conceptual perspective, the relation between RWEs and urban planning is characterised by certain proximity, it remains unclear if this also applies to the reality of urban planning and the use of experimental approaches in different urban settings. Thus, although the paragraphs above describe the conceptual relation, they do not elaborate on this mutual relation in greater empirical detail. I, therefore, propose the following categories to aid in understanding the value of RWEs for urban planning from a practical point of view. The relationship between RWEs and urban planning depends on the three dimensions of target, system, and transformation knowledge, which in turn provide the following analytical categories:

- *Target knowledge* relates to an RWL's *content*, which may or may not be of interest for urban planning.
- *System knowledge* describes how an RWL is integrated into *local governance arrangements* and how urban planning relates to it.
- How the RWL collects *transformation knowledge* determines whether the RWL/RWE can be used as an additional *instrument* for urban planning.

Using these three categories, I analysed my empirical case study along with my research question on urban planning stakeholders' perceptions of experimental approaches. For this, this article refers to the notion of 'local planning culture' thereby emphasising the constructivist nature of urban planning itself. By 'local planning culture' I mean contextually embedded forms of urban planning that are shaped by overarching ways of thinking and acting of urban planning actors themselves. Local planning cultures manifest themselves in the social production of urban spaces (Sondermann, 2017, p. 47). One important dimension of planning on the ground is the specific local patterns of interpretation of different planning actors. In this understanding, urban planning objects do not exist as 'objective' problems, nor does the planning process. Rather, they are open to interpretation. In the following section, I present my case study and the applied methods before describing my empirical findings.

3. Setting the Stage: Case Study and Methodology

This article draws on empirical research conducted between 2018 and 2020 in the context of the RWL project "KoopLab: Participation through Cooperative Open Space Development" (https://www.kooplab.de/project). This RWL project is one example of similar research-practice-projects that address issues of social cohesion at the neighbourhood scale across European cities.

3.1. Urban Planning on Social Cohesion and Encounter

The steadily increasing diversity within cities has led to the insight that political steering is needed to strengthen local social cohesion and promote the acceptance of diversity, particularly in super-diverse urban neighbourhoods. This request is rooted in the observation that, despite a fundamental appreciation of diversity in society, not every form of diversity meets with unqualified acceptance (Wiesemann, 2019; Wilson, 2017); intolerance and rejection are certainly realities of everyday life in cities. In this respect, it is not only within the scientific community that the potential of group-spanning contacts and encounter for social cohesion is emphasised but also within urban development and planning practice (vhw, 2019). Accordingly, many social neighbourhood development measures in European cities are geared towards creating group-spanning contacts, often in combination with the idea of a 'social mix' (Phillips, 2015). At the same time, such measures frequently explain the kind and quality of encounters which are expected to reduce prejudices.

Here, the idea of 'spontaneous encounter' in public spaces is contrasted with that of 'organised encounters.' Regarding the former, many authors in urban and planning theory are convinced that, as shared everyday places, public spaces promote contact between

members of different social groups and, thus, lead to higher acceptability of social diversity (Dangschat, 2011; Sennett, 1991; Shaftoe, 2008), while sceptical voices regard everyday interaction being characterised by mutual distancing and indifference (Amin, 2002; Valentine, 2008; Wiesemann, 2015). In contrast, 'organised encounters' describe the creation of places of encounter and the provision of opportunities for encounters like communal gardens, concerts, etc. as part of urban development programmes to help reduce prejudices and create social cohesion (Wiesemann, 2019, p. 7). Nevertheless, research warns against excessive optimism, as the course of encounters—especially organised ones—is never predictable. It is not clear how relationships will develop in concrete situations (Wilson, 2017).

Against this backdrop, it is worth discussing the usefulness of combining established methods of urban development or planning with approaches that make greater use of spontaneous, experimental forms of encounter to improve social cohesion in urban neighbourhoods. In Germany, RWLs/RWEs are being tested as a new approach within urban planning to boost social cohesion in super-diverse neighbourhoods. Also, this article draws on experience from a RWL in a super-diverse neighbourhood.

3.2. KoopLab and Case Study in Hanover-Sahlkamp

At its three locations in Leipzig, Dortmund, and Hanover, the project KoopLab aims to test innovative methods of cooperative open space development that will bring residents together to design and develop green and open spaces close to their homes. The spatial focus is on so-called 'arrival neighbourhoods,' characterised by social disadvantage, migration, and high residential density (Saunders, 2010). For this article, particular focus is placed on the experiences of the RWL in Hanover, more specifically in the super-diverse neighbourhood Sahlkamp. The RWL Hanover-Sahlkamp is run by a university-based scientific team, an urban planning office experienced in participation procedures, and a civil society organisation, active in the neighbourhood for years. KoopLab is integrated into local governance arrangement in Hanover-Sahlkamp in different ways: There is not only a working relationship between the lab and the city's urban planning section within the local administration but also various residents and professional actors from the neighbourhood, e.g., social workers, have contributed to the RWL. Since 2018, KoopLab has been conducting a series of interventions, i.e., RWEs, all of which are geared towards developing alternative uses of open spaces and opportunities for encounters and strengthening social cohesion. These interventions include, for example: (1) A construction trailer that served as a mobile on-site café in seldom-used open spaces in the neighbourhood; (2) a balcony concert in a communal plot garden, surrounded by multi-storey residential buildings, which created an occasion for encounter and exchange for listeners from the direct neighbourhood and more distant residential areas; and (3) according to the motto "Sahlkamp dines," a long table that was set with white tablecloths and porcelain in the middle of the district park that invited local people to eat and drink together.

With a population of over 5,600 inhabitants and almost 2,500 households, Sahlkamp is located on the north-eastern edge of Hanover. In socio-demographic terms, it deviates in some key ways from the citywide averages. For example, it is characterised by an above-average proportion of households with many children, higher rates of transfer benefit receipt, and a relatively large share of Germans with a 'migration background' (i.e., international immigrants and their children). The neighbourhood has been developed since the 1960s under the leadership of the public authorities to build affordable social housing. Since 2009, the neighbourhood has been part of the federal and state programme "Soziale Stadt" ("Social City") as an "urban district with special development needs" (Landeshauptstadt Hannover, 2015, p. 5). In addition to 'investive' measures, the local social infrastructure was also increasingly developed with the aim of not only strengthening social networks and neighbourhoods but also of promoting a "neighbourhood identity" and a "culture of participation" (Landeshauptstadt Hannover, 2019). Thus, the KoopLab RWL was established in a neighbourhood where the management of social cohesion through urban planning initiatives has a long tradition. While in the citywide discourse the district is discussed as a 'problem area' and a stigmatised neighbourhood, the perceptions of the residents themselves are quite varied here, as our empirical analyses have shown.

3.3. Empirical Methods

First, to gain an overview of the Hanoverian neighbourhood Sahlkamp, existing urban planning initiatives and the handling of social cohesion at the neighbourhood level, the project team employed a secondary analysis of existing data, including data on demographics provided by the municipal statistical offices. Also, we evaluated newspaper articles, documents, and web pages published by local authorities and semi-public actors such as civil society organisations to identify policy goals, stakeholders, institutional arrangements, and temporary programmes relevant to urban planning and the management of 'social cohesion,' 'mixing,' and 'encounters.'

However, given the scarcity of knowledge concerning the handling of experimental approaches in local urban planning and the perception of involved stakeholders of the RWL, the main focus of the empirical work for this article lay on qualitative methods that would allow for an interpretative approach to local planning cultures, i.e., we conducted 12 semi-structured interviews with three groups of stakeholders:

- First, a total of four interviews were conducted with people associated with neighbourhood development and social services in Hanover-Sahlkamp. Many of these interviewees were closely related to the KoopLab RWL, e.g., through participation in different lab interventions.
- Second, four interviews were carried out with representatives from municipal politics and administration, i.e., with experts affiliated to Hanover's urban planning and neighbourhood development section.
- Third, four interviews were conducted with members of the KoopLab core team at different stages in the lab processes.

The interviews focused, on the one hand, on the Sahlkamp neighbourhood and its communal life, (the history of) local planning initiatives in Hanover in general and in Sahlkamp in particular, on corresponding governance arrangements, and the role of performative-experimental approaches in this context. On the other hand, the interviews aimed at capturing the perceptions of the KoopLab RWL, the sense and senselessness of the conducted experiments/interventions and their effects in the neighbourhood.

The interview partners were selected according to the 'sampling along predefined criteria' as well as the 'snowball sampling' (Przyborski & Wohlrab-Sahr, 2014, pp. 182–185). The interviews were transcribed and analysed with the assistance of the text analysis programme MAXQDA. Empirical data was then subject to a qualitative content analysis based on multistage, thematic coding (Mayring, 2010).

However, in the context of the RWL and conducted RWEs, participant observations in Sahlkamp also helped to capture the perceptions of different groups of residents. In addition to these rather 'classical' methods of qualitative social research, the members of the RWL's core team—including myself—met every 2–3 weeks to exchange information and coordinate the lab process. Apart, they took part in various discussion groups and events in the neighbourhood and (informally) talked to residents and planners about their experiences in the neighbourhood. All these observations and conversations were recorded in a digital 'RWL diary.' These empirical data only play a 'flanking role' in the context of this article and are not systematically analysed.

As described above, from a conceptual perspective, whether proximity between RWEs and urban planning can be deduced depends on very different dimensions, e.g., the understanding of urban planning itself. How this plays out in 'real-world' planning practice, however, is also an ambiguous question. This relation depends very much, as I assume, on the local urban planning culture (see above). Here, Hanover seems to provide a rather favourable context for experimental approaches: As previous studies have shown, Hanover has a tradition of an open, communicative planning culture that supports a strong collaboration with civil society initiatives (Sondermann, 2015). This is also confirmed by the perception of the interviewed stakeholders, as will be shown in the following.

4. The Content Dimension: Neighbourhood-Related Planning and Transformative RWLs (Target Knowledge)

Due to the city's generally open planning culture, it is not surprising that the interviewed urban planning and community development stakeholders in Hanover have a rather positive attitude towards the RWL KoopLab. This applies first and foremost to the lab's overarching objectives.

4.1. Compatibility of Values and Norms

A RWL that aims at strengthening social cohesion in a super-diverse neighbourhood is in line with overarching (normative) political programmes that define how to politically handle these neighbourhoods, as in the case of the national urban development programme "Social City" (see above). This closeness in terms of contents is reflected in the interviewees' statements: A majority of them perceives the communal social life in the neighbourhood as being by no means conflict-free, especially because of its super-diversity. However, an appreciative perspective is the decisive aspect for the basically positive attitude towards the neighbourhood, as an involved urban planner emphasises: "What is really at stake is the positive recognition of a diversified urban society, be it multi-ethnic, multicultural, multinational, multisocial, or whatever, and Sahlkamp reflects this in a certain way" (personal communication). Against this background, local stakeholders promote the "strengthening of the neighbourhood," the enabling of "peaceful coexistence" and "pacification" in the neighbourhood, and ultimately its strong social cohesion, as fundamental values for the neighbourhood. Encouraging people to participate in urban development processes becomes, in their opinion, a means to the end of achieving social participation, conveying local democratic values, and informing people about their rights as residents in the neighbourhood. These ideas are not only compatible with already existing neighbourhood development programmes in Hanover-Sahlkamp; they also do justice to the conceptual demand that RWLs, with their transformative approach, should pursue a socially legitimate goal that is ethically well-founded and oriented towards the common good (Defila & Di Giulio, 2018, p. 12).

4.2. Normative Dilemma

While in terms of content, the proximity between urban planning initiatives in Hanover-Sahlkamp and the KoopLab RWL can easily be deduced, it becomes more difficult in terms of the (democratic) justification. In the case of the lab, on the one hand, its overriding values

and norms are set top-down. On the other hand, the RWL concept is based on the understanding that the normative goals are to be determined with the participation of all stakeholders (co-creation and co-design). Although the interviewed stakeholders in Sahlkamp identify with the overarching value of the RWL ("social cohesion"), secondary project objectives are simultaneously called into question. For example, an involved social worker voices criticism of the top-down set goals: "I find other topics much more important than open space development. Namely simply housing" (personal communication). Thus, while some stakeholders stress the importance of green spaces for life in the neighbourhood, others question the relevance of social encounters in public spaces to the residents' often highly problematic daily life: "Green and open spaces in the city are certainly not the first thing that comes to people's minds when they think about their problems" (personal communication). An interviewed urban planner reflects that KoopLab only receives its legitimation from the "seal of a research project," especially vis-à-vis the city administration: "We are using this to introduce experimental formats of neighbourhood participation…they have gained respectability in the eyes of the planners because they are not just any kind of student artist actions" (personal communication).

The difference to urban planning is obvious: It is also subject to the 'normative dilemma' but to a much lesser extent, given the more precise political guidelines in urban planning and the lower level of participation. This also applies to the problem of the translation of overriding values or their operationalisation into standards that guide action. However, particularly in a superdiverse neighbourhood like Hanover-Sahlkamp, it is not possible to define social cohesion, participation, and a 'good' neighbourhood by consensus bottom-up, given the fact the local population is so diverse (Räuchle & Schmiz, 2020). Here, the RWL offers a specific potential, as it is precisely its task to concretise such overriding values in constant dialogue and on-going communication with the local residents. This is, at least, confirmed by urban planning actors in Hanover, who stress that urban planning might be overburdened with this task due to a lack of personnel and financial resources.

5. The Instrumental Dimension: Knowledge Production and RWEs (Transformation Knowledge)

Although the RWE as the RWL's key instrument might differ from the instruments of conventional urban planning in conceptual respect, it is controversial whether this applies to urban planning practice. What do local stakeholders in KoopLab think about experimental approaches in urban planning for strengthening social cohesion in general and in Hanover-Sahlkamp in particular?

5.1. Questioning the Very Potential of RWEs in Urban Planning

Stakeholders from all different groups see several strengths and great potential in RWEs for testing possibilities for encounter in neighbourhoods. However, the interviewees make a very precise distinction between social neighbourhood development initiatives (like in the context of "Social City") on the one hand and 'classical' planning and participation processes subject to various (in)formal regulations on the other. While, in the former case, experimental formats are quite common and the proximity to performative approaches in urban planning is evident, in the latter case, RWEs represent a special opportunity. With RWEs, as an interviewed planner stresses, one moves "in a field that does not belong to the mainstream of urban planning, because there, the processes are usually so narrowly defined" (personal communication). Thus, RWEs offer special freedom to experiment. The interviewed members of the RWL core team particularly emphasise that, compared to other urban planning interventions that aim to create social cohesion, RWEs also gain a special character due to their being embedded in the research infrastructure of an RWL: "It is very important that one is not 'only' practically engaged in urban space…but that you reflect on it with each other" (personal communication).

In terms of knowledge production, there is a difference between experimental and traditional planning approaches. The open RWE, with its possibility of 'failure,' differs from the instruments of conventional planning procedures such as public discussions, round tables, or workshops. Experiments do not create 'safe' knowledge, they do not primarily serve to resolve conflicts, and create acceptance. Nevertheless, urban planners involved in KoopLab estimate the potential of experiments to be so high that they argue that they should no longer take place only in the 'niche,' but be integrated into official planning processes or precede them before the "actual planning machinery is set in motion" (personal communication). In the interviewed stakeholders' opinion, the potential of experiments lies in mobilising and activating local citizens and testing, e.g., options regarding how to use public spaces (cf. also Altrock, 2014, p. 24).

However, on the other side of the coin, the analysis reveals that some local stakeholders stress the limitations or challenges of this approach rather than its strengths. First, when specifically asked about the innovative potential of RWEs for social cohesion, interview partners from the social neighbourhood development department emphasised that they had "always" experimented with opportunities for encounters. As such, they indicate that these experimental approaches are actually nothing new. Furthermore, some stakeholders point to the ambiguity of the RWE format: It is possible, on an abstract level, to precisely define this type of experiment; however, the real challenge lies in its empirical implementation/operationalisation in urban planning in

line with the superordinate RWL's topic. For example, it is relatively easy to conduct experiments on technical issues of sustainability because their structure is usually clear, and the results can be recorded quantitatively. In contrast, this is considerably more difficult for RWEs on social cohesion, because the results or effects cannot be measured.

5.2. Questioning the Very Impact of KoopLab's RWEs

Against this background, the usefulness of the KoopLab RWEs is assessed ambiguously. Different interviewees say that they see their potential for the Hanover-Sahlkamp neighbourhood in two aspects: On the one hand, they expect that the RWEs demonstrate to actors at various levels of urban governance (district and city) which creative urban planning instruments can be used to boost social cohesion. On the other hand, project participants hope that the RWEs will open up possibilities for residents: Some interview partners stress that they are not only interested in getting residents more engaged in the development of 'their' neighbourhood in general, but that empowering socially disadvantaged people is particularly important. Another positive aspect is that KoopLab offers a chance for longer-term engagement in the neighbourhood. Although the different RWEs are always of short duration, an RWL is usually established for several years. As one of the city planners involved put it, "Urban planning is all too often like that, that you get an impression on the spot, but you are never on-site as long and in as much detail as we are now in Sahlkamp. For me, it means that much more comes to light" (personal communication). In the case of KoopLab, the involved stakeholders stress that the project's experimental approach definitely improves the neighbourhood's conditions for social encounter and appeals to residents who are difficult to reach even within an open, communicative approach in urban planning procedures. However, KoopLab's potential for the neighbourhood should not be overestimated. In this vein, one representative of the local community development department argued that "KoopLab is not really a concern for local residents, and the project is relatively invisible overall" (personal communication).

In general, it seems that the consideration of experimentally produced knowledge by official urban planning apparently depends on the inner 'attitude' of planners themselves. An open planning culture such as that in Hanover or an open attitude such as that of the local stakeholders certainly regards such knowledge production as an opportunity to make urban planning projects more citizen-centred. Here, KoopLab reveals that RWLs might be "a way of getting around the formal bureaucratic system in a quasi-formal way, by allowing certain deviations" (Scholl & Kemp, 2016, p. 93). As such, experimental approaches seem to hold potential for urban planning instrument-wise, but does that also apply to governance arrangements?

6. The Actor Dimension: Governance Arrangements and Networks of Relationships (System Knowledge)

Governance as a conceptual-heuristic framework describes urban actors and their relationships (hierarchical, competitive, cooperative), which are shaped by superimposed values and norms (Benz & Dose, 2010). Concerning RWL's embeddedness in local governance arrangements, the city administration may be closely associated with the lab, as either its "initiator or an important party to it," as in the case of 'city labs' (Scholl & Kemp, 2016, p. 89). This article is, however, based on an understanding of labs as RWLs whose relationship to the municipal administration and city politics can be much looser. This general approach to RWL governance arrangements corresponds to an open local planning culture (Sondermann, 2017, p. 47). From the governance perspective, different paradigms of spatial planning can then be determined, ranging from the 'synoptic' planning ideal (rational planning approach, intervening, hierarchical governance) to a 'discursive' planning culture (planning approach open to communication and results, negotiating-cooperative governance; Nuissl & Heinrichs, 2006). The latter will be discussed here and the question is whether interviewees perceive a specific potential of how the KoopLab RWL is embedded in Hanover's urban governance arrangements.

6.1. Competitive, Hierarchical, and Cooperative Relations

As introduced above, KoopLab represents an additional governance actor in Hanover-Sahlkamp, which acts relatively autonomously compared to other actors and also to the city's official urban planning politics. However, the RWL tries to establish cooperative relationships with other stakeholders in the neighbourhood and to dock into existing networks, e.g., by participating once a month in a working group responsible for organising neighbourhood events and consisting of the neighbourhood management, social workers, the biggest housing company on-site, and civil society organisations. In this respect, KoopLab serves as an intermediary interface between different groups of actors. The advantages of this rather independent position of the RWL are also recognised by various interviewed stakeholders, e.g., one representative of a local neighbourhood initiative stresses: "If we were more involved in official urban planning procedures, competition would be much stronger and some interventions would have met with more resistance from residents" (personal communication).

However, in the case of public spaces, the duration of the KoopLab interventions, i.e., RWEs, is decisive. As long as KoopLab only conducted temporary interventions in public space, no conflicts arose, e.g., with community workers or the urban planning section within the local administration. But, as soon as the core team tried to intervene with a long-term perspective, permission was not

granted from the city. Here, one member of the lab's core team emphasises: "This is very annoying because we can't implement ideas that really make sense for the neighbourhood" (personal communication). Hierarchical relationships are also evident in the case of interventions on privately owned land as permissions are not readily granted.

6.2. RWL as a New Actor

Against the background of the cooperative, communicative planning culture in Hanover (Sondermann, 2015, 2017), the urban planning staff with whom KoopLab works accepts the RWL as a new player and initially welcomes its interventions for experimental space use with interest and goodwill, as different interviewees confirm. They also accept that KoopLab acts relatively independently within the framework of the neighbourhood-related governance arrangement. The urban planning staff also see themselves, at least partially, involved in formalised planning procedures which do not ensure sufficient flexibility, as one urban planner confirms: "As part of the local administration, we cannot take such an independent position. This is particularly unfortunate in the case of planning projects that require a high degree of low-threshold participation" (personal communication). This is also true when the city awards a project to a private planning office. An interviewed planner also remarks that the flexibility for participating inhabitants is limited in official planning projects, given the more or less differentiated catalogue of services that must be worked through. Incidentally, most neighbourhoods—like Sahlkamp—have multi-layered constellations of actors and a complex range of interests that can only be covered by formal planning procedures to a limited extent. This opens up far-reaching possibilities for a RWL like KoopLab.

There can be no clear answer to the question of how a RWL must position itself in the governance arrangement of a city or neighbourhood to be able to work in a goal-oriented manner. This also applies to RWLs such as KoopLab Hannover, which retain their autonomy by neither concluding formal declarations of intent or land use agreements with the city administration nor entering too closely into cooperation with the official planning authorities. After all, interviewees confirm that they are maybe more likely to involve marginalised groups of residents who have little confidence in local actors working closely with the urban administration. Informal, loose relationships can be very promising for RWLs that aim at fostering social cohesion in the neighbourhood as an experimental niche in the existing governance arrangement. This is confirmed by the city's urban planning representatives, who see the potential of the RWL precisely in this independent position.

7. Lessons Learnt and Outlook

This article explored how local stakeholders from, e.g., urban planning and social work perceive the potential of RWEs to be a fruitful addition to established urban planning practices. Based on an interpretative approach to planning and the notion of local planning culture, this study has focused on the content, instrumental, and governance dimension of urban planning. The findings presented are case study-based and, therefore, their generalisability must be critically questioned. Furthermore, the RWL's way of producing experimental knowledge is nothing entirely new for urban planning science and practice. In some respects, the RWL concept takes up the approaches that have already emerged in urban planning in recent past, for example within the framework of the communicative planning paradigm. Nevertheless, urban planning actors (in Hanover) see RWLs/RWEs as a potential for urban planning (in the case of social cohesion through cooperative open space development) particularly in the following aspects:

- *Negotiation of values and norms*: A RWL with its experimental, transdisciplinary and 'low-threshold' interventions, i.e., RWEs, enables the negotiation of overarching values and norms as well as their operationalisation for practice in different neighbourhoods. Here, the lab offers the specific chance to take into account local inhabitants' opinions, perceptions, and proposals that receive only limited attention in official planning processes. In this respect, RWLs may provide a more differentiated picture of what different groups of local stakeholders actually expect from different planning projects.
- *Extending opportunities for participation*: RWLs can expand opportunities for local residents' participation in neighbourhood planning. The lab's transdisciplinary approach—possibly combined with a targeted strategy of empowerment—its long-term engagement, and its various collaborative RWEs reach out to (marginalised) groups of residents with whom urban planning may find difficulty getting in touch with. Furthermore, a lab's 'neutrality' in the sense of a possible distance from other actors—especially from urban planning administration or housing companies—can positively influence the relation with a local public. Especially for social-participatory projects, an extended involvement of residents brings advantages for the planning process and the achievement of planning goals.
- *Permission to fail and reflect*: Like urban planning, RWLs pursue a transformative, normative goal. However, their RWEs do not aim at creating the conditions for achieving this goal, but primarily serve the purpose of open knowledge production. They allow for 'failure' and are designed to reflect the gained knowledge. For example, experiments can be conducted in different variations, which is hardly possible in planning itself. Openness, reflection, and an 'empathic understanding' of local issues are also often neglected in (conventional)

planning procedures. However, they can be helpful at least for an open planning culture, possibly as a preliminary stage to the actual planning process.

- *RWLs as new actors*: As a new 'actor,' the RWL enters governance arrangements at the neighbourhood scale with its established actor structures and relationships. For urban planning procedures, a RWL offers the opportunity not only to be a source of new ideas but also to break up ingrained, path-dependent patterns of relationships and negotiation. At least a rather open local planning culture can perceive the co-design and co-production in RWEs as enrichment. In this respect, RWLs can serve as intermediate interfaces between different groups of actors. They can dock onto existing networks, bring together actors who have had little contact with each other in the past, or set up flexible formats of cooperation which urban planning is not able to do in its formal planning procedures—due to legally or bureaucratically defined forms of participation, lack of time, or lack of human or financial resources. If participatory, deliberative involvement is a goal of planning, it can be strengthened by RWLs.

The recent crises that cities have been facing make new modes of transformative research necessary. In this study, I have argued that RWEs at the intersection of urban planning and community development hold unexpected potential for testing different 'opportunities for encounters.' In future research, however, comparative analyses of RWLs may help researchers gain a better understanding of constricting local conditions and the varied influence of different institutional environments on the transformative potential of RWEs and the successful creation of spaces of encounter. At the international level, comparative analyses of labs with different underlying theoretical concepts may identify specific lab settings that promote or inhibit social cohesion. Such research would be especially helpful to scientists and policymakers who wish to realise the full potential RWEs have to contribute at the interface of urban planning and community development to the fair and sustainable transformation of cities.

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References

Abbott, J. (2005). Understanding and managing the unknown: The nature of uncertainty in planning. *Journal of Planning Education and Research*, *24*(3), 237–251.

Albrechts, L. (1991). Changing roles and positions of planners. *Urban Studies*, *28*(123), 123–137.

Altrock, U. (2014). Das Ende der Angebotsplanung? Instrumente der Planung im Wandel [The end of the offer planning? Planning instruments in change]. In P. Küpper, M. Levin-Keitel, F. Maus, P. Müller, S. Reimann, M. Sondermann, . . . T. Wiegand (Eds.), *Raumentwicklung 3.0: Gemeinsam die Zukunft der räumlichen Planung gestalten* [Spatial development 3.0: Shaping the future of spatial planning together] (pp. 15–32). Hanover: ARL.

Amin, A. (2002). Ethnicity and the multicultural city: Living with diversity. *Environment and Planning A: Economy and Space*, *34*(6), 959–980.

Banovetz, J. M. (1971). The city and change: Programming for control. In J. M. Banovetz (Ed.), *Managing the modern city* (pp. 134–150). Washington, DC: International City Management Association.

Beecroft, R., Trenks, H., Rhodius, R., Benighaus, C., & Parodi, O. (2018). Reallabore als Rahmen transformativer und transdisziplinärer Forschung [Real-world labs as a framework for transformative and transdisciplinary research]. In R. Defila & A. Di Giulio (Eds.), *Transdisziplinär und transformativ forschen: Eine Methodensammlung* [Transdisciplinary and transformative research: A collection of methods] (pp. 75–100). Wiesbaden: Springer.

Benz, A., & Dose, N. (2010). Governance: Modebegriff oder nützliches sozialwissenschaftliches Konzept? [Governance: A buzzword or a useful social science concept?] In A. Benz & N. Dose (Eds.), *Governance: Regieren in komplexen Regelsystemen. Eine Einführung* [Governance: Governing in complex systems of rules. An introduction] (pp. 13–36). Wiesbaden: Springer.

Bulkeley, H., Marvin, S., Voytenko Palgan, Y., McCormick, K., Breitfuss-Loidl, M., Mai, L., . . . Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European Urban and Regional Studies*, *26*(4), 317–335.

Caprotti, F., & Cowley, R. (2017). Interrogating urban experiments. *Urban Geography*, *38*(9), 1441–1450.

CASS & ProClim. (1997). *Forschung zu Nachhaltigkeit und Globalem Wandel: Wissenschaftspolitische Visionen der Schweizer Forschenden* [Research on sustainability and global change: Science policy visions of swiss researchers]. Bern: Schweizerische Akademie der Wissenschaften. Retrieved from https://

naturwissenschaften.ch/service/publications/75640-visionen-der-forschenden

Dangschat, J. S. (2011). Partizipation, Integration und öffentlicher Raum [Participation, integration and public space]. *eNewsletter Netzwerk Bürgerbeteiligung* 01/2011 vom 12.12.2011, pp. 1–9. Retrieved from https://www.netzwerk-buergerbeteiligung.de/?id=158#c131

Danielzyk, R., & Sondermann, M. (2018). Informelle Planung [Informal planning]. In Akademie für Raumforschung und Landesplanung (Ed.), *Handwörterbuch der Stadt—und Raumentwicklung* [Handbook of urban and spatial development] (pp. 963–974). Hanover: ARL.

Defila, R., & Di Giulio, A. (2018). Reallabore als Quelle für die Methodik transdiszplinären und transformativen Forschen: Eine Einführung [Real-world laboratories as a source for the methodology of transdisciplinary and transformative research: An introduction]. In R. Defila & A. Di Giulio (Eds.), *Transdisziplinär und transformativ forschen: Eine Methodensammlung* [Transdisciplinary and transformative research: A collection of methods] (pp. 9–35). Wiesbaden: Springer.

Deutscher Städtetag. (2013). *Integrierte Stadtentwicklungsplanung und Stadtentwicklungsmanagement: Strategien und Instrumente nachhaltiger Stadtentwicklung* [Integrated urban development planning and urban development management: Strategies and instruments for sustainable urban development]. Berlin and Cologne: Deutscher Städtetag. Retrieved from https://www.staedtetag.de/positionen/positionspapiere/integrierte-stadtentwicklungsplanung-2015

Dorstewitz, P. (2014). Planning and experimental knowledge: Zeche Zollverein as an urban laboratory. *IJURR*, *2*(38), 431–449.

Drobek, S., & Tran, M. (2017). Temporäre urbane Interventionen in der Stadtplanungspraxis [Temporary urban interventions in urban planning practice]. In J. Reinermann & F. Behr (Eds.), *Die Experimentalstadt: Kreativität und die kulturelle Dimension der Nachhaltigen Entwicklung* [The experimental city: Creativity and the cultural dimension of sustainable development] (pp. 95–114). Wiesbaden: Springer.

Eckart, J., Ley, A., Häußler, E., & Erl, T. (2018). Leitfragen für die Gestaltung von Partizipationsprozessen in Reallaboren [Key questions for the design of participation processes in real-world labs]. In R. Defila & A. Di Giulio (Eds.), *Transdisziplinär und transformativ forschen: Eine Methodensammlung* [Transdisciplinary and transformative research: A collection of methods] (pp. 105–135). Wiesbaden: Springer.

Evans, J., Karvonen, A., & Raven, R. (2016). The experimental city: New modes and prospects of urban transformation. In J. Evans, A. Karvonen, & R. Raven (Eds.), *The experimental city* (pp. 1–12). London and New York, NY: Routledge.

Groß, M. (2017). Experimentelle Kultur und die Governance des Nichtwissens [Experimental culture and the governance of ignorance]. In J. Reinermann & F. Behr (Eds.), *Die Experimentalstadt: Kreativität und die kulturelle Dimension der Nachhaltigen Entwicklung* [The experimental city: Creativity and the cultural dimension of sustainable development] (pp. 21–40). Wiesbaden: Springer.

Healey, P. (1983). 'Rational Method' as a mode of policy formation and implementation in land-use policy. *Planning and Design*, *10*(1), 19–39.

Healey, P. (1996). The communicative turn in planning theory and its implications for spatial strategy formation. *Environment and Planning B: Urban Analytics and City Science*, *23*(2), 217–234.

Healey, P. (1997). *Collaborative planning: Shaping places in fragmented societies*. Basingstoke: Macmillan.

Honey-Rosés, J., & Stevens, M. (2019). Commentary on the absence of experiments in planning. *Journal of Planning Education and Research*, *39*(3), 267–272.

Jacobsen, S. (2018). *Challenging the place experiment: A critical take on the experiment as an urban planning strategy* (Master's thesis). Lund University, Lund, Sweden. Retrieved from http://lup.lub.lu.se/student-papers/record/8957925

Kanning, H. (2018). *Reallabore aus planerischer Perspektive* [Real-world labs from a planning perspective]. Hanover: Sustainify. Retrieved from https://www.sustainify.de/files/luxe/downloads/sustainify/03-2018-Reallabore-planerisch07.pdf

Karow-Kluge, D. (2008). *Gewagte Räume: Experimente als Teil von Planung zwischen Wissenschaft, Gesellschaft und Kunst* [Daring spaces: Experiments as part of planning between science, society and art] (Doctoral dissertation). University of Hanover, Hanover, Germany. https://doi.org/10.15488/7063

Karvonen, A., & van Heur, B. (2014). Urban laboratories: Experiments in reworking cities. *IJURR*, *38*(2), 379–392.

Knieling, J. (2018). Kooperative Planung [Cooperative planning]. In Akademie für Raumforschung und Landesplanung (Ed.), *Handwörterbuch der Stadt—und Raumentwicklung* [Handbook of urban and spatial development] (pp. 1229–1236). Hanover: ARL.

Landeshauptstadt Hannover. (2015). *Integriertes Entwicklungskonzept 2015 Sahlkamp-Mitte* [Integrated development concept 2015 Sahlkamp-Mitte]. Hanover: Landeshauptstadt Hannover. Retrieved from https://www.hannover.de/content/download/601303/13730211/file/IEK_Sahlkamp_2015.pdf

Landeshauptstadt Hannover. (2019). Sanierung Sahlkamp-Mitte [Redevelopment Sahlkamp-Mitte]. *Landeshauptstadt Hannover*. Retrieved from https://www.hannover.de/Leben-in-der-Region-Hannover/Planen,-Bauen,-Wohnen/Stadterneuerung-Förderung/Sanierung-im-Programm-Soziale-Stadt/Sanierung-Sahlkamp-Mitte

Lapina, L. (2016). Besides conviviality: Paradoxes in being 'at ease' with diversity in a Copenhagen district.

Nordic Journal of Migration Research, *6*(1), 33–41.

Mackrodt, U., & Helbrecht, I. (2013). Performative Bürgerbeteiligung als neue Form kooperativer Freiraumplanung [Performative citizen participation as a new form of cooperative open space planning]. *disp*, *49*(4), 14–24.

May, T., & Perry, B. (2016). Cities, experiments and the logics of the knowledge economy. In J. Evans, A. Karvonen, & R. Raven (Eds.), *The experimental city* (pp. 32–46). London and New York, NY: Routledge.

Mayring, P. (2010). *Qualitative Inhaltsanalyse* [Qualitative content analysis]. Weinheim: Beltz.

Müller-Ibold, K. (1996). *Einführung in die Stadtplanung I* [Introduction to urban planning I]. Stuttgart: Kohlhammer.

Nuissl, H., & Heinrichs, D. (2006). Zwischen Paradigma und heißer Luft: Der Begriff der Governance als Anregung für die räumliche Planung [Between paradigm and hot air: The concept of governance as a stimulus for spatial planning]. In U. Altrock, S. Güntner, S. Huning, T. Kuder, H. Nuissl, & D. Peters (Eds.), *Sparsamer Staat—Schwache Stadt?* [Economical state: Weak city?] (pp. 51–72). Kassel: Altrock.

Olesen, K. (2018). Teaching planning theory as planner roles in urban planning education. *Higher Education Pedagogies*, *3*(1), 302–318.

Othengrafen, F., & Reimer, M. (2018). Planungskultur [Planning culture]. In Akademie für Raumforschung und Landesplanung (Eds.), *Handwörterbuch der Stadt—und Raumentwicklung* [Handbook of urban and spatial development] (pp. 1733–1739). Hanover: ARL.

Parodi, O., Beecroft, R., Albiez, M., Quint, A., Seebacher, A., Tamm, K., & Waitz, C. (2016). Von Aktionsforschung bis Zielkonflikte. Schlüsselbegriffe der Reallaborforschung [From action research to conflicting goals: Key terms in real-world lab research]. *TATuP*, *25*, 9–18.

Phillips, D. (2015). Segregation, mixing and encounter. In S. Vertovec (Ed.), *Routledge international handbook of diversity studies* (pp. 337–343). London and New York, NY: Routledge.

Przyborski, A., & Wohlrab-Sahr, M. (2014). *Qualitative Sozialforschung* [Qualitative social research]. Munich: Oldenbourg.

Puttrowait, E., Dietz, R., Gantert, M., & Heynold, J. (2018). Der Weg zum Realexperiment—Schlüsselakteure identifizieren, Kooperationsstrukturen aufbauen, Projektideen auswählen [The way to a real-world experiment: Identifying key players, building cooperation structures, selecting project ideas]. In R. Defila & A. Di Giulio (Eds.), *Transdisziplinär und transformativ forschen: Eine Methodensammlung* [Transdisciplinary and transformative research: A collection of methods] (pp. 195–232). Wiesbaden: Springer.

Räuchle, C., & Schmiz, A. (2020). WissenMachtStadt. Wie in Reallaboren Stadt verhandelt und Wissen produziert wird [Knowledge, power, and the city: The negotiation of the city and the production of knowledge in real-world laboratories]. *sub\urban*, *8*(3), 31–52.

Renn, O. (2018). Real-world laboratories: The road to transdisciplinary research? *GAIA*, *27*(1), 1.

Saunders, D. (2010). *Arrival city: How the largest migration in history is reshaping our world*. New York, NY: Pantheon.

Schäfers, B. (Ed.). (1992). *Grundbegriffe der Soziologie* [Basic concepts of sociology]. Opladen: Leske + Budrich.

Schäpke, N., Stelzer, F., Bergmann, M., Singer-Brodowski, M., Wanner, M., Caniglia, G., & Lang, D. J. (2017). *Reallabore im Kontext transformativer Forschung. Ansatzpunkte zur Konzeption und Einbettung in den internationalen Forschungsstand* [Real-world labs in the context of transformative research: Starting points for conception and embedding in the international state of research]. Lunenburg: Leuphana Universität Lüneburg. Retrieved from https://epub.wupperinst.org/frontdoor/deliver/index/docId/6629/file/6629_Schaepke.pdf

Schneidewind, U. (2014). Urbane Reallabore—ein Blick in die aktuelle Forschungswerkstatt [Urban real-world labs: A look at the current state of research]. *pnd|online*. Retrieved from http://archiv.planung-neu-denken.de/fre-ausgaben-mainmenu-63.html

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Sennett, R. (1991). *Civitas. Die Großstadt und die Kulturen des Unterschieds* [The conscience of the eye]. Frankfurt: S. Fischer.

Shaftoe, H. (2008). *Convivial urban spaces: Creating effective public places*. London: Earthscan.

Sondermann, M. (2015). Zivilgesellschaftliches Engagement und die kulturelle Dimension kooperativer Stadtgrünentwicklung am Beispiel Hannovers [Civil society engagement and the cultural dimension of cooperative urban green development using the example of Hanover]. *Neues Archiv für Niedersachsen*, *1*(2015), 98–111.

Sondermann, M. (2017). Planungskultur als Sinnsystem: Eine Untersuchung am Beispiel kooperativer Stadtgrünentwicklung in Düsseldorf [Planning culture as a system of meaning: An investigation using the example of cooperative urban green development in Düsseldorf]. *Raumforschung und Raumordnung*, *75*(1), 45–56.

Valentine, G. (2008). Living with difference: Reflections on geographies of encounter. *Progress in Human Geography*, *32*(3), 323–337.

Wiesemann, L. (2015). *Öffentliche Räume und Diversität. Geographien der Begegnung in einem migrationsgeprägten Quartier—das Beispiel Köln-Mülheim* [Public spaces and diversity: Geographies of encounter in a neighbourhood characterized by

migration—The example of Cologne-Mülheim]. Berlin and Münster: LIT.

Wiesemann, L. (2019). *Begegnung schaffen im Quartier: Eine Reflexion von Theorie und Praxis* [Creating encounters in the neighbourhood: A reflection on theory and practice]. Berlin: vhw werkSTADT. Retrieved from https://www.vhw.de/fileadmin/user_upload/08_publikationen/werkSTADT/PDF/vhw_werkSTADT_Begegnung_im_Quartier_Nr_34_2019.pdf

Wilson, H. F. (2017). On the paradox of 'organised' encounter. *Journal of Intercultural Studies*, *38*(6), 606–620.

Yiftachel, O. (1989). Towards a new typology of urban planning theories. *Environment and Planning B: Urban Analytics and City Science*, *16*(1), 23–39.

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Article

Planning from Failure: Transforming a Waterfront through Experimentation in a Placemaking Living Lab

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Abstract
This article assesses what happens when planning by experiment becomes imperative for strategic city sites such as waterfronts due to the failure of other forms of centralised, top-down, or market-led planning. Through an in-depth case-based analysis of La Marina de València (LMdV) we investigate the potential of experimentation for revitalisation of city sites. To do this, we first review the literature on urban development approaches to identify specific issues that lead to urban planning failure. We then extend the scholarship on urban experimentation by proposing a definition of place-based experimentation as 'relational process.' Then, we explore how planning by experiment emerged as a response to planning failures in a broader strategy for revitalisation of LMdV. We propose key processes for planning by experiment through a Placemaking Living Lab based on perception, collaboration, and iteration, which we use to assess experimentation at LMdV. In the conclusion we discuss the potential of this approach to 'planning by experiment' to revitalise urban governance and planning processes in cities and their strategic sites.

Keywords
experimental planning; innovation; participation; placemaking; urban living labs

Issue
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1. Introduction

Worldwide, waterfront regeneration megaprojects have become key post-industrial sites of entrepreneurial planning strategies to revamp a city's international image (Marshall, 2001)—attracting investment and footloose capital, and iconic architectural symbols of economic power (Kennedy, 2015; Orueta & Fainstein, 2008). Proposals for their regeneration are usually justified by promises of social, economic, and environmental benefits (Laidley, 2007). However, such aims are often reduced to rhetoric and broken promises (Flyvbjerg, 2005), while megaprojects unfold as antagonistic processes between developers, authorities, and local communities (Sandercock & Dovey, 2002; Siemiatycki, 2013).

Despite the multifaceted issues around waterfront regeneration, there is often ongoing commitment from state and specialised planning authorities to realise social, economic, and environmental benefits. In this article we consider one such strategic waterfront site:

La Marina de València (hereafter LMdV), Spain—the old harbour of one of the largest ports in Mediterranean Europe. Through different phases of urbanisation (Hall & Barrett, 2012), waterfronts sites have been key strategic areas of mercantile exchange, industrialisation and, later, of cultural modes of capital exchange. While planning strategies and urbanisation processes have changed over time reflecting economic and political changes, dominant underlying values and outcomes remain influential and contested. Though some sites have seen environmental and aesthetic improvements led by more recent design strategies, the continued focus of planning efforts on profit-value over user-value have compounded long histories of dislocation, under and over development, and economic, political, and climate crises.

Within the discourse of multiple crises, urban experimentation is gaining increasing importance. With associated approaches such as living labs and placemaking, experimentation is increasingly seen as necessary for addressing new or intractable urban challenges (Bulkeley et al., 2016; Caprotti & Cowley, 2017) and a potentially valuable mode of planning (Scholl & Kemp, 2016). This potential raises questions about the 'urban planning challenges' to be addressed as well as the approaches, participants, and outputs of urban experimentation processes. How can experimental processes generate new knowledge, relationships, and mechanisms that embed a commitment to experimentation and improving governance? This article aims to make a conceptual and empirical contribution to the literature by responding to these questions through an investigation of what happens when planning by experiment becomes an imperative due to the failure of other forms of centralised, top-down, or market-led planning for strategic city sites.

The article is based on a three-year collaboration between el Consorcio València 2007 (the administrative agency responsible for LMdV) and the Western Sydney University to inform and assess the establishment of a Living Lab at the Marina. Between 2017 and 2020 the authors engaged in regular knowledge exchange and collaborated on some of the experiments conducted at LMdV. A transdisciplinary project, the findings in this article are based on: regular correspondence with members of the Consorcio as the Living Lab was established; observation; participant observation; document, media, and website content analysis; qualitative data generated in workshops and interviews; and secondary analysis from experiments and research conducted by the Consorcio. Our analysis finds that experimentation surfaced and helped focus planning processes on the dynamic relationship between the tangible (physical) and intangible (social and cultural) features of the site—essential for achieving thriving public spaces.

To understand why previous planning approaches have not grasped the importance of this relationship, we begin by critiquing the way different approaches to planning have failed strategic city sites. Then, we consider how experimentation has emerged as a response to the limitations of state and market-led planning paradigms. Identifying the ways experimentation addresses the limitations of other planning approaches, we propose a definition of *planning by experiment as relational process*. We then introduce the case study—noting that the potential of urban experiments is inextricably tied to the histories of the places in which they are enacted—and apply the relational concept of planning by experiment to assess the integration of planning by experiment in a broader strategy for revitalisation of LMdV. We conclude there is considerable potential in 'planning by experiment' through a Placemaking Living Lab (hereafter PmLL) to revise urban governance and planning—and to productively impact broader planning processes and practices that shape cities and their strategic sites.

2. Planning and Failure

Strategic city sites, such as LMdV, have developed over centuries and, since the 1950s, have been subject to different planning approaches. These can be understood as evolving and overlapping with legacies that play out in the present (Table 1). While the pre-industrial phases of urban transformation were characterised by laissez-faire, elite-led urban development with limited state control, the industrial period marked a shift towards a more regulated plan-led system, whereby development processes became increasingly directed by legally-binding zoning plans against which proposals and approvals were determined (Hall & Barrett, 2012).

However, zoning plans typically lacked collaborative visioning and community building (Deakin, 2011). From the late 1970s, planning approaches shifted towards policies and regulations to development-based and market-led approaches (Parker, Street, & Wargent, 2018). These approaches, characterised by public-private consortiums and outsourced development proposals, became globally influential particularly in large-scale regeneration projects. This form of 'market-led' planning became a matter of box-ticking, rather than collaboration or reflection, further limiting professional and community participation (Parker et al., 2020). Despite the justification of such approaches and development proposals on the basis of environmental, social, and economic improvements at the local and regional level (e.g., through new infrastructure and the creation of new economic centres), they largely resulted in privatised high-end property markets and isolated urban areas that reflected the desires and visions of a limited number of producers and users of urban space.

At the turn of the millennium, the growing force of the cultural economy and the creative industries generated design-based schemes and initiatives as a driver of economic and social regeneration globally (Freestone & Gibson, 2006). Still framed by principles of production and consumption, design-led planning was characterised by flagship public, commercial, and residential developments—and which had greater global marketing

Table 1. Phases of urban planning leading to place-based approaches.

Plan-led planning From 1950s	Development proposals are determined by the public authority through a formal zoning plan.
Development-led planning From 1960s	Development proposals are determined by the public authority on case-by-case merits without limitations from a formal zoning plan.
Market-led planning From 1990s	Increased role of the private sector in determining the formulation of master plans, determination of land-use rights, and financial resources. Viability-planning is a derivative.
Design-led planning From 2000s	Based on place branding, marketing, and promotion in combination with infrastructural improvement to stimulate local economic development through the attraction of post-industrial professional, managerial, and service businesses.
Place-led planning From 2010s	Also associated with 'placemaking,' derived from 'place' theory: as multilayered space occupied with human activity, local meaning, and distinctive qualities or 'spirit.' Fundamentally based on community participation and understood as a collaborative process among multiple stakeholders (professionals, officials, residents, and businesses). Spans the planning, design, management, and programming of public space with the purpose of improving a community's cultural, economic, social, and ecological situation.

impact when associated with mega sporting events (Bell & Jayne, 2003). In all, design-led planning approaches boosted the high-end cultural economy of cities, attracting footloose capital and mega-events, but further failed to implement a regeneration process that connected at the local level to provide public spaces that were meaningful to local people (Mussi, Steinmetz, Evans, & Corkery, 2020). Design-led approaches in many instances reproduced and even deepened the disconnect between development outcomes and local people, cultures, and uses (Sandercock & Dovey, 2002) and have been heavily critiqued as restrictive and preventative rather than generative of new ideas and practices that result in use of urban space that benefits the broader public (Lovering, 2009; Pickvance, 1982; Yiftachel & Huxley, 2000).

This brief discussion highlights the persistent conflict between exchange-value (profit) and user-value (everyday life) in configuring the urban. In planning approaches for strategic city sites, exchange-value has dominated, "failing dismally, producing devalorized, crisis-driven urban and regional landscapes in which labour and capital cannot be combined productively to satisfy social needs" (Brenner, Marcuse, & Mayer, 2012, pp. 3–4). Success has mainly been measured in capital turnover, often resulting in the pursuit of ongoing developments within the same planning approach. Opportunities for learning, revisions in governance, regulations, and small-scale changes for gradual improvement are frequently overlooked. Thus, as cities have evolved, they have become increasingly complex, caught up in an evolving "dichotomy between the planned and the unplanned, the rational and the irrational" (Cupers, 2004, p. 5)—requiring new ways of planning for urban transformation.

Place-led approaches offer to bridge the exchange and user value gap by reconceptualising city sites as 'places,' prioritising and responding to changing demands from communities, and focusing on people and not on profit (see Brenner et al., 2012). Importantly, place-based experimental projects that do not result in desired outcomes can still be associated positively with learning (Sendra & Sennett, 2020), involvement of previously excluded groups, and a shift in the attitude and practices of administering organisations, municipalities, or corporate stakeholders towards collaboration and co-creation (Scholl & Kemp, 2016, p. 99). In this way, place-based and experimental approaches can be understood as crucial responses to the failure of other planning approaches and as deeply implicated in attempts to reconceptualise how city sites are constituted, to understand how transformation is enacted, and how success and failure are defined.

3. Experimentation as a Response to Failure

When understood through the lens of 'places,' cities—encompassing waterfronts—are made up of dynamic human and non-human arrangements that inform city life, that move beyond binary oppositions such as "subject-object, mental-material, natural-social…local [and] global" (see Massey, 1994; Soja, 1996, p. 60). As Cupers (2004, p. 5) argues, through the concept of assemblages, alternative visions of the city are "no longer a dichotomy, but a multitude of (dis)ordering interventions that constitute and transform the urban landscape." Moreover, efforts to grapple with the 'emotional' and 'non-tangible' move beyond the notion of the city as a 'thing' (Farias & Bender, 2010) and towards understanding the city as a 'place' and an integral actor in the planning network. This relational account of place requires relinquishing 'certainty' and engaging

with 'the known unknowns' in urban planning processes. Experimental approaches can be understood as a response to the recognition that cities are complex assemblages to which top-down, linear modes of planning are problematic at best. Here we consider the experimental features of two place-based approaches to urban planning—placemaking and urban living labs (ULL)—to propose a definition of 'planning by experiment' that addresses the short-comings of the planning approaches discussed above.

Placemaking is conceptualised as a 'continuous process' and a way of "shaping spaces to create meaningful experiences (in, of and for) people" (Hes, Mateo-Babiano, & Lee, 2019, p. 2). This involves a user-centred process concerned with urban sustainability by transforming context-specific public spaces through exploratory processes (Project for Public Spaces, 2007). When enacted successfully, placemaking is inherently experimental: An iterative process involving numerous small-scale interventions implemented by collaboration with end-users. Placemaking is a nonlinear process involving tiptoes forward, leaps ahead, backtracks, and repeating steps depending on the context and outcomes. Whether these small interventions are temporary or permanent, the goal is long-term impact towards more sustainable public spaces. Similarly, living labs are "user-centred, open innovation ecosystems based on systematic, user co-creation, integrating research and innovation processes in real life communities and settings" (Steen & van Bueren, 2017). ULL are place-based and focus on generating knowledge and solutions to multifaceted and transdisciplinary problems and opportunities in cities, such as sustainable transitions (Bulkeley et al., 2016; Steen & van Bueren, 2017). ULL are not just concerned with place but embedded within it—existing in relation to the histories and institutional, spatial, and temporal dimensions of the places they seek to transform. As such, they have potential to contribute to a broader paradigm shift in urban planning (Scholl & Kemp, 2016, p. 94).

For both approaches, transforming the role of local authorities from sponsors or administrators to partners and collaborators is critical (Cohen, Almirall, & Chesbrough, 2016). To distinguish themselves from neoliberal agendas, ULL need to meaningfully remake public space into a thriving place, co-designed and reimagined by community and stakeholders using approaches such as placemaking (Lorne, 2019). To overcome the issue of 'profit-value' over 'user-value,' placemaking must also move beyond urban renewal projects in which 'professional place-makers' (often acting as consultants or advisors) are 'flown in' to recreate or 'fix' problematic spaces, without understanding how local lived experiences or 'everyday encounters' impact upon the value and the consequential use of the space (Fincher, Pardy, & Shaw, 2016). To address these concerns, the literature on urban experimentation indicates three generative features: (1) learning towards a goal; (2) increase diversity; and (3) iterative process. These features are generative in the sense that they can produce interventions that result in places holding value for diverse stakeholders, in contrast to the goals of traditional planning modes that have proven unsuccessful thus far.

The first feature is that urban experimentation is focused on *learning towards a goal*, rather than achieving a predetermined outcome (Ansell & Bartenberger, 2016, p. 70; Scholl & Kemp, 2016, p. 92). In comparison to that carried out in laboratories, urban experimentation is a messy assemblage of various actors performing in many, often unpredictable, ways requiring a double measure of observation and intervention (Karvonen & van Heur, 2014, p. 383). Moreover, in urban contexts, experimentation is more "fluid, open-ended, contingent and political" (Raven et al., 2019, p. 260). Thus, urban experimentation prioritises learning through fostering the relations of people and places—putting people at the centre of planning processes. This involves shifting the focus of change from the actions of macro-level actors and policies to diverse stakeholders and their concrete actions in specific places (Karvonen & van Heur, 2014). This "process of collaboration and interactive learning" is reliant on networking, involving different enterprises, organisations, science and technology, and other entities and individuals (Smith, 2006, pp. 152–153). Experimentation, therefore, is transdisciplinary and values and leverages diverse knowledges through collaborative practices.

Secondly, through ULL, experimentation can *increase diversity* of participants in urban transformation processes, emphasising reflexivity in relation to other modes of planning so as to prompt broader adaptations within the system (Scholl & Kemp, 2016, p. 94). To achieve genuine change, experimental urban planning processes must be more than a supplement to a design-based approach, or corporate lip-service to expectations of 'consultation' or 'co-design' (Bulkeley & Castán Broto, 2013; Evans, Karvonen, & Raven, 2016, p. 1). Instead, it requires ongoing critical consideration of 'who' is involved, and who is likely to benefit from the recommendations and outcomes, and who determines what success looks like and how it is measured (Evans et. al., 2016, p. 3). These concerns highlight that to be transformative, urban experiments must aim to question and unsettle established power relations associated with institutional, social, and technical forms of knowledge (Bulkeley et al., 2016).

Thirdly, in contrast with other planning systems that are defined by set visions and linear processes and steps, experimentation is *iterative*, full of discoveries and failures through 'inefficient urban trial and error' (Jacobs, 1969; Levinthal & March, 1993; Smith, 2006). Experimentation itself unfolds in temporal and spatial relations with flexible and evolving networks comprising economic, social, and political actors and trajectories (Evans et. al, 2016; Farias & Bender, 2010).

Consequently, space becomes a living creation, enacted through actions, connections, and associations, iteratively and over time. This idea of space challenges the traditional conventions of planning that define it as a capitalist construct of relations (Smith, 1982) or state strategies (Brenner, 2004). Instead, space evolves as learning and knowledge is shared through various actor networks to create change.

Based on this understanding of planning by experiment as a process of learning towards a goal, which increases participation and diversity, and depends on iteration as an inherent quality, as discussed in the literature, we propose a definition of planning by experiment *as a relational process*. To examine this relational process in action, we turn to the case study of LMdV.

4. La Marina de València: Place-Led Experimentation in Response to Planning Failure

In this section, we introduce the LMdV and contextualise the emergence of a place-led experimentation approach to highlight that urban experiments are inextricably tied to the histories of the places in which they are enacted. As argued above, planning failures can be linked to a misunderstanding of what a place represents to multiple publics: To successfully 'make' place, place needs to be understood as "the locus of complex intersections and outcomes of power geometries that operate across many spatial scales from the body to the global" (Massey, cited in Kitchin, Valentine, & Hubbard, 2004, p. 7). After first establishing the genealogy of LMdV, the development of a framework for embedding experimentation in the planning approach at LMdV is presented. By synthesising this framework with our proposed definition of *planning by experiment as relational process* we identify three specific processes that can be used to assess the potential of experimental approaches to urban planning at strategic city sites.

4.1. A Brief Genealogy of València's Waterfront

With 1.5 million habitants, València is Spain's third largest city. In València they say: "Los Valèncianos viven de espaldas al mar," which means "Valèncians live with their backs to the sea." Modern planning efforts have aimed to address the tensions between the 'city' and the 'seaside' that have characterised the city's urban evolution. València's harbour was born, six km from the Roman-founded city, with the need for commerce. Over time, the commercial waterfront grew steadily, with significant infrastructure consolidated during the 20th century (Figure 1). The major expansion, based on the exponential growth of maritime trade, took place in the 1980s—a period of development that generated a new phase of social and environmental tensions.

Throughout the late 20th century, there were numerous plans to connect the city centre with the harbour. The General Land-use Plan, from 1988, included opening to the public the old harbour which, by then, had become obsolete for commercial purposes (Boira, 2013). During the late 1990s and early 2000s, València's municipality promoted urban redevelopment based on tourism, real estate growth, and city branding. This resulted in large-scale, flagship developments such as Santiago Calatrava's City of Arts and Sciences, Norman Foster's Conference Hall, and waterfront redevelopment. These projects achieved international attention but exacerbated existing inequalities and divisions in the city (Romero, Melo, & Brandis, 2015). A key strategy to secure tourism, real estate growth, and international profile for the city was

Figure 1. València's harbour in 1947 and 2018. In the right picture we can see LMdV on the upper side. Source: Courtesy of Institut Cartogràfic Valencià.

to organise a major international event, as Barcelona and Sevilla had both done in 1992 (Olympics and the World Expo respectively). This urban entrepreneurialism and rapid growth policies (Prytherch & Boira, 2009) reflected a neo-liberal development model (Romero et al., 2015) based also on the long-term alliance between political and market powers linked to the construction of real estate and infrastructure (Sorribes, 2015).

València's 'event' was the 2007 America's Cup of Sailing, followed in 2008 by the European Grand Prix. To host it, a new public institution was created to redevelop the old harbour and waterfront to meet the needs of these events. The Consorcio was established as the waterfront redevelopment agency with the municipal, regional, and Spanish state governments as shareholders. Without a clear plan for post-event uses, major investment was directed towards fitting out the old harbour for the event, including public spaces, construction of twelve team bases, a landmark building for VIP events designed by architect David Chipperfield, a new entrance channel to the old harbour segregated from the commercial port, and three marinas for 800 boats. Following the event, the site became under-used, generating social and economic tensions exacerbated by the severity of the 2008 economic crisis and ongoing proposals for privatisation, leaving the Consorcio with a debt of around 500 million euros.

In 2015 a new government was elected and a new leadership was appointed to lead the Consorcio. This team (which included co-author Ramon Marrades as the chief strategy officer) took a radically different approach to revitalisation of the Marina. To address the major financial debt and continuing lack of use and maintenance of the site, the leadership launched a new strategy in 2017. After the failures brought about by decades of formal regulatory land use plans and development-led and market-led approaches, a place-led approach was adopted and formalised in the LMdV *Plan Estratégico* 2017–2021 (LMdV, 2017). The plan outlined a new vision based on three fundamental goals:

1. Productive activation of an under-utilised space of high historic, cultural, and real-estate value;
2. Civic engagement and active participation;
3. Effective governance.

At the core of its approach were new strategies to explore alternative outcomes and to create impactful changes. Instead of seeking grand-scheme investments, the strategy prioritised smaller-scale interventions, focusing on uses: putting activation of public space at the core. The Living Lab was specifically created to facilitate knowledge exchange and experimentation using a placemaking approach. Thus, the PmLL served as a conceptual platform for collaboration, especially with desired 'end-users' of LMdV, in identification and codesign of responses to unmet needs. Activation of the network of users, environments, and stakeholders, from conception to implementation of interventions in a real-time context, also allowed for ongoing monitoring and reflexivity.

4.2. Experimental Urban Planning through a Placemaking Living Lab

Since 2016, more than 50 experimental processes, at different scales, and involving different groups of stakeholders, have been undertaken to transform LMdV. To support understanding of the experimental approach and to capture the ethos of urban planning and placemaking at LMdV, a manifesto was created with the intention of guiding new ways to reimagine successful city spaces. The Manifesto (LMdV, 2019) synthesised research evidence with professional and situated knowledges in a practical framework. It was created through an open-ended, experimental process drawing on the experiences and knowledge of staff at the Consorcio, businesses operating at LMdV and elaborated during a co-creation workshop with 40 experts, and practitioners and researchers from 15 countries, which took place in November 2018. The Manifesto (LMdV, 2019, p. 38) was:

> Born out of the need to define clearly (a) the concept of public space, innovation and the relationship between the two (b) the core values and principles that should guide the creation of public spaces and (c) the key stakeholders that must be involved in the process.

The resultant framework aims to guide all stakeholders when working with the LMdV (Figure 2).

The PmLL manifesto and framework helped articulate the learnings from past experiments to staff at the Consorcio and to local and external stakeholders who were involved, invited, or intending to propose uses at LMdV. The framework intentionally emphasised people, places, and practices for co-creation and action to enhance understanding and legitimacy of the approach. When combined with the three generative features of our definition we posit that planning by experiment through approaches such as placemaking and living labs requires reflexivity through commitments to deeply *perceive* the place, enhance *diversity* and embed *iteration*. Thus, synthesising our proposed definition with the LMdV framework, we propose that an experimental approach to planning from failure is operationalised through the following interrelated processes:

- *Perception*: Prioritising *learning* through empirical assessment of needs (data), a systematised response to different stakeholders' requests (demands) and open conversation and co-creation with citizens (hopes or dreams) in an intuitive manner.
- *Collaboration*: Interrupting hierarchical and market-based power relations and *expands the diversity of publics* involved in the making of the

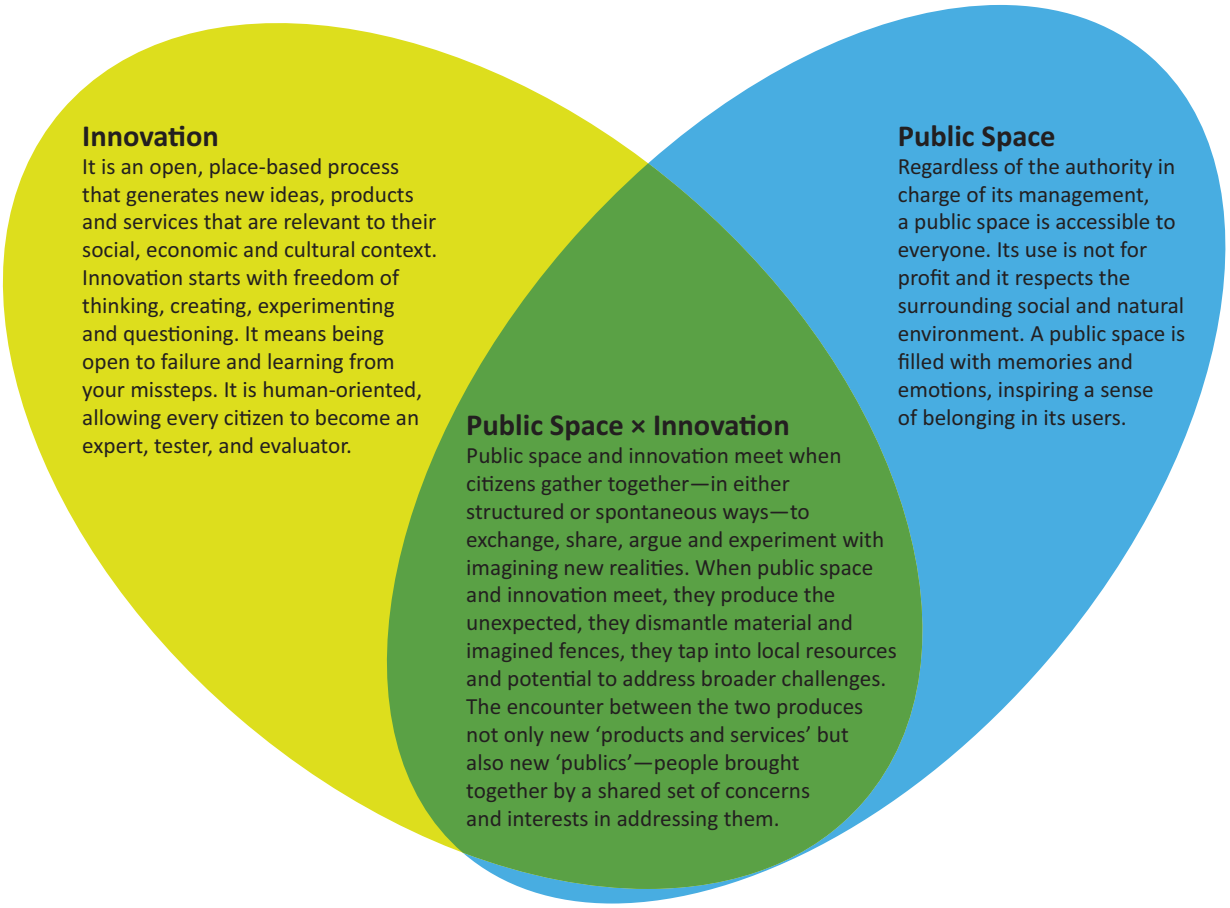

Figure 2. Framework for a PmLL at LMdV (2018). Source: Courtesy of LMdV.

place. Defines who is involved, who is benefiting and who is missing through co-design, co-creation, and co-evaluation.
- *Iteration*: Embed in institutional governance and strategy to achieve ongoing, approved action. Supports transformation and evolution of the place and leads to the next intuitive experiment and/or to reach out to different actors, involving rethinking, replicating, and rescaling each intervention.

The way these processes are interrelated is captured in Figure 3, and while not entirely linear, the figure illustrates the intent of planning by experiment to result in progressive, positive changes that cumulatively transform urban sites of significant strategic value—and controversy.

These processes were used by the authors to assess how planning by experiment is assisting place-based learning, inclusion, and improvements at LMdV. Our transdisciplinary inquiry draws on key informant summaries, participant observation, secondary data analysis, and document and media analysis. In the next section we provide five short 'intervention vignettes,' purposively selected for their illustrative capacity, to consider how planning by experiment through this framework is assisting in the transformation of a failed strategic city site such as LMdV.

4.3. Learning from Experimentation: Revitalisation of La Marina de València

Analysis of the PmLL activities identified five aims common to all experiments at LMdV that address failures of past planning approaches and contribute to the Consorcio's strategic goals. These are illustrated below in relation to five vignettes of experiments at LMdV:

1. *Turn spaces into places*. By 2017, all historical buildings and structures at LMdV had fallen into disrepair. The administrators identified the small bandstand—*La Pergola*—as a place of particular significance and potential. In collaboration with the Valèncian Music Societies of the surrounding communities, for whom it was a traditional site for concerts and gatherings, a renovation of La Pergola was conducted and a program of weekend concerts featuring the original musicians took place. Attendance numbers and feedback indicated these were popular with local communities and Valèncians. Over four years, the programming for La Pergola has grown and evolved to new

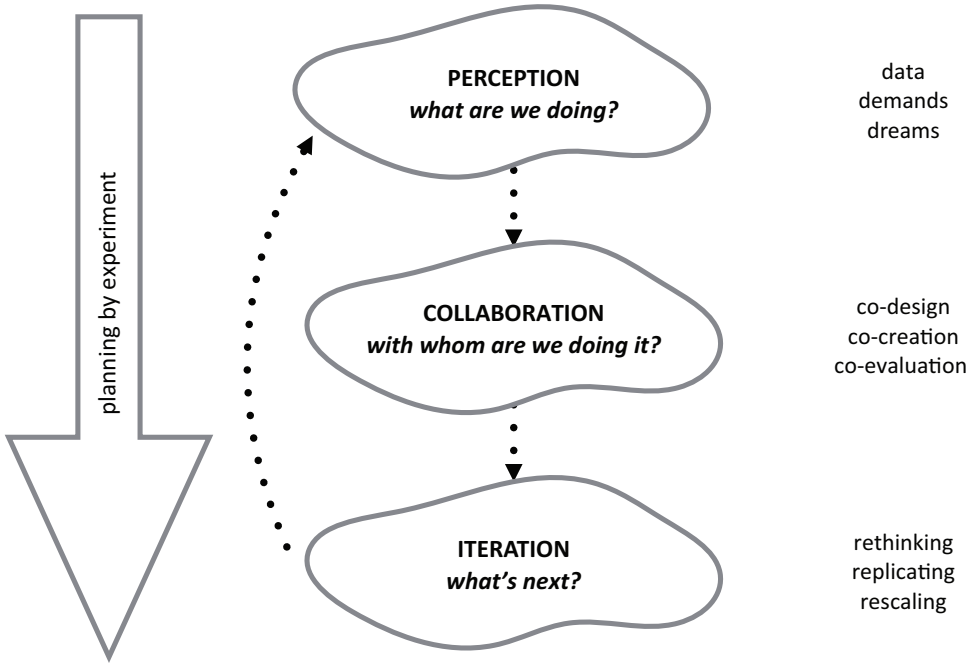

Figure 3. Processes underpinning the approach to planning by experiment at LMdV.

genres and audiences, drawing in a diverse, intergenerational crowd and 'revolutionizing [sic] daytime culture in the city' (El Mundo, 2018).

2. *Connect with local identity*. Poor local identification with the Marina was identified as a key issue for revitalisation (LMdV, 2017). To improve the everyday engagement of Valèncians with the site, the *Veus de La Marina* project (2018) engaged local residents, community organisations, and academic, public, and private stakeholders—including waterfront workers and small business owners—to co-create the toponymy of LMdV. Through interviews, surveys, collaborative mapping, and workshops, the project uncovered the history of the space, and developed unique names for the streets and squares in LMdV. The project facilitated a re-appropriation of LMdV's identity by local stakeholders, through a co-creative process of renaming spaces within the precinct. This process was accompanied by the creation of 15 signs for pedestrians and cyclists, five general plans of the site, and 46 general informative signs that address problems of navigation and improving accessibility to the space of LMdV (LMdV, 2020).
3. *Broaden user groups*. Among other groups, the Marina was not viewed as a place for young people (YP), who were often identified as a 'problem' for the site. To investigate alternative relations, one of the projects was *Surem La Marina* (2018). The project aimed to dialogue with YP in the surrounding areas, shift negative perceptions, and consider the needs and ideas of YP in a new vision for La Marina, while facilitating participants' learning and empowerment. Over two months, 50 participants aged 12–14 years visited LMdV weekly for participatory workshops to investigate and 'dream up' ideas to transform the area. Through engaging with YP's experiences of the built and social environment of LMdV and Poblats Maritims (suburbs surrounding LMdV), the project surfaced the preferences, interests, and hopes of participants. YP reimagined the harbour by brainstorming potential interventions to generate value in LMdV, identifying murals, sculptures, and 'artsy things' as well as free and accessible sports facilities as desirable. They also proposed broader goals including making a Marina 'for YP' to address their broader exclusion from other public and private city spaces. Participants' ideas were exhibited at the Consorcio, trialled, or channelled into subsequent co-creation events and other major projects, such as a Skatepark and a basketball court, which also utilised youth-participatory methodologies.
4. *Expand public uses*. To further develop the idea of a swimming pool proposed by YP in Surem la Marina, and to connect with the historic use of the Valèncian waterfront for public bathing, consultations with local swimming clubs and neighbourhood associations were conducted. These identified the concept of swimming as something that could bring locals and visitors of all ages together at LMdV. Using a 'lighter-quicker-cheaper' approach, *La Marina Ocean Pool* was created by employees of LMdV and opened to the public in June 2019, attracting a diverse audience of neighbours, YP, and visitors.
5. *Build generative international partnerships*. To enhance understanding, capacities, and engage-

ment in place-based and experimental planning, in 2019 LMdV hosted *Placemaking Week Europe*. The week-long event was attended by 400 placemakers, politicians, civil servants, developers, and companies who shared best practice, took part in interactive workshops, accelerated existing and new projects at LMdV, and celebrated the growing contribution of placemaking in creating better cities. Many events in the program were open to the public and included performances, panel discussions, and debates on the practices, challenges, successes, and impacts of placemaking. Leveraging other experiments such as the Ocean Pool, the event enabled locals and visitors to share stories and collaborate and experience the natural, artistic, and cultural aspects of LMdV and the city of València leading to specific policy changes such as legalising busking on the waterfront.

Although experiments at LMdV addressed all aims at some level, we identified that most had a primary aim (Table 2). According to official documentation, key informant reflections, and standard metrics (visitor numbers and satisfaction, income), these interventions were

Table 2. Outcomes of selected examples of experiments at LMdV (2017–2019).

Intervention	La Pergola	Veus de La Marina	Surem La Marina	Ocean Pool	Placemaking Week Europe
Primary Aim	Turn spaces into places	Connect with local identity	Broaden user groups	Expand public uses	Build generative international partnerships
Perception	Underutilised iconic structures; Historical and cultural significance for local communities; Small urban elements with strong cultural capital can have a big transformative effect.	Non-identifiable public spaces created problems (e.g., mail delivery, visitor navigation); Rich local knowledge of place exists; Problem could be solved and add community value.	YP seen as a problem; Lack of knowledge about YP's experiences of LMdV and desires for the place.	Swimming at LMdV was a valued activity in the past; Excluded users (locals and YP) proposed the concept; Recovering swimming in the harbour could enhance inclusion and diversify users.	International events are elitist and extractive; Limited understanding of placemaking and experimental approaches among administration and the public; Many professionals keen to participate in rejuvenation.
Collaboration	Community groups, music schools, NGOs, and local music industry.	Citizens and local community organisations.	Local YP aged 12–14 years and a facilitating NGO.	YP, swimming clubs, and LMdV employees.	International organisations including Placemaking X, Placemaking Europe, and Project for Public Spaces.
Iteration	LMdV became the main site for free public concerts in the city.	The results were used in the branding strategy and a new wayfinding schema.	Some ideas were trialled and others informed experiments at LMdV.	There is a plan to expand and improve the facility.	Increased local and international recognition of LMdV; Increased role of LMdV in global debates and leadership of waterfront transformations.

'successful' in delivering improvements to LMdV aligned with the strategic goals: productive activation of the space; civic engagement and participation; and effective governance.

However, many desired interventions have not proceeded as planned. For example, one of the tools to be embedded in PmLL activities was an emotion mapping app that used geolocation, a short survey, and user-generated content to capture how people feel in different parts of LMdV, and document desirable changes. Ultimately the scale of developing and introducing the app into LMdV was inhibited by lack of organisational buy-in and resources to promote it. Consequently, the app was subsumed by other priorities and ultimately discontinued. Other projects, such as the skatepark, had challenges with securing finances and development timelines. These delays generated considerable frustration among the community involved. Lessons learned from these examples included the importance of setting clear expectations and maintaining transparency and clear communication with institutional and community constituents from the outset. Nevertheless, discontinued initiatives provided learnings and smaller scale outcomes (like the release of the final design for the skatepark) that helped build community support for future experiments.

This focus on aims and challenges raises the question of what overall impact experimentation at LMdV has had, and what lessons this case study offers for broader conceptualisations and practices of place-based experimental planning.

5. Unsettling 'Success' and 'Failure' through Experimentation

The case of LMdV shows how planning by experiment reconfigured a failed urban development strategy through taking a different approach to success. Certainly, 'measures' and 'outcomes' are indicative of change in respect of the three strategic goals of LMdV: economic vitality; public engagement and perception; and effective governance. Even using conventional measures, economic changes have been achieved. Since 2015, revenue at the LMdV has increased by 78%. This outcome is undoubtedly linked to the increase of visitors to the Marina: By 2018, LMdV had become the second most visited site in València (7,7 million visitors). Moreover, the diversity of visitors and the relative presence of locals compared with tourists also increased (LMdV, 2019). While the significant commercial activities of LMdV were a key strategic priority for the Consorcio, experimental processes to foster transformations that reclaimed the site for citizens were also expanded and increasingly valued. With an elastic agenda and no control over the outcomes that would be generated, experimentation brought to life and empowered community voices and narratives.

Public participation and perceptions of LMdV were also transformed through the PmLL activities. Alongside greater inclusion, experimentation at LMdV sought to change how people viewed, interacted with, and felt about the site. PmLL activities focused on turning the spaces of LMdV into places by co-designing and reimagining the site with community and other stakeholders (Lorne, 2019). Specifically, interventions aimed to connect with local culture and history, diverse users, and promote new usages at the site (Figure 4). The vignettes presented above demonstrate how this approach activated actor networks, resulting in a wider distribution of power from institutional authorities and businesses towards actors who had previously been labelled as problematic or marginalised. For example, experiments such as Surem la Marina reconfigured YP as key partners in reshaping the LMdV. The project activated a different relationship with YP who had been marginalised in previous planning processes and whose presence in LMdV had been poorly understood. The increasingly positive perception of LMdV is also visible in media coverage. In 2015, prior to the implementation of the new strategy, 82% of the news coverage of LMdV was negative. By 2018, 91% of news mentioning LMdV was positive—one indication of the success of experimentation at LMdV.

With regards to effective governance, the integration of place-based and experimental planning approaches was achieved through strategic, subtle, and iterative transformations in governance and action (Bulkeley et al., 2016). The positioning of the PmLL within the strategic plan formalised the intent for the administering agency to be a partner, rather than a sponsor of change (Cohen et al., 2016). By demonstrating how experimental approaches can co-exist with good governance, the positive transformation process has shaped the political debate around LMdV. This culminated in the negotiations of the Spain's national budget for 2021 including payment for the current debt of Consorcio València 2007 (related to the America's Cup investments) as well as providing the resources and regulations to allow the Consorcio to advance the next phase of waterfront redevelopment (Europa Press, 2020). Thus, ongoing use of experimentation as relational process—involving continuous, open, reflexive cycles of perception, collaboration, and iteration—has contributed to reconfiguring even the most significant indicator of market-led planning 'failure' at LMdV—massive financial debt—as an opportunity.

Finally, the relational process of planning by experiment through commitment to perception, collaboration, and iteration has supported ongoing negotiations between competing needs and demands. Not all parties have been pleased with specific outcomes. For example, in La Pergola experiment, some residents remain in favour of the concerts and want more to be programmed, while others claim that the concerts are too noisy. Furthermore, while most of the interventions described in this article aimed to improve the inclusiveness of LMdV, some members of the community still perceive events and commercial activities such as fine

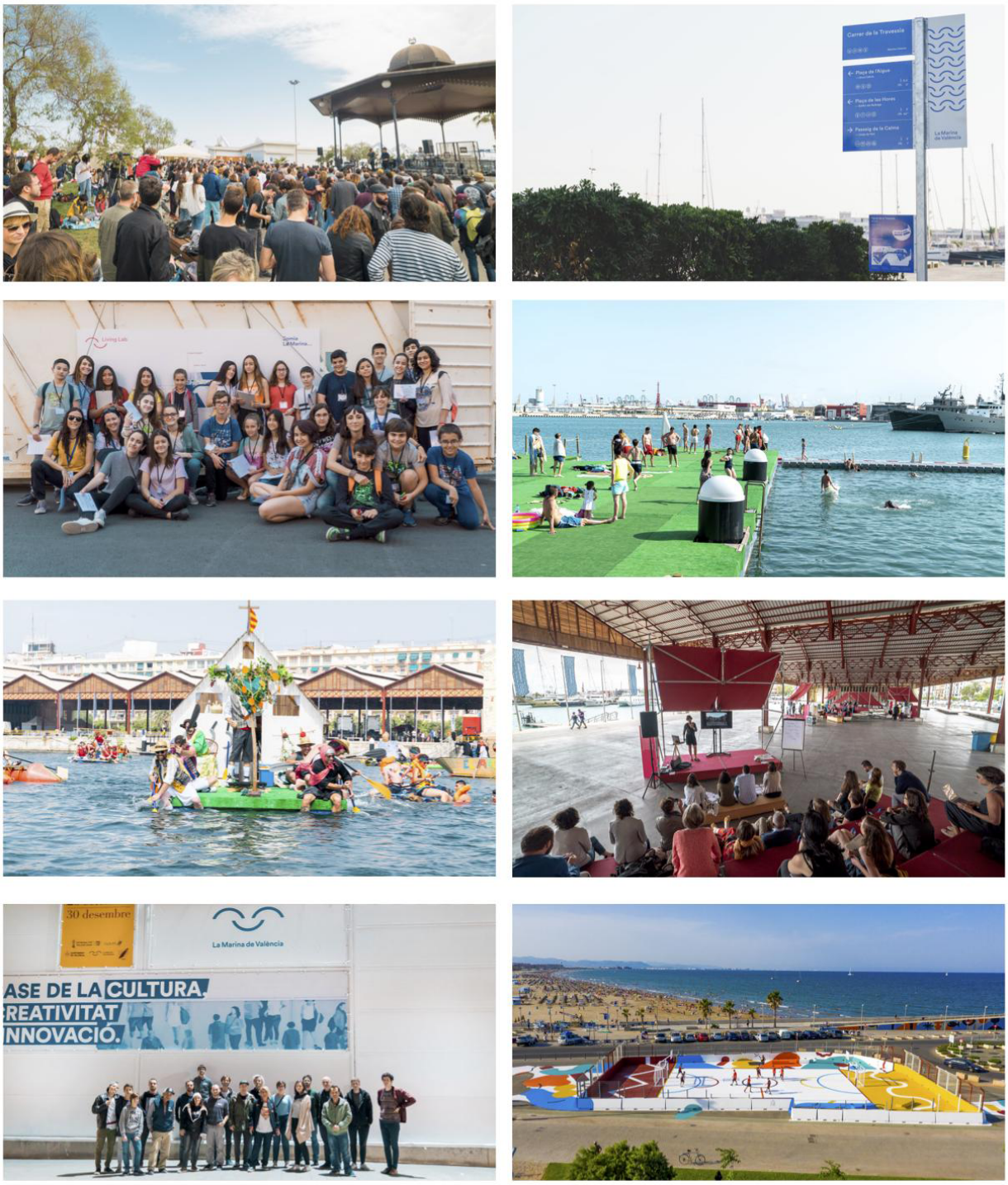

Figure 4. Experiments at LMdV. From left to right and top to bottom: Concert at La Pérgola; signals at Veus de La Marina; participants at SUREM project; ocean pool; crazy boats race; Placemaking Week; participants at a co-design workshop for the skatepark; and basketball court. Source: Courtesy of LMdV.

dining and sailing to be elitist. Nevertheless, the PmLL framework encourages working with the productive possibilities of the tensions and contradictions that surface through creative processes. Acknowledging these criticisms, testing and trialling different elements further, learning from successes and challenges and apply this knowledge, iteratively in new activities and strategies honours the complexity of the urban experiment.

6. Conclusions: Lessons for Experimentation from a Placemaking Living Lab

This article examines the potential of planning by experiment for the ongoing transformation of problematic city sites. By considering the literature in relationship to the case of LMdV, the article firstly contributes to an understanding of planning by experiment *as relational process*.

The case of LMdV demonstrates that this relational process is not separate to but emerges from the negative impacts of other forms of centralised, top-down, or market-led planning, and is an effort to reconcile the relations between the tangible (physical) and intangible (social and cultural) features of a site.

Secondly, the article provides an empirical account of how experimentation fosters the relations of people and places, by putting people—not profits—at the centre of planning processes. From the case of LMdV, we have derived processes for operationalizing planning by experiment at strategic city sites: specifically, *perception*, *collaboration*, and *iteration*. We suggest these processes could be usefully applied to other sites where experimental approaches could assist in shifting the mode of planning to achieve different outcomes. The case of LMdV suggests these processes are useful for guiding administrative actors to leverage diverse knowledges through collaborative and co-creative practices, as a continuous process to generate new, meaningful place-based experiences. Through this, failure is fundamentally reconfigured as ongoing learning and 'success' can be understood as the evolving (commitment to) shared value generated between places, people, uses, and local-global networks.

By discussing the pitfalls of historic planning approaches in the context of an iconic waterfront development, and then discussing the approaches, participants, and outputs of urban experimentation processes, we have shown how an experimental planning approach can help address past failures of planning. In the context of LMdV, the turn to experiment directly reconfigured the goals, processes, and participants in planning to activate the site through prioritising actions that aimed to uncover the history and potential of the relationship of people to the space. Such an approach has gone some way to interrupting hierarchical structures and traditional power relations by opening up networks of exchange and connectivity. The case demonstrates that, when mobilised through approaches such as placemaking and ULL, experimentation can support transforms in traditional planning, becoming an integral and generative tool of urban development that brings valued form to urban futures. Or at least, in a practical way, the case of LMdV shows experimentation can foster new uses and ideas, where concrete alone does not.

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Conflict of Interests

The authors declare no conflict of interests.

References

Ansell, C., & Bartenberger, M. (2016). Varieties of experimentalism. *Ecological Economics*, *130*, 64–73.

Bell, D., & Jayne, M. (2003). 'Design-led' urban regeneration: A critical perspective. *Local Economy*, *18*(2), 121–134.

Boira, J. V. (2013). Puerto y ciudad en València: El tránsito hacia un modelo de uso ciudadano (1986–2013) [Port and city in Valencia: The transition to a citizen use model]. *Biblio 3W: Revista Bibliográfica de Geografía y Ciencias Sociales*, *XVIII*(1049, 25), 1–8.

Brenner, N. (2004). *New state spaces*. Oxford: Oxford University Press.

Brenner, N., Marcuse, P., & Mayer, M. (2012). Cities for people, not for profit: An introduction. In N. Brenner, P. Marcuse, & M. Mayer (Eds.), *Cities for people, not for profit: Critical urban theory and the right to the city* (pp. 1–10). London: Routledge.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions: Institute of British Geographers*, *38*(3), 361–375.

Bulkeley, H., Coenen, L., Frantzeskaki, N., Hartmann, C., Kronsell, A., Mai, L., . . . Palgan, Y. V. (2016). Urban living labs: Governing urban sustainability transitions. *Current Opinion in Environmental Sustainability*, *22*, 13–17.

Caprotti, F., & Cowley, R. (2017). Interrogating urban experiments. *Urban Geography*, *38*(9), 1441–1450.

Cohen, B., Almirall, E., & Chesbrough, H. (2016). The city as a lab: Open innovation meets the collaborative economy. *California Management Review*, *59*(1), 5–13.

Cupers, K. (2004). *Walking as do-it-yourself urbanism*. London: Goldsmiths, University of London.

Deakin, M. (2011). Meeting the challenges of learning from what works in the development of sustainable communities. *Sustainable Cities and Society*, *1*(4), 244–251.

El Mundo. (2018, September 13). Vuelve la Pérgola de La Marina, el ciclo musical que ha revolucionado el ocio diurno de València [La Pérgola de La Marina is back, the musical cycle that has revolutionized daytime leisure in Valencia]. *El Mundo*. Retrieved from https://www.elmundo.es/comunidad-Valènciana/2018/09/13/5b9a7fbde2704e05878b460b.html

Europa Press. (2020, October 28). El Gobierno condona la deuda de la Marina de València ante el Tesoro Público en los PGE 2021 [The Government forgives the debt of the Marina de València to the Public Treasury in the State Budget 2021]. *Europa Press*. Retrieved from https://www.europapress.es/comunitat-Valenciana/noticia-gobierno-condona-deuda-marina-Valencia-tesoro-publico-pge-2021-20201028184632.html

Evans, J., Karvonen, A., & Raven, R. (2016). The experimental city: New modes and prospects of urban

transformation. In J. Evans, A. Karvonen, & R. Raven (Eds.), *The experimental city* (pp. 1–12). Oxon and New York, NY: Routledge.

Farias, I., & Bender, T. (2010). *Urban assemblages* (1st ed.). London: Routledge.

Fincher, R., Pardy, M., & Shaw, K. (2016). Place-making or place-masking? The everyday political economy of "making place." *Planning Theory & Practice*, *17*(4), 516–536.

Flyvbjerg, B. (2005). Machiavellian megaprojects. *Antipode*, *37*(1), 18–22.

Freestone, R., & Gibson, C. R. (2006). The cultural dimension of urban planning strategies: An historical perspective. In J. Monclus & M. Guardia (Eds.), *Culture, urbanism and planning* (pp. 21–41). Farnham: Ashgate.

Hall, T., & Barrett, H. (2012). *Urban geography* (4th ed.). London: Routledge.

Hes, D., Mateo-Babiano, I., & Lee, G. (2019). Fundamentals of placemaking for the built environment: An introduction. In D. Hes & C. Hernandez-Santin (Eds.), *Placemaking fundamentals for the built environment* (pp. 1–14). Basingstoke: Palgrave Macmillan.

Jacobs, J. (1969). *The economy of cities*. New York, NY: Vintage Books.

Karvonen, A., & van Heur, B. (2014). Urban laboratories: Experiments in reworking cities. *International Journal of Urban and Regional Research*, *38*(2), 379–392.

Kennedy, L. (2015). The politics and changing paradigm of megaproject development in metropolitan cities. *Habitat International*, *45*, 163–168.

Kitchin, R., Valentine, G., & Hubbard, P. (2004). *Key thinkers on space and place*. London and Thousand Oaks, CA: Sage.

La Marina de València. (2017). *Plan estratégico 2017–2021* [Strategic plan 2017–2021]. València: La Marina de València.

La Marina de València. (2019). *La Marina de València impact report (Vol. 2, March 2019)*. València: La Marina de València. Retrieved from www.lamarinadevalencia.com/mreal/uploaded/memoria_2018_web_ingl.pdf

La Marina de València. (2020). *La Marina de València impact report (Vol. 3, April 2020)*. València: La Marina de València.

Laidley, J. (2007). The ecosystem approach and the global imperative in Toronto's central waterfront. *Cities*, *24*(4), 259–272.

Levinthal, D. A., & March, G. J. (1993). The myopia of learning. *Strategic Management Journal*, *14*(S2), 95–112.

Lorne, C. (2019). The limits to openness: Co-working, design and social innovation in the neoliberal city. *Environment and Planning A: Economy and Space*, *52*(4), 747–765.

Lovering, J. (2009). The recession and the end of planning as we have known it. *International Planning Studies*, *14*(1), 1–6.

Marshall, R. (2001). *Waterfront in post-industrial cities*. London: Spon Press.

Massey, D. (1994). *Space, place and gender*. Minneapolis, MN: University of Minnesota Press.

Mussi, E., Steinmetz, C., Evans, C., & Corkery, L. (2020). Public participation: A sustainable legacy for Olympic Parks. In R. Roggema & A. Roggema (Eds.), *Smart and sustainable cities and buildings* (pp. 335–349). Cham: Springer.

Orueta, F., & Fainstein, S. (2008). The new mega-projects: Genesis and impacts. *International Journal of Urban and Regional Research*, *32*(4), 759–767.

Parker, G., Street, E., & Wargent, M. (2018). The rise of the private sector in fragmentary planning in England. *Planning Theory & Practice*, *19*(5), 734–750.

Parker, G., Wargent, M., Linovski, O., Schoneboom, A., Gunn, S., Slade, D., . . . Tasan-Kok, T. (2020). The future of the planning profession. *Planning Theory & Practice*, *21*(3), 453–480.

Pickvance, C. (1982). Physical planning and market forces in urban development. In C. Paris (Ed.), *Critical readings in planning theory* (pp 69–82). Oxford: Pergamon Press.

Project for Public Spaces. (2007). What is placemaking? *Project for Public Spaces*. Retrieved from https://www.pps.org/article/what-is-placemaking

Prytherch, D. L., & Boira, J. V. (2009). City profile: Valencia. *Cities*, *26*(2), 103–115.

Raven, R., Sengers, F., Spaeth, P., Xie, L., Cheshmehzangi, A., & de Jong, M. (2019). Urban experimentation and institutional arrangements. *European Planning Studies*, *27*(2), 258–281.

Romero, J., Melo, C., & Brandis, D. (2015). The neoliberal model of the city in Southern Europe. A comparative approach to Valencia and Madrid. In J. Knieling and F. Othengrafen (Eds.), *Cities in crisis: Reflections on the socio-spatial impacts of the economic crisis and the strategies and approaches applied by Southern European cities* (pp. 73–93). Abingdon: Routledge.

Sandercock, L., & Dovey, K. (2002). Pleasure, politics and the "public interest": Melbourne's riverscape revitalisation. *Journal of the American Planning Association*, *68*(2), 151–168.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102.

Sendra, P., & Sennett, R. (2020). *Designing disorder: Experiments and disruptions in the city*. London and New York, NY: Verso.

Siemiatycki, M. (2013). Riding the wave: Explaining cycles in urban mega-project development. *Journal of Economic Policy Reform*, *16*(2), 160–178.

Smith, K. (2006). Measuring innovation. In J. Fagerberg, D. C. Mowery, & R. R. Nelson (Eds.), *The Oxford handbook of innovation* (pp. 148–177). Oxford: Oxford University Press.

Smith, N. (1982). Gentrification and uneven development. *Economic Geography*, *58*(2), 139–155.

Soja, E. (1996). *Thirdspace: Journeys to Los Angeles and other real-and-imagined places*. Cambridge, MA: Blackwell.

Sorribes, J. (2015). *València 1940–2014: Construcción y destrucción de la ciudad* [Valencia 1940–2014: Construction and destruction of the city]. València: Universitat de València.

Steen, K., & van Bueren, E. (2017). The defining characteristics of urban living labs. *Technology Innovation Management Review*, *7*(7), 21–33.

Yiftachel, O., & Huxley, M. (2000). Debating dominence and relevance: Notes on the 'communicative turn' in planning theory. *International Journal of Urban and Regional Research*, *24*, 907–913.

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Article

Contextualising Urban Experimentation: Analysing the Utopiastadt Campus Case with the Theory of Strategic Action Fields

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Abstract
Practices of urban experimentation are currently seen as a promising approach to making planning processes more collaborative and adaptive. The practices develop not only in the context of ideal-type concepts of urban experiments and urban labs but also organically in specific governance contexts. We present such an organic case in the city of Wuppertal, Germany, centred around a so-called change-maker initiative, 'Utopiastadt.' This initiative joined forces with the city administration and collaborated with a private property owner and the local economic development agency in an unusual planning process for the development of a central brownfield site. Ultimately, the consortium jointly published a framework concept that picked up the vision of the 'Utopiastadt Campus' as an open-ended catalyst area for pilot projects and experiments on sustainability and city development. The concept was adopted by the city council and Utopiastadt purchased more than 50% of the land. In order to analyse the wider governance context and power struggles, we apply the social-constructivist theory of Strategic Action Fields (SAFs). We focused on the phases of contention and settlement, the shift in interaction forms, the role of an area development board as an internal governance unit and the influences of proximate fields, strategic action, and state facilitation on the development. We aim to demonstrate the potential of the theory of SAFs to understand a long-term urban development process and how an episode of experimentation evolved within this process. We discuss the theory's shortcomings and reflect critically on whether the process contributed to strengthening collaborative and experimental approaches in the governance of city development.

Keywords
collaborative planning; governance experiment; participatory city-making; theory of Strategic Action Fields; urban change; urban experimentation

Issue
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1. Introduction

Over the last three decades, the call for participatory, citizen-centred, communicative, and collaborative urban planning and development has been persistent and clear (Forester, 1999; Healey, 1997; Innes, 1995; JPI Urban Europe, 2019; UN, 2016; WBGU, 2016). Despite this, participatory forms of urban planning are still contested and challenging in practice, and are subject to debate in urban research (Åström, 2020;

Staffans, Kahila-Tani, & Kyttä, 2020). More recently, innovation in urban planning has been conceptualised around the notion of experimental urban governance (Bulkeley & Castán Broto, 2013; Bulkeley et al., 2019). This notion resonates strongly with debates within urban transition theory, which frames urban experimentation as a productive approach to fostering local transformations towards sustainable urban environments (Kronsell & Mukhtar-Landgren, 2018; Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013; Sengers, Wieczorek, & Raven, 2016; von Wirth, Fuenfschilling, Frantzeskaki, & Coenen, 2018; Voytenko, McCormick, Evans, & Schliwa, 2016). Experimentation becomes a more prominent activity as it develops as an element of alternative niche activities and is often organised by bottom-up civil society initiatives (Seyfang & Haxeltine, 2012). These 'new urban actors' demonstrate novel and often informal deliberative processes and alternative planning processes and governance procedures (Willinger, 2014). Bulkeley and Castán Broto (2013, p. 365) see experimental processes as vital for creating such niches which—importantly—"can…challenge regime dominance." Bernstein and Hoffmann (2018) state that there is no shared understanding of such experimental governance, but all approaches share "the notion that something new is being tried out—there is a conscious intervention that differs from the status quo." Evans, Karvonen, and Raven (2016) differentiate urban experimentation from conventional urban development by its explicit emphasis on learning from real-world interventions. This view is shared by Scholl and Kemp (2016), who develop the idea of so-called city labs as suitable hybrid organisational platforms to co-create and steer urban experiments in a multi-stakeholder and multi-disciplinary setting.

In this study, we present a case in the city of Wuppertal, Germany, that—at first sight—ticks the boxes of an ideal-type urban planning experiment centred around a so-called change-maker initiative, 'Utopiastadt.' This bottom-up initiative for co-creative and sustainable city development joined forces with the city administration and collaborated with a private property owner and the local economic development agency in an unusual planning process for the development of a central brownfield site of almost 6 ha in size along an abandoned railway line at Mirke station. Ultimately, the consortium, which was institutionalised as the Utopiastadt Campus Area Development Board (UCAB), jointly published a medium-term framework concept for the development of the area in accordance with Utopiastadt ideals. Instead of aiming for a conventional industrial or housing development, the framework concept picked up the vision of the 'Utopiastadt Campus' as an open-ended catalyst area for pilot projects and experiments on sustainability and city development. The concept was adopted by the city council. Finally, Utopiastadt managed to purchase more than 50% of the land for further participatory city development.

Looking at the case more closely, it becomes obvious that analysing only the experimental planning phase and its direct outputs poses the risk of overlooking the broader governance context from a long-term perspective. In this light, the round table created through the establishment of the UCAB was far more an attempt to mediate a latent conflict that emerged between Utopiastadt and the property owner than an intentional and jointly agreed experimental planning process or a planned city lab platform. Nevertheless, the real-world process encompasses actors' behavioural and structural deviations from their normal routines, new modes of communication and mutual learning. As Torrens, Schot, Raven, and Johnstone (2019) state, urban experimentation is rarely a linear, structured endeavour; more often, experimental settings emerge organically and are the result of struggles in their specific contexts. Healey (2004, p. 88) defined such settings as "episodes of experimentation," in which new forms of governance are tested and potentially inform and transform the status quo governance processes and cultures. In her work on collaborative planning, she calls for a social-constructivist and institutional perspective on governance, in which planning is a specific style of governance (Healey, 2006, p. 218). We posit that these institutionalised and socially constructed governance settings should be taken into account in order to understand embedded episodes of experimentation and—furthermore—for the actors and mainstream governance culture to learn from them.

We operationalise the overall governance setting of the Utopiastadt Campus with the help of the theory of Strategic Action Fields (SAFs; Fligstein & McAdam, 2011, 2012/2015), which offers a social-constructivist perspective on social orders that is focused on the dynamics of change. SAFs can be defined as constructed social orders at the mesolevel arising from a shared understanding of the purpose and governing rules of a field. The theory is rooted in institutional theory, network analysis, and Giddens' structuration theory, and builds on Bourdieu's ideas of habitus, field, and capital, as well as on social movement scholarship (Fligstein & McAdam, 2012/2015, pp. 23–31). It is used to analyse social and political phenomena, including policy fields (Stecker, 2015) and governance processes in energy transitions and urban development (Domaradzka & Wijkström, 2016; Fuchs & Hinderer, 2014; Krauss, 2015). By focusing on the dynamics of conflict and change, the theory of SAFs provides concepts to analyse urban actors, their actions, and contexts in complex urban development issues (see Section 2).

To test the explanatory power of the theory, we applied several of its core dimensions in the longitudinal case study of the Utopiastadt Campus, dealing with the contested purpose, planning process, and land development driven by the niche actor Utopiastadt. Drawing on empirical data collected over five years, we aimed to answer three research questions:

- RQ1: What phases could be distinguished when describing the field of the development at Mirke station following Utopiastadt's arrival in 2011?
- RQ2: How did the interaction between the main actors develop from 2016 and what role did the UCAB as a new governance format play?
- RQ3: How was the new settlement achieved in 2018 and what role did experimentation in the context of the UCAB play in this process?

By answering these research questions, we aim to demonstrate the potential of the social-constructivist theory of SAFs to understand a long-term urban development process and how an episode of experimentation evolved within this process. The objective is to understand the functions of experimentation and whether it contributed to transforming the local governance of city development.

2. Theory: The Theory of SAFs and its Operationalisation

As socially constructed orders, stable SAFs rest upon a 'settlement,' which is a shared consensus regarding the purpose, rules, and boundaries of the field. In contrast, contested SAFs are characterised by disagreement about the framing of these elements. Actors who either benefit or are disadvantaged by a settlement are characterised respectively as 'incumbents' or 'challengers' (Fligstein & McAdam, 2012/2015, Chapter 1). To answer our three research questions, we build upon different core aspects of the original theory.

2.1. Dynamics of SAFs

SAFs are either emergent (developing from a previously unformed social space), stable (due to a settlement), or are undergoing an 'episode of contention.' Emphasis is put on the processes through which fields change from one of these states to another and the theory describes these in detail. Typically, destabilisation is brought about by external developments interpreted as threats or opportunities by field actors. This sets off a process of emergent mobilisation, characterised by innovative action and organisational appropriation. If successful, the field is pushed into open contention, marked by shared uncertainty. Stabilisation is achieved through a new settlement. Building on this dynamic, we analyse five phases to provide answers to RQ1 in terms of (1) the original settlement; (2) the onset of contention; (3) the episode of contention; (4) establishment of the new settlement; and finally (5) the characteristics of the new settlement (Fligstein & McAdam, 2012/2015, pp. 19–23, Chapter 4).

2.2. Interactions in SAFs

The theory of SAFs posits that settlements are stabilised through hierarchies and coalitions, or hybrids of both. These ordering types are characterised by typical practices which, for the purpose of this analysis, we deem to be 'forms of interaction.' Ideal-typically, coalitions are held together by co-operation, while hierarchies rest on advantages gained through competition or coercion, based on the power to harm, withhold resources or threats to do so. We trace the shifting patterns of interactions to answer RQ2. Additionally, we turn to the concepts of 'internal governance units' (IGUs): These bodies, typically institutionalised (e.g., trade associations or compliance units), represent the field towards important stakeholders and provide further crucial functions, thus contributing to field stability and serving the interests of incumbent actors. Moreover, they are often created as part of a settlement and are instrumental to its establishment. To understand the contribution of UCAB from a SAF perspective, we trace the six functions of information, administration, regulation (controlling compliance with mutually-agreed rules), enforcement (forcefully sanctioning rule violations), certification (decisions and rules about who is allowed to be a field actor), and external representation, and include institutionalisation as an additional crucial dynamic (Fligstein & McAdam, 2012/2015, pp. 13–16, 77–78, 94–96).

2.3. Explanatory Factors of Dynamics in SAFs

In both the stabilisation and destabilisation phases of SAFs, three explanatory factors play a crucial role. First, the stability of fields rests largely on the stability of proximate fields within the array of interdependent fields. Second, in constructing, maintaining, and challenging settlements, 'strategic action' (understood as framing and mobilisation) plays a key role. Strategic action is "the attempt by social actors to create and maintain stable social worlds by securing the co-operation of others" (Fligstein & McAdam, 2011, p. 7) and mainly depends on social skill, understood as the ability to read people and environments and engage interactively with others. Actors rely heavily on strategic action when contesting or crafting a settlement. Finally (at least in modern societies), state actors play a key role in both destabilising and sustaining/ratifying settlements, as they are interested in maintaining stability across a variety of fields (Fligstein & McAdam, 2012/2015, Chapters 1 and 4). To answer RQ3, we trace these three factors across the identified phases and in their interplay with the UCAB meetings.

3. Methods and Data

Our single case study of the Utopiastadt Campus is based on three bodies of data (see Supplementary File): (1) documents of a programmatic nature (n = 8) between 2007 and 2018, laying out the policies, plans, and positions of the main actors regarding the area development; (2) data accumulated from participative observation at meetings from 2015, including field notes (2015–2018), minutes of

negotiations, and board meetings (2016–2020, n = 24), as well as the official meeting protocols (2016–2020, n = 17); and (3) five guided interviews (2020) with representatives of the main actors and with the board's external facilitator. The period of study ends in May 2020.

The meeting minutes and protocols, as well as the transcribed interviews, were analysed using qualitative content analysis (Kuckartz, 2018; Mayring & Fenzl, 2014). Codes were deductively derived from the elements of the theory outlined in Section 2 and data was coded using the program MAXQDA (coding trees and sampling/coding units available upon request). The different bodies of data were used to test and triangulate working hypotheses and the continuously adapted case narrative and flow chart.

4. Results

4.1. RQ1: Phases of the Development of the Area

Our analysis distinguishes the five phases of the SAF (see Section 2.1). During the phase of the establishment of the settlement, the actors took part in experimentation on communication, decision-making, and planning. An overview of these phases, detailed in the following sub-sections, is given in Figure 1.

4.1.1. Initial Settlement

Our case narrative begins in 2011 when Utopiastadt, an aspiring catalyst initiative for bottom-up urban development rooted in the arts and creative scene, as well as civil society, first moved into an old, beautiful, and listed station building (Mirke station) along an abandoned inner-city railway line. At this time, there was a shared consensus between the property owner, the city administration, and the economic development agency that the area around the old railway station should be used and developed as commercial premises. Due to the lack of noise protection from the nearby motorway and a long-term decline in the Wuppertal property market, the area was assessed as being inferior. From a SAF perspective, this situation can be described as a settlement in a spatially central, but relatively neglected, field. The incumbent role was played by the property owner, a nationwide property company with a business strategy of profit-focused section-by-section development.

4.1.2. Onset of Contention

Three significant triggers of contention can be identified. First, initiated by local residents, the old railway line was converted into a major inner-city cycle route. This new cycle highway, which opened in 2014/15, delivered significant impetus for the development of areas along its route. Second, Utopiastadt's activities attracted growing public attention at local, regional, and national level. Finally, the property owner decided to push the marketing of its assets in Wuppertal. All three are proximate fields affecting the stability of the field.

Utopiastadt saw the growing desirability of the area as both an opportunity (the possibility of securing a key area of urban development for civil society actors and co-production) and a threat (the possibility of losing this area to conventional investor-driven urban development). It implemented three strategies. First, it single-handedly expanded its activities to the ground surrounding the station building. Second, it worked on a political-administrative connection between the two fields (station and surrounding premises). A state-funded grant required the initiative to be embedded into an overarching strategy for neighbourhood development.

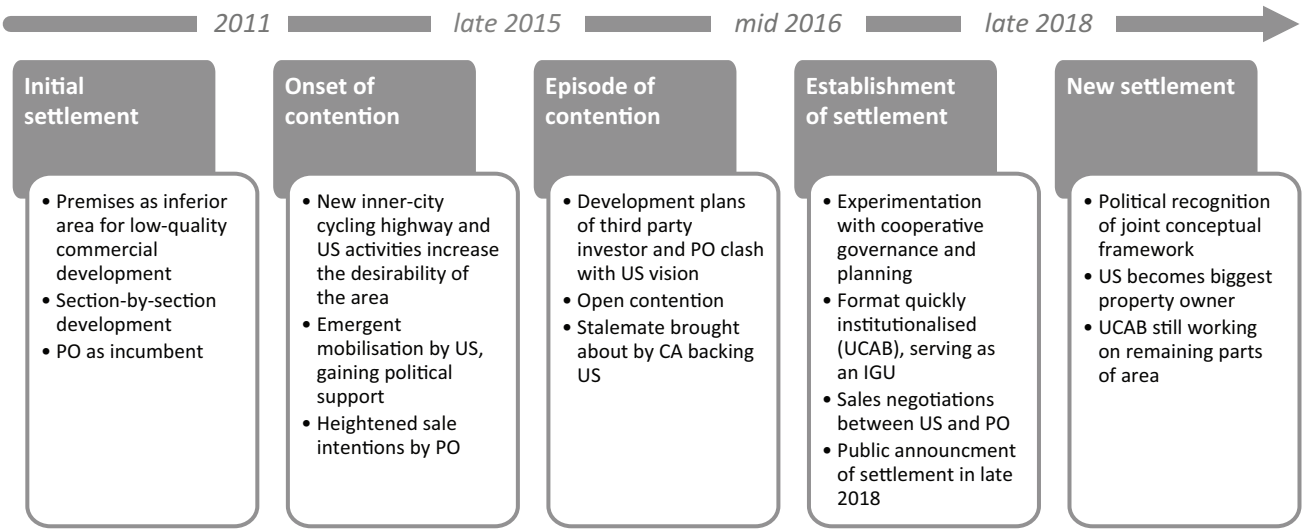

Figure 1. Simplified timeline of the five SAF phases in field changes concerning the area development around Mirke station between 2011 and 2020. Abbreviations: CA = city administration, PO = property owner, US = Utopiastadt (see Supplementary File for a table of the five main actors).

Utopiastadt, together with a coalition of civil-society actors, participated closely in writing this strategy which was adopted by the city council in October 2014. This 'Integrated Action Programme' (IAP) positioned Utopiastadt as central to the development of the whole area, and Utopiastadt's revival of the station building effectively became a municipal funding project. Finally, Utopiastadt worked towards acquiring the land. In 2015, Utopiastadt's coalition (unsuccessfully) applied for funds from a philanthropic foundation and started a crowdfunding campaign to raise funds and public awareness.

For the property owner, the increasing desirability of the area represented an opportunity for profitable development. Utopiastadt's activities were not perceived as a challenge to the status quo; the company even legitimised Utopiastadt's actions through formal agreements and contracts while simultaneously advancing their own marketing activities. While the property owner initially mobilised within the bounds of the old settlement, in late 2015 they deviated from the strategy of gradual sell-off and delegated the development to a local property developer who proposed a concept for the whole area.

4.1.3. Episode of Contention

The choice to delegate the development led to open conflict. In March 2016, a meeting between the local property developer, Utopiastadt, and the city administration, facilitated by the local economic development agency, ended without agreement. Utopiastadt, backed by the city administration, rejected the plans. Subsequently, the developer publicly announced its withdrawal from the project and backed Utopiastadt. Caught off guard, the property owner took the development into their own hands, suggesting a joint process with the city administration. This plan marginalised Utopiastadt, as it included neither a prominent role for Utopiastadt nor a purchase option. It was discussed in two small roundtable meetings, in which both parties called upon the city administration as an ally; in theory, this would only be expected from an incumbent. However, no agreement was reached, and a shared sense of deadlock clearly marked a peak in uncertainty.

The episode took place largely in isolation from the public and the direct influence of proximate non-state fields. Only in one of the meetings with the property owner was Utopiastadt directly supported by an invited representative from 'Forum:Mirke,' a local neighbourhood council institutionalised by the IAP. However, the influence of proximate fields was felt indirectly. On the one hand, in their attempts to secure the administration's support, the different parties tried to frame the prospective impact of the development on local proximate fields such as the housing in the surrounding neighbourhood and the station building itself. Also, the local economic development agency advocated on behalf of commercial development. On the other hand, growing recognition for Utopiastadt among Wuppertal's general public and in the supra-regional urban redevelopment arena created a supportive backdrop that shaped the perspective of the administrative actors and bolstered Utopiastadt's confidence. In terms of power, Utopiastadt's position was clearly dependent on the city administration, as it had no means of imposing its vision for developing the area on its own. However, the property owner also needed the co-operation of the city administration, as there was no zoning in place at the time to support its plans. In the end, the city administration backed up Utopiastadt's position and insisted that the initiative was involved in the development of the area. As will be explained in Section 4.3, this support was largely motivated by having secured the Utopiastadt's project in the station building and its function for the development of the neighbourhood.

4.1.4. Establishment of New Settlement by Governance and Planning Experimentation

The resulting stalemate was overcome by a series of externally moderated meetings proposed by the city administration, starting in October 2016. The facilitator was proposed by Utopiastadt and jointly commissioned. This approach developed into a co-operative governance council through which a new settlement was forged in late 2018. It is in this phase that we identify experimentation in the Utopiastadt Campus process. We emphasise that experimentation is not an inherent concept of the theory of SAFs; hence, we draw on urban experimentation theory (as mentioned in the introduction) to analyse the experimental practices. First, the meetings between Utopiastadt, the property owner, the city administration, and later the economic development agency, which had originally been informal in nature, deliberately evolved into an increasingly institutionalised board: the UCAB. Second, co-operation among the members of the UCAB led to consensual practical decisions concerning, for example, infrastructure development, co-ordinated communication with potential buyers, and the approval of a new day-care centre in the area. Third, a collaborative planning process, in which the board members co-operated on a shared understanding of the future development of the area, played a significant role in this phase. In three workshops with external planners (jointly commissioned), the parties produced a joint framework concept, which was adopted by the city council in June 2018. All three elements can be considered experimental as they significantly deviated from the mainstream practices usually present in developing an area owned by a private property owner. We will elaborate on how they contributed towards the transformation of the overall governance setting from a SAF perspective in Sections 4.2 and 4.3.

In parallel, Utopiastadt and the property owner entered into purchase negotiations, resulting in Utopiastadt purchasing significant parts of the area in December 2018 and October 2019. This was largely

made possible through the acquisition of a major publicly-funded project ('Solar Decathlon Europe [SDE] 2021,' an energy efficient housing competition) and was announced by UCAB at a press conference.

Throughout the process, the municipal actors played an important role as facilitators, mediating with stakeholders and actively participating in UCAB. The property owner also worked actively to facilitate the process, changing its staff and using its own finances to pay for the external moderation and planning experts. As in the preceding episode of contention, the workings of the UCAB took place largely in isolation from the general public. Proximate fields played a more differentiated role. On the one hand, requests from local businesses interested in buying parts of the area put pressure on the UCAB to reach a decision regarding the development of the premises. On the other hand, the ongoing process provided the actors with a means of buying time and effectively shielding the area from influences such as marketing pressure and political discussion. Again, we will take a deeper look at the interplay of these factors and how developments in proximate fields allowed the individual actors to commit to the vision in Sections 4.2 and 4.3.

4.1.5. New Settlement

The new consensus manifested itself in three ways. First, the municipality ratified the settlement by officially recognising the joint framework concept in the city council. Second, Utopiastadt gained an incumbent-like status without disadvantaging the property owner: it effectively became the biggest landowner on the site, but the property owner benefited from achieving a normal market price and, in mid-2020, still owned an important part of the land. Third, the actors—for the time being—maintain their commitment to UCAB. Programmatically, the consensus centres on the overall goal of developing the area in line with the activities and values of Utopiastadt, as well as on a co-operative governance model through which the development was facilitated.

4.2. RQ2: Interaction Forms and the Utopiastadt Campus Area Development Board

RQ2 focuses on the evolution of the interaction since 2016 and the role of the UCAB as an IGU. We argue that the theory's concept of IGUs provides a useful perspective to understand the emergence of co-operative governance practices, as well as the role these practices played in the development of the overall process. Figure 2 presents a summary.

4.2.1. Interaction Forms: From Coercion to Competition and Co-Operation

We analysed the forms of interaction (see Section 2.2) over time based on meeting minutes and identified changing patterns over the different phases:

- *Co-operation* is the only interaction form present throughout all phases. It plays a vital role in the contention phase, signifying support for Utopiastadt in the face of contention. Co-operation is the defining and constant interaction form during the establishment of the new settlement, reflecting the trust and respect developed between all participants.
- *Competition* is most frequent in the contention phase, but also present in the UCAB—mainly due to an ongoing struggle for interpretative power between Utopiastadt and the property owner. Significantly, in some meetings before and after the main settlement, disputes arose over programmatic differences regarding residential construction.
- *Coercion* in our case study only occurs in the form of threats to use certain forms of power (financial, protest, etc.) or to withhold important resources. Codings here were notably fewer but must be heavily weighted because coercion potentially puts current and future relationships at risk. Coercion was mostly used in the contention phase to test red lines, or to call upon or provocatively challenge the hierarchy. Notably, the frequency reduces with the establishment of the UCAB and no instances of coercion occurred after the adoption of the new settlement, which fits with the shift in roles and the fact that no party suffered 'severe losses.'

We found that the new settlement went hand in hand with a shift towards co-operation, indicating a more coalition-like relationship between the actors.

4.2.2. IGU: Structures, Rules, and Functions in the Phase of the Governance and Planning Experimentation

Based on an analysis of the official meeting protocols and minutes, we assess the extent to which the UCAB took on the characteristics of an IGU (see Section 2.2). The board did not fulfil all functions at all times, but this is not a prerequisite for an IGU to work:

- *Institutionalisation*: The group quickly institutionalised itself by agreeing on a name, a regular format, and a clear objective. Since the new settlement, the group meetings have continued, albeit on a more infrequent and ad-hoc basis and with uncertainty about the future commitment and composition.
- *Administration*: This function was quickly and effectively fulfilled primarily by appointing an external facilitator and adopting co-ordinated protocols.
- *Information*: Exclusive, new, and/or relevant information was exchanged openly in nearly all meetings and by all members to provide grounds for mutual agreements.

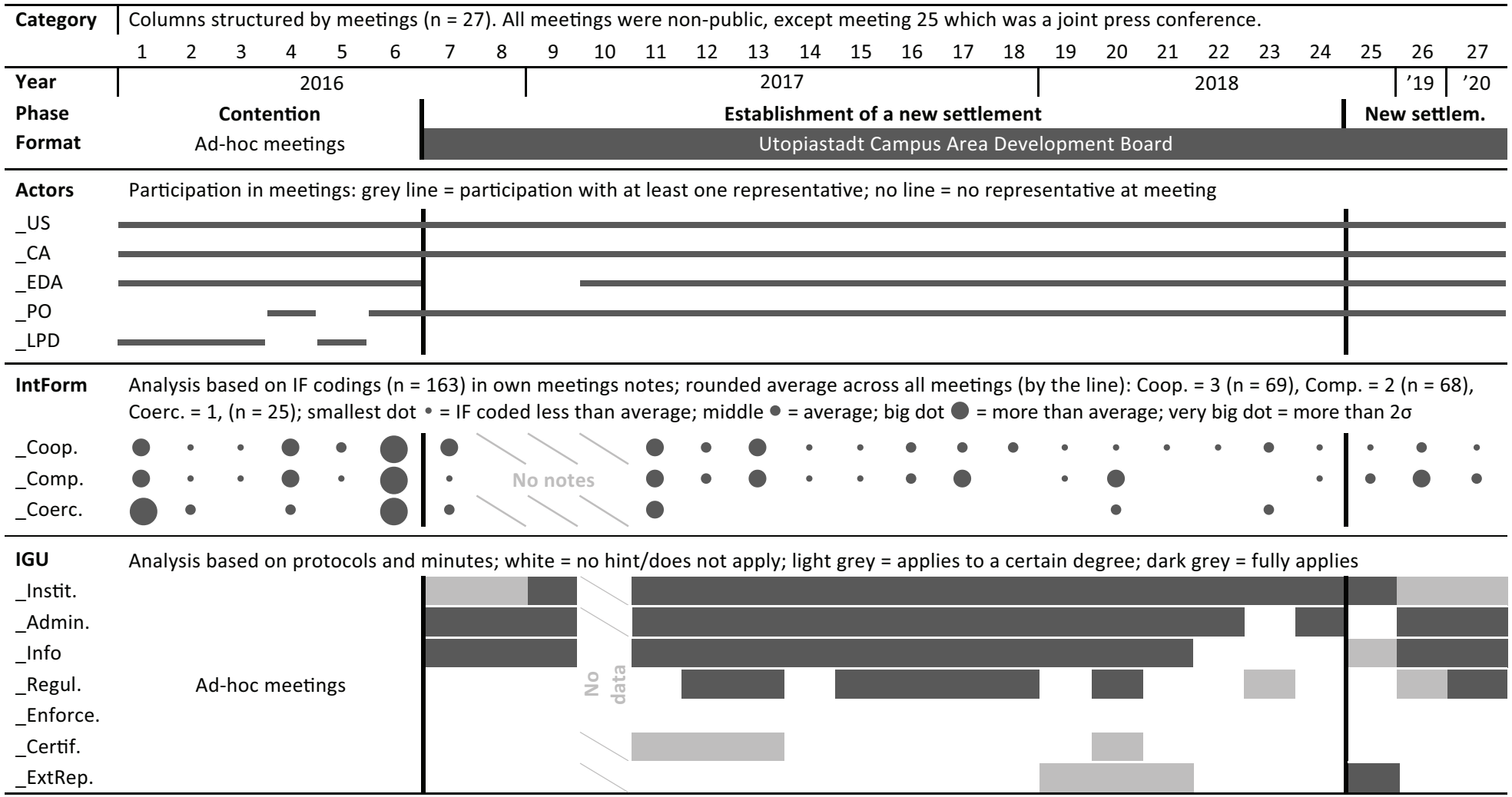

Figure 2. Meetings in the SAF phases of contention and (establishment of) a new settlement concerning the area development around Mirke station, March 2016–January 2020. Abbreviations: Actors (EDA = economic development agency, LPD = local property developer); IntForm/IF = SAF interaction forms (Coop. = co-operation, Comp. = competition, Coerc. = coercion); IGU (Inst. = institutionalisation, Admin. = administration, Regul. = regulation, Enforce. = enforcement, Certif. = certification, ExtRep. = external representation). Thick black vertical lines highlight the different phases (see Section 4.1).

- *Regulation*: Mutually-agreed rules were frequently discussed and at times referred to in the meetings.
- *Enforcement*: No occurrences were found, as there were no attempts to openly question the rules put in place by the board.
- *Certification*: The board defined criteria for potential buyers and businesses. In separate meetings, interested companies had to demonstrate their suitability. Consensual decisions led to the acceptance of one applicant (the day-care centre).
- *External representation*: On several occasions, the UCAB acted as a unified representative for the stakeholders, specifically in terms of the framework concept and at the joint press conference signalling the new agreement. Also, the decision makers from all the parties involved were regularly informed about the work and progress of the UCAB, which built trust in the construct.

In essence, while the UCAB's original motivation was to overcome the stalemate between the competing development models, it quickly took on the characteristics of an IGU, carrying out many functions and contributing to the overall stabilisation of co-operative practices and, finally, the settlement.

4.3. RQ3: Enabling Factors of the Process and the Role of Governance Experimentation

To answer RQ3, we traced the three main influencing factors identified by the theory of SAFs—strategic action, state actors, and proximate fields—over the flow of events. As UCAB was crucial for the new settlement, we also accounted for its specific role. Figure 3 presents this information in a simplified, complexity-reduced graph. Overall, the process was made possible by the *interplay* of the three major factors. We illustrate this by highlighting five significant steps:

1. *Increased desirability*: The initial increase in desirability of the area can be traced to two bottom-up urban development projects—the inner-city cycling lane, which positively affected several areas along its route, and the Utopiastadt's original project to revive Mirke station. From a SAF perspective, both are *proximate fields*.
2. *Emergent mobilisation by Utopiastadt*: Emergent mobilisation can largely be analysed in terms of *strategic action* by Utopiastadt. Through networking, the weaving of narratives and strategic navigation of the funding and policy landscape, the initiative attracted support. The IAP connecting the project to the municipal urban redevelopment agenda was crucial. The IAP would not have been possible without the support of the city administration (*state actors*), which was interested in securing funding for Utopiastadt's revival of Mirke station. This interest was rooted in a concern for the surrounding urban area, which had already been on the redevelopment agenda but was only identified as the distinct neighbourhood 'Mirke' through the IAP. The architectural restoration and social revival of the station building was seen as a central lever for the revival of the neighbourhood. The IAP provided the necessary legal framework for supporting this restoration, as outlined in Section 4.2. In this way, Utopiastadt's project in the Mirke station building was closely tied to two *proximate fields*, which strongly influenced the administration in the subsequent process.
3. *Stalemate*: The disagreement was largely a consequence of Utopiastadt's and the property owner's divergent strategies. However, the stalemate can be traced to strong support for the initiative from the municipality (*state actors*) and to Utopiastadt's refusal to accept the marginalised role offered in the company's plans (*strategic action*). Both were influenced by *proximate fields*: The municipality was motivated to back the Mirke station project and to secure the integrated development of the neighbourhood. Additionally, Utopiastadt received strong support from the local community, as well as increased supra-regional recognition, which influenced both the municipality's position and Utopiastadt's self-confidence.
4. *(First) moderated meetings:* The meetings were made possible due to the strategic decision of all actors to adopt a governance mode in which moderation and a prolonged timeframe could reconcile the interests (*strategic action*). Again, the city administration (*state actors*) played a major part in facilitating these meetings. However, the property owner also made a significant contribution by changing their strategy for the area, adopting a longer timeframe, and withdrawing a particularly hawkish representative. The remaining staff agreed to pay for the moderation and planning offices (*strategic action*)—a decision based on earlier experiences from other projects (*proximate fields*).
5. *Purchase negotiations:* The purchase negotiations reconciled the property owner's aim of profitable development with Utopiastadt's aim of securing the area. UCAB made the negotiations possible through combining elements. The tangible topics dealt with served as boundary objects around which trust grew. This trust enabled the negotiations, but their success hinged on Utopiastadt's ability to pay market prices. Utopiastadt achieved this by *strategic action*: while UCAB was in operation, it forged a coalition from local foundations, businesses, and the University of Wuppertal, which organised financial support and funding. Here, *proximate fields* played a major enabling role. First, the depressed Wuppertal property market meant the market price was relatively low.

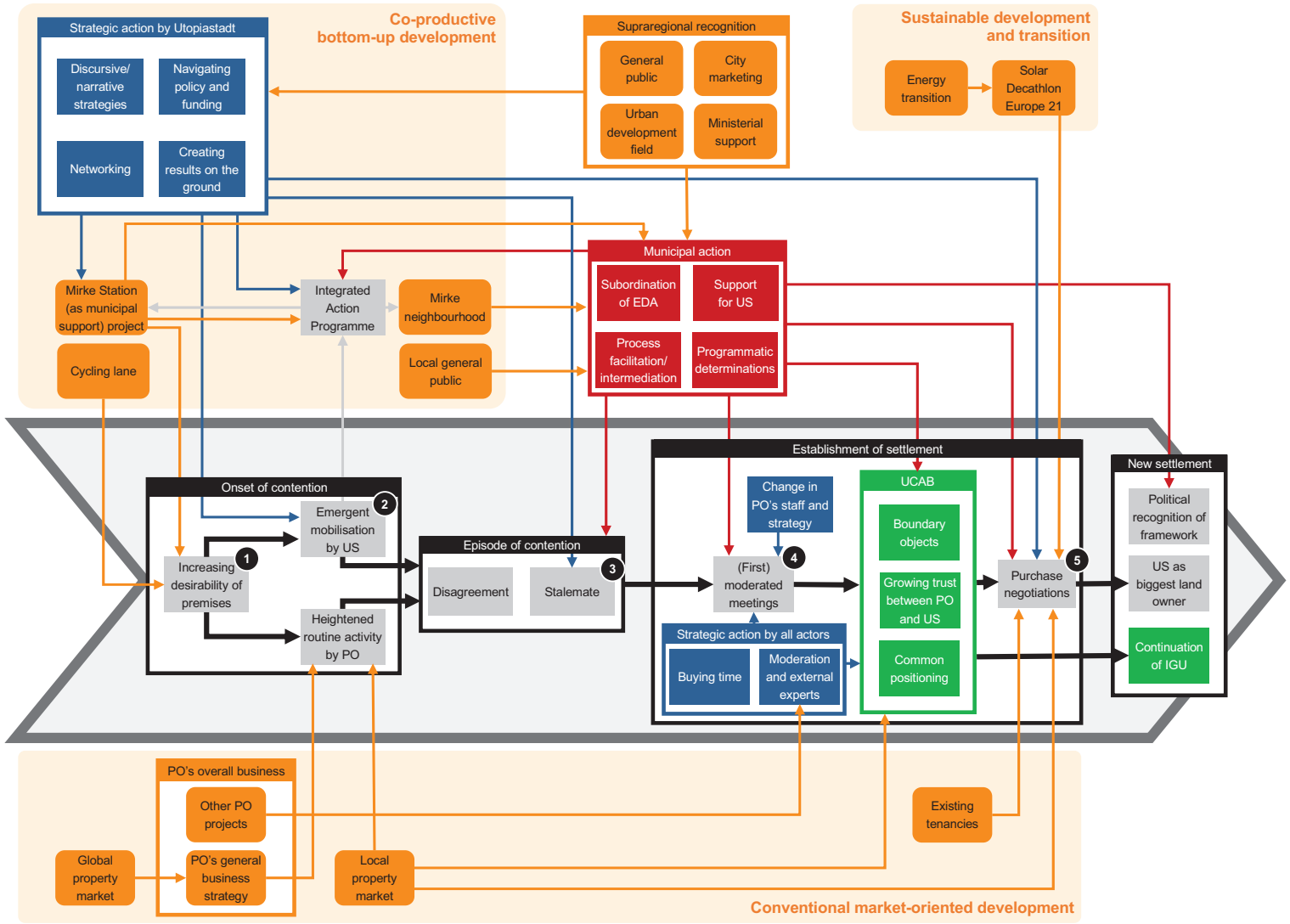

Figure 3. Interplay of influencing factors in the process of the SAF. Nodes: grey = processual flow of events; coloured = types of influencing factors. Arrows: black = processual flow of events, grey = processual flow branching off from main process with significant feedback influence, coloured = influencing factors, big background arrow = indicating flow for convenience. Boxes: summaries for readability, thick frames = similar types with headline, faded background = thematic. Colours: blue = strategic action, red = state actors, orange = proximate fields, green = UCAB. Numbers: focal steps of analysis.

Second, existing tenancies on the premises provided a steady income stream. Third, Utopiastadt's coalition acquired the project SDE 2021, which was expected to provide income in the coming years. The existing tenancies and the SDE are both subordinate SAFs, with the SDE also rooted in the broader energy transitions field. The final factor was the municipality, which actively participated in the programmatic process of UCAB (thereby excluding housing development, which would have warranted higher market prices) and—by intervention of the Lord Mayor—created the ultimate trust needed for the acquisition (*state actors*).

As this outline highlights, strategic action, facilitation by state actors, and the field environment were individually necessary but only jointly—and in their *interplay*—sufficient. Proximate fields provided both an enabling and restricting environment for the development of the SAF. In Figure 3, we summarise these supportive fields under the themes of co-productive bottom-up development, supra-regional recognition, and sustainable development and transition. Fields summarised under conventional market-oriented development played a more restricting role in our case. However, our analysis also shows that strategic action was necessary to exploit these influences. Proximate fields were also a major motivation for the actions of the state actors. Finally, our analysis shows that the establishment and work of the IGU was an integral part of this interplay. First, the work of UCAB was made possible and shaped by the three analysed factors. Second, UCAB became an enabling factor for the settlement itself, and co-operative routines continued after our analysis period (see Section 4.2). This, again, fits with the assumptions of the theory, which posits that IGUs are often put in place to facilitate and stabilise original settlements in emergent SAFs. Third, our analysis also sheds light on how the IGU (apart from stabilising co-operation) contributed to the settlement, as shared boundary objects, increased trust and common positioning proved to be necessary conditions for the acquisition.

In this light, how does the phase of experimental planning and its product, the joint framework concept, fit into the SAF analysis? As the interviewees stated, the material results of planning in the framework were not as significant as the process itself. On the one hand, the planning process became a major boundary object for UCAB, enabling the growth of trust and co-operation. On the other hand, it provided an overall storyline for the work of the council, both providing assurance that the actors were 'on track' internally and justifying UCAB's work with the municipal organisations and the property owner. In this way, the planning process enabled the IGU to function long enough to create the conditions necessary for the settlement itself.

5. Discussion

5.1. The Theory of SAFs and Urban Experimentation

We used the theory of SAFs to describe and explain a process of area development in a German city and to assess its explanatory power regarding the conditions and outcome of an altered governance process that encompassed practices of experimentation.

We show that the theory is useful to unpick and analyse contested area development processes and perspectives. The notions of co-operation, competition, and coercion as central forms of interaction proved to be instrumental for detecting changes in the communication style, and clearly marked the onset of the co-operative planning phase. We traced the establishment and functioning of an IGU, which helped to explain why and how an agreement was reached in a new governance mode. Furthermore, the three SAF concepts of influence of proximate fields, strategic action, and state interventions contributed towards explaining the process. Taken together, we showed that the theory can help to illuminate the emergence and function of experimentation in its wider governance context.

However, the theory of SAFs does have shortcomings when analysing urban experimentation. First, from a SAF perspective, state actors primarily hold regulatory power and intervene in non-state fields in a top-down manner. On the one hand, we observed such dynamics when the city administration used its regulatory power to block the property owner's development ideas. On the other hand, administrative actors engaged at eye level and provided continuous programmatic orientation, which contributed towards reaching a common position. This space for manoeuvre for state actors is vital to instigate and allows for the emergence of collaborative planning modes and experimentation.

Second, the meso-level construction of SAFs offers few conceptual tools to analyse the specific dynamics and behaviour of individual actors at micro-level; particularly for operationalising strategic action and social skill. Our analysis, therefore, had to inductively derive the strategic actions described in Section 4.3. It could be worth analysing strategic action with concepts from narrative analysis, micro-sociological theory, and typologies on discursive policy-making as the one put forward by Leipold and Winkel (2017).

Third, we came to focus on important turning points in the course of events and analysed the influences and contexts of these moments. In the theory, decisive moments are reflected in the notion of (external) shocks, leading to the destabilisation of fields. These shocks resonate with recent conceptualisations in social innovation research about "critical turning points" (Pel et al., 2017). We suggest that the dynamics around these decisive moments, not only in terms of destabilising but also re-establishing the stability of fields, should be further explored.

Finally, the theory of SAFs does not explicitly refer to notions such as experimentation or experiments. On a very general level, experimentation could be conceptualised as a form of strategic action through which the actors in the case tried to overcome the stalemate that could not be overcome by adhering to the conventional practices of area development. Furthermore, the theory offers the concept of 'innovative action,' referring to "actors violating field rules with respect to acceptable practices and engaging in innovative action in defence or support of group interests" (Fligstein & McAdam, 2011, p. 9). These innovative actions are supposed to be taken by 'challengers,' or actors considered as "sensing an opportunity to advance their position in the field through novel means" (Fligstein & McAdam, 2011, p. 10). Instead of challenging existing coalitions and action, incumbents are supposed to assure the status quo in the field in order to stabilise the situation (Fligstein & McAdam, 2011). These distinct actions by certain actors in the theory resonate with the distinctions made between activities conducted by (innovative) niche actors and regime incumbents in transition theory (Geels, 2012). Moreover, the notion of innovative action may suggest linkages to ideas revolving around the concept of (urban) experimentation, meanwhile established in transition theory (Fuenfschilling, Frantzeskaki, & Coenen, 2019). However, a deeper conceptual debate around these concepts is beyond the scope of this work. We suggest that future research could explore the conceptual distinctions and conjunctions between innovative action from the theory of SAFs and (urban) experimentation. This may help to describe the nestedness and interaction effects of urban experimentation within SAFs beyond a single in-depth case study.

5.2. The Development of the Utopiastadt Campus as an Example of Experimentation and Collaborative Planning?

As we demonstrated, laying the foundations for the Campus was made possible by involving all four actors in a changed pattern of interaction and communication, working on a joint framework concept, and building trust for the purchase negotiations. As shown, this was possible through the interplay of influential proximate fields, strategic action and changed strategies (mainly by the property owner), and intervention by the state actors. However, whether the process is a good example of urban experimentation and collaborative planning is debatable.

Concerning experiments, we listed central criteria for such experiments in the introduction: Urban experiments are defined as situations where a multi-stakeholder, multi-disciplinary actor group deliberately decides to jointly deviate from the status quo, to enter a phase and setting of trial and error, and is eager and willing to learn from it in the longer run or even set up stand-alone platforms for urban experiments (like city labs). Concerning collaborative planning, Innes and Booher (2018) present three normative aspects of collaborative planning: (1) The planning process should enable individual and collective capacity-building among the participants, beyond specific outcomes or solutions; (2) the open character of the planning process must be guaranteed—no pseudo-transparent and pre-determined processes are allowed; and (3) the collaborative planning process should include—at least with a certain possibility—contributions to make institutions more effective, adaptive, and resilient to deal with complexity.

Accordingly, both concepts ideally demand the deliberate creation of a safe space for interaction and a joint and open-ended learning environment. In our case, it should be noted that the process was not a joint endeavour to explicitly explore and modify area development processes in Wuppertal and beyond; it was, in fact, an attempt to resolve a specific clash of interests. The actors' decisions to participate in the UCAB meetings and to change the governance mode can be interpreted as individual strategic choices in an attempt to secure the objectives of their respective organisations. The purchase deal was mostly made possible by the acquired and acknowledged strategic and economic power of Utopiastadt, not by the property owner's support for the experimental and participatory nature of the development. It is questionable whether the Mirke case had any short-term influence on the property owner's business model. The perspectives of the representatives in the meetings and the interview showed that the changed procedure was seen as a symbol of adaptive management—and the case itself was perceived as an exception to the rule. At city level, the interpretations were mixed: Some saw the deal as a specific action to support and protect the Utopiastadt project, while others perceived it as an example of changing planning culture and identified need for more collaborative and participatory not-for-profit city development projects. On the whole, in respect of ideal-type urban experiments and collaborative planning, this highlights why we consider it appropriate to speak only of an *episode* of experimentation and collaboration.

However, seen in the broader context of cultural changes in urban planning, the process provided all actors with important learning opportunities. The process was—to a certain extent—open-ended and transparent, and the decisions were based on consensus. We could also clearly trace individual learning processes in the data: The actors were able and willing to listen to the arguments and perspectives of the others involved. Over time, they all learned to see the potential development of the area through the lens of the other actors and sometimes even swapped roles by explaining or defending the others' standpoints to outsiders or newcomers. All the actors recognised the importance and the uniqueness of *jointly* publishing the framework concept and featuring all the logos on the front cover. Even if the experimental process evolved step-by-step over time, the concrete planning and urban

development results are profound. It could, therefore, be argued that these organically evolving, unintended episodes of experimentation and collaboration harbour at least as much potential for change in urban governance strategies and culture as intentional experiments. However, further research is needed—both in our case and in other projects—to trace the long-term impact of the seeds that have been sown and the real-world experiences that have been gained.

6. Conclusion

In our article we have described and analysed an urban process with an experimental and collaborative episode in an inner-city area development. From a normative perspective of collaborative planning and urban experimentation, the process may not have ticked all the boxes. Nevertheless, the outcome of the process can be deemed a success story for unconventional and adaptive planning processes and can be recognised as a fruitful learning environment. Applying the theory of SAFs to this case proved to be instrumental for analysing and understanding the context and determining factors of such non-ideal but real-world urban governance processes and episodes of experimentation. The theory helps particularly to understand the specific configuration of (proximate) fields, actors' vested interests in these fields, and the power struggles between interpretations, process sovereignty, and development objectives. It also helps to understand the emergence of episodes or settings of experimentation as a shift in a wider governance context. Our case shows how and why experimentation can fulfil important functions of finding new settlements in contested fields. By using the theory of SAFs, we hope to have contributed to opening up novel perspectives on the inherent process dynamics at play in urban experimentation and collaboration that could transform governance cultures. In turn, this may help to inform scientific scholars and practitioners dealing with urban transformations and experimentation in other socio-spatial contexts.

Postscript: After the end of the study period, the remaining area was purchased by a private person at the end of 2020. This was done in coordination with Utopiastadt and the city of Wuppertal and is intended to reserve this space for the further development of the Utopiastadt Campus. The PO thus no longer owns any part of the former railway grounds.

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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 author (unedited).

References

Åström, J. (2020). Participatory urban planning: What would make planners trust the citizens? *Urban Planning*, *5*(2), 84–93. https://doi.org/10.17645/up.v5i2.3021

Bernstein, S., & Hoffmann, M. (2018). The politics of decarbonization and the catalytic impact of subnational climate experiments. *Policy Sciences*, *51*(2), 189–211. https://doi.org/10.1007/s11077-018-9314-8

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375. https://doi.org/10.1111/j.1475-5661.2012.00535.x

Bulkeley, H., Marvin, S., Palgan, Y. V., McCormick, K., Breitfuss-Loidl, M., Mai, L., . . . Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city? *European Urban and Regional Studies*, *26*(4), 317–335. https://doi.org/10.1177/0969776418787222

Domaradzka, A., & Wijkström, F. (2016). Game of the city re-negotiated: The polish urban re-generation movement as an emerging actor in a strategic action field. *Polish Sociological Review*, *2016*(195), 291–308.

Evans, J., Karvonen, A., & Raven, R. (2016). The experimental city: New modes and prospects of urban transformation. In J. Evans, A. Karvonen, & R. Raven (Eds.), *The experimental city* (pp. 1–12). London: Routledge.

Fligstein, N., & McAdam, D. (2011). Toward a general theory of strategic action fields. *Sociological Theory*, *29*(1), 1–26. https://doi.org/10.1111/j.1467-9558.2010.01385.x

Fligstein, N., & McAdam, D. (2015). *A theory of fields* (First issued as an Oxford University Press paperback). Oxford, Auckland, and New York, NY: Oxford University Press. (Original work published 2012)

Forester, J. (1999). *The deliberative practitioner: Encouraging participatory planning processes*. Cambridge, MA: MIT Press.

Fuchs, G., & Hinderer, N. (2014). Situative governance and energy transitions in a spatial context: Case studies from Germany. *Energy, Sustainability and Society*, *4*(1). https://doi.org/10.1186/s13705-014-0016-6

Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019). Urban experimentation & sustainability transitions. *European Planning Studies*, *27*(2), 219–228. https://doi.org/10.1080/09654313.2018.1532977

Geels, F. W. (2012). A socio-technical analysis of low-carbon transitions: Introducing the multi-level perspective into transport studies. *Journal of Transport Geography*, *24*, 471–482. https://doi.org/10.1016/j.jtrangeo.2012.01.021

Healey, P. (1997). *Collaborative planning: Shaping places in fragmented societies*. Vancouver: UBC Press.

Healey, P. (2004). Creativity and urban governance. *Policy Studies*, *25*(2), 87–102. https://doi.org/10.1080/0144287042000262189

Healey, P. (2006). *Collaborative planning: Shaping places in fragmented societies* (2nd ed.). Basingstoke and New York, NY: Palgrave Macmillan.

Innes, J. E. (1995). Planning theory's emerging paradigm: Communicative action and interactive practice. *Journal of Planning Education and Research*, *14*(3), 183–189. https://doi.org/10.1177/0739456X9501400307

Innes, J. E., & Booher, D. E. (2018). *Planning with complexity: An introduction to collaborative rationality for public policy* (2nd ed.). London and New York, NY: Routledge.

JPI Urban Europe. (2019). *Strategic research and innovation agenda 2.0*. Brussels: Joint Programming Initiative Urban Europe.

Krauss, G. (2015). The creation of a second centre pompidou in metz: Social embedding of a new regional cultural facility and formation of a strategic action field. *European Planning Studies*, *23*(8), 1494–1510. https://doi.org/10.1080/09654313.2013.817542

Kronsell, A., & Mukhtar-Landgren, D. (2018). Experimental governance: The role of municipalities in urban living labs. *European Planning Studies*, *26*(5), 988–1007. https://doi.org/10.1080/09654313.2018.1435631

Kuckartz, U. (2018). *Qualitative Inhaltsanalyse: Methoden, Praxis, Computerunterstützung* [Qualitative content analysis: Methods, practice and using software]. Weinheim and Basel: Beltz Juventa.

Leipold, S., & Winkel, G. (2017). Discursive agency: (Re-)conceptualizing actors and practices in the analysis of discursive policymaking. *Policy Studies Journal*, *45*(3), 510–534. https://doi.org/10.1111/psj.12172

Mayring, P., & Fenzl, T. (2014). Qualitative Inhaltsanalyse [Qualitative content analysis]. In N. Baur & J. Blasius (Eds.), *Handbuch Methoden der empirischen Sozialforschung* [Handbook of methods of empirical social research]. (pp. 543–556). Wiesbaden: Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-531-18939-0_38

Nevens, F., Frantzeskaki, N., Gorissen, L., & Loorbach, D. (2013). Urban transition labs: Co-creating transformative action for sustainable cities. *Journal of Cleaner Production*, *50*, 111–122. https://doi.org/10.1016/j.jclepro.2012.12.001

Pel, B., Bauler, T., Avelino, F., Backhaus, J., Ruijsink, S., Rach, S., . . . Kemp, R. (2017). *The Critical Turning Points database; concept, methodology and dataset of an international Transformative Social Innovation comparison* (TRANSIT Working Paper No. 10). Brussels: TRANSIT.

Scholl, C., & Kemp, R. (2016). City labs as vehicles for innovation in urban planning processes. *Urban Planning*, *1*(4), 89–102. https://doi.org/10.17645/up.v1i4.749

Sengers, F., Wieczorek, A. J., & Raven, R. (2016). Experimenting for sustainability transitions: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 153–164. https://doi.org/10.1016/j.techfore.2016.08.031

Seyfang, G., & Haxeltine, A. (2012). Growing grassroots innovations: Exploring the role of community-based initiatives in governing sustainable energy transitions. *Environment and Planning C: Government and Policy*, *30*(3), 381–400. https://doi.org/10.1068/c10222

Staffans, A., Kahila-Tani, M., & Kyttä, M. (2020). Participatory urban planning in the digital era. In S. Geertman & J. Stillwell (Eds.), *Handbook of planning support science* (pp. 307–323). Northampton: Edward Elgar Publishing.

Stecker, R. (2015). Zur Entstehung des neuen Politikfeldes Klimawandelanpassungspolitik in Deutschland [On the emergence of the new policy field of climate change adaptation policy in Germany]. *Der Moderne Staat: Zeitschrift für Public Policy, Recht und Management*, *8*(1), 71–89. https://doi.org/10.3224/dms.v8i1.19111

Torrens, J., Schot, J., Raven, R., & Johnstone, P. (2019). Seedbeds, harbours, and battlegrounds: On the origins of favourable environments for urban experimentation with sustainability. *Environmental Innovation and Societal Transitions*, *31*, 211–232. https://doi.org/10.1016/j.eist.2018.11.003

UN. (2016). *New Urban Agenda: Quito declaration on sustainable cities and human settlements for all.* New York, NY: United Nations.

von Wirth, T., Fuenfschilling, L., Frantzeskaki, N., &

Coenen, L. (2018). Impacts of urban living labs on sustainability transitions: Mechanisms and strategies for systemic change through experimentation. *European Planning Studies*, *27*(2), 229–257. https://doi.org/10.1080/09654313.2018.1504895

Voytenko, Y., McCormick, K., Evans, J., & Schliwa, G. (2016). Urban living labs for sustainability and low carbon cities in Europe: Towards a research agenda. *Journal of Cleaner Production*, *123*, 45–54. https://doi.org/10.1016/j.jclepro.2015.08.053

WBGU. (2016). *Humanity on the move: Unlocking the transformative power of cities—Flagship report*. Berlin: WBGU.

Willinger, S. (2014). Governance des Informellen: Planungstheoretische Überlegungen [Governance of the informal: Planning theoretical reflections]. *Informationen zur Raumentwicklung*, *2/2014*, 147–156.

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Article

Planning for 1000 Years: The Råängen Experiment

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Abstract
While traditional forms of urban planning are oriented towards the future, the recent turn towards experimental and challenge-led urban developments is characterized by an overarching presentism. We explore in this article how an experimental approach to urban planning can consider the long-term through setting-up 'conversations with a future situation.' In doing so, we draw on a unique experiment: Råängen, a piece of farmland in Lund (Sweden) owned by the Cathedral. The plot is part of Brunnshög, a large urban development program envisioned to accommodate homes, workspaces, and world-class research centers in the coming decades. We trace how Lund Cathedral became an unusual developer involved in 'planning for thousand years,' deployed a set of art commissions to allow reflections about values, belief, time, faith, and became committed to play a central role in the development process. The art interventions staged conversations with involved actors as well as publics geographically and temporally far away. The Råängen case illustrates how long-term futures can be fruitfully brought to the present through multiple means of imagination. A key insight for urban planning is how techniques of financial discounting and municipal zoning plans could be complemented with trust in reflective conversations in which questions are prioritized over answers.

Keywords
art; deep-time organizations; experimentation; long-term; planning; Sweden

Issue
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1. Experimenting with the Long Term

A key characteristic of planning is that it "embrace[s] an orientation towards the future" (Hillier & Healey, 2010, pp. 12–13). Planners make decisions in the present with long-term effects. However, planners have not always been successful in letting their long-term plans come to fruition—for example, many implementations of the famous Dutch spatial planning visions had less of an influence than their originally stated objectives (Hajer & Zonneveld, 2000). Furthermore, plans often result in unintended consequences, a case in point being modernism's failure to anticipate the detrimental effects of separated functions for social interaction (Berman, 1983; Scott, 1998).

A decisive break from this kind of top-down and rigid engagement with spatial futures is the set of urban experiments that emerged from both urban policy and academic research in the early 2010s. Urban experimentalism builds on key insights from the field of sustainability transitions, according to which the shift to urban sustainability is the result of experimentation in 'niches' or local practices, in which new ideas can be tested and matured (e.g., Evans, Karvonen, & Raven, 2016; Markard, Raven, & Truffer, 2012). Summarizing these developments, Sengers, Wieczorek, and Raven (2019, p. 153)

define an experiment as "an inclusive, practice-based and challenge-led initiative, which is designed to promote system innovation through social learning under conditions of uncertainty and ambiguity." Over the last two decades, experiments have emerged in different sectors, including mobility, renewable energy, waste, the provision of social services, as well as in urban development projects.

Cities are increasingly the site of these experiments. Economists and economic geographers (e.g., Florida, 2002; Glaeser, 2011) already emphasized the innovative potential of cities in the 1990s and early 2000s, because cities are diverse ('Jacobs externalities') and have scale ('agglomeration externalities'). The urban experimentalist approach builds on cities' innovative potential, but is interested in outcomes beyond economic growth such as social justice or the mitigation of climate change. Since the early work on climate experiments by Bulkeley and Castán Broto (2012), the field of urban experiments has broadened both its thematic focus (to include, e.g., food, mobility, and post-capitalist initiatives) and conceptual basis. The latter now includes a range of typologies about experiments themselves, the role of local governments, and the local environments in which experiments play out (e.g., Caprotti & Cowley, 2016; Kronsell & Mukhtar-Landgren, 2018; Torrens, Schot, Raven, & Johnstone, 2019).

Whereas the range of interests has broadened, learning has remained a central premise of urban experiments. Urban experiments are not just meant to test a specific solution in a specific context, but rather have the potential to set something in motion—cognitively, culturally, politically, institutionally—beyond that particular instance. As Fuenfschilling, Frantzeskaki, and Coenen (2019, p. 225) put it: "Experimentation is about de-risking new solutions or approaches by learning about and with them in an open and safe space." Importantly, learning in experiments is not only conceived as an individualistic and cognitive endeavor, but as a collaborative process, typically referred to as 'social learning.' As such, the learning process is also part of the transformation of the socio-technical system in which an experiment is embedded (see, e.g., Brown & Vergragt, 2008; Bulkeley & Castán Broto, 2012; Fuenfschilling et al., 2019).

Although we acknowledge and see the merit of the flexible, reflective, and experiential process of experimentalism, in this article we argue that it might also obfuscate what traditionally was the chief concern of spatial planning: *the long term*. For all the shortcomings of blueprint planning and modernism, these approaches did explicitly engage with the long-term implications of planning issues. Whereas many urban experiments deal with long-term themes such as energy supply, biodiversity, or climate change, long-term *considerations* typically receive little attention. We analyzed 22 articles on urban experiments and none of them explicitly engaged with the long term (see the Supplementary Material). Indeed, one explanation for the surge in urban experiments is that its effects can be directly observed and adaptations can be made in a kind of trial-and-error way. Yet this benefit comes with a trade-off: In experiments it becomes much harder to look beyond pressing short-term issues to reflect on long-term implications.

Caney (2019) explains why 'harmful short-termism' is problematic yet so ubiquitous. According to Caney, it is challenging to deal with issues that will chiefly affect future generations—such as climate change—because they manifest themselves much less prominently in the present. Reasons for short-termism include a political system in which elected officials represent only the current generation, the way in which the media are organized, and the psychological complexities of thinking beyond the present. Caney develops a range of solutions (focusing on political reforms such as the development of future councils) and underlines the importance of artists in imagining the future. He concludes:

> We need to re-imagine ways of organizing our political life to make the 'future' salient and visible, to jolt us out of our fixation on the present, and to induce us to look ahead and give the 'future' its due. (Caney, 2019, p. 15)

In this article we are interested in exploring an experimental approach to spatial planning that 'gives the future its due.' This is a crucial question that in our view is still underexplored both in planning practice and in scholarly research. As such, the aim of this article is *to explore how an experimental approach to urban planning can engage with the long term*. In doing so, we will draw on insights from a case study involving an ongoing planning experiment framed by the idea of planning for a thousand years (see the Supplementary Material for the case study methodology). The case is an urban development project, called Råängen, run by the Cathedral of Lund, Sweden. Their thousand-years framing raises intriguing questions for urban planning and experimentation: Could planners envisage such a long-term horizon? How do they even begin to engage with a situation so far in the future?

2. Conversations with a Future Situation

To begin with, it is helpful to look more closely at some of the ideas of pragmatism that have underpinned much planning theory since the so-called communicative turn in the 1990s (e.g., Healey, 1992a). Here, experimentation also plays a key role in conceiving planning, albeit in a somewhat different way. The application of pragmatism to planning emphasizes how planning is a reflective practice characterized by situated judgment. Empirical research working in this tradition has paid close attention to the considerations and experiences of practitioners (Healey, 1992b, 2009; Hoch, 1994). The philosophy of pragmatism is not easy to summarize, but it is typically

described as a "philosophy of what works," one that does not aim to discover the truth but rather makes use of the craft of situated judgment in a continuous process (Healey, 2009). One of pragmatism's founders, John Dewey, maintained that means and ends are unstable and in a continuous interaction, which requires an unceasing process of reflection.

Starting from this premise, Schön developed Dewey's work into a perspective on learning with important implications for both planning theory and recent urban experiments (e.g., Schön, 1983, 1992). Learning is, in Schön's perspective, largely a process of reflection: Not so much learning how the world works through books as making sense of concrete situations in practice. Schön (1992) identifies three stages of increasing complexity in a reflective practice. First, knowing in action: In this stage, situations are not problematic, and one is equipped to find the right course of action. No reflection on what to do is required. Second, reflection in action: One encounters a problematic situation, but one reflects during this situation on a course of action. Reflection in action is difficult to record, because "we tend to 'wipe it out' as soon as it is over, like the error one makes and quickly forgets on the way to discovering the solution to a puzzle" (Schön, 1992, p. 125). Third, and most relevant for the purposes of this article, is what Schön refers to as a metaphorical *conversation-with-the-situation*. As he puts it:

> Here, an inquirer, in transaction with the materials of a situation, encounters surprise in the form of 'back-talk' that momentarily interrupts action, evoking uncertainty. The inquirer goes on to transform the situation in a way that resolves uncertainty, at least for the moment. (Schön, 1992, p. 125)

In this article, we ask how it is possible to engage in conversations with a *future* situation, whereby 'future' is conceived as the long term and includes, for instance, attention to the needs of future generations or a 'deep-time' focus (e.g., Caney, 2019; Hanusch & Biermann, 2020; Krznaric, 2020; World Commission on Environment and Development, 1987). This requires a redirection of Schön's work, which has focused mostly on past situations. For conversations with a future situation, we argue three dimensions to be of particular relevance for reflecting on the long term.

First, the *tangibility of the future* refers to the means through which a yet unknown future is presented. Reflection occurs through different senses and through different carriers (Candy & Dunagan, 2017; cf. Dewey, 1938). Whereas numbers and written analyses are still central to planning decisions, scholars building on design studies maintain that the future should be brought to the present more experientially through, among other things, visceral and embodied interventions (e.g., Bendor, Maggs, Peake, Robinson, & Williams, 2017; Candy & Dunagan, 2017; Pelzer & Versteeg, 2019). Whereas in urban experiments such embodiment typically occurs more naturally, by being part of an on-the-ground situation, experiencing the long term requires a more careful staging of "the reflective imaginative conception and comparison of alternative actions in the face of some problem [that] enables humans to move beyond risky trial-and-error learning on the ground" (Hoch, 2016, p. 7).

Second, *conditions* for opening up the long term: Attention to the long term is not distributed evenly across time or institutional contexts. The extent to which long-term considerations can be reflected depends not only on the dramaturgy of a conversation (Hajer, 2009), but also on the phase in the planning process. For instance, in the planning of a new tramline, the long-term future is considered through different scenarios and cost-benefit analyses. However, once the decision is made the attention of the actors involved tends to focus on operational and short-term matters. In this regard, drawing on a United Nations conference, Mische (2014, p. 433) introduces the concept of 'sites of hyper-projectivity' as "arenas of heightened, future-oriented public debate about contending futures, such as those taking place in communities, social movements, and policy arenas." Contrary to Mische's conception, in planning such sites are not necessarily public; the long-term future can also be discussed behind the scenes. For instance, in 'deep-time organizations' (Hanusch & Biermann, 2020) reflections about the long term do not only occur in public debates, but are also part of the internal culture, practices, and the very organization of their operations. Hanusch and Biermann characterize deep-time organizations by their extreme longevity, both in terms of their long existence (centuries or more) and their engagement with long-term challenges. Typically, such deep-time organizations are associated with a timeless purpose, often linked to common goods and public values. They tend to address issues and provide services that are "overwhelmingly either basic human needs or transcendental" (Hanusch & Biermann, 2020, p. 29), the latter being exemplified by religious organizations such as churches. Another key characteristic of deep-time organizations is that they are well connected to the surrounding society and have the capacity to adapt to and incorporate external changes in their operations. Whereas Hanusch and Biermann are chiefly interested in explaining the longevity of deep-time organizations, we are concerned with the practices of a deep-time organization such as a millennial cathedral. Such practices include their reflections about the future and the kind of decisions that are being taken in light of long-term concerns.

Third, *interactions between different timescales*: Reflection about the long term often centers around how short-term decisions have long-term implications. In some instances, this is the result of a very careful scenario planning or visioning process. In other instances, decisions are taken in the 'heat of the moment,' for

instance under public or political pressure, but have long-term repercussions. In spatial planning, the concept of path dependence is of particular relevance: Once land use, infrastructure, or even institutions have taken a certain form, they are difficult to radically change again (e.g., Sorensen, 2015). Thus, there is an irreversibility in planning that puts constraints on what kind of subsequent planning decisions are possible.

3. The Råängen Experiment

3.1. Planning for Thousand Years

> Our aim is to rethink the way that towns are developed by introducing an arts programme that will become a tool for conversation, critical debate and engagement before any building work begins….The [Råängen] development will address 21st century challenges by creating a sustainable and socially responsible working and living environment that is able to meet people's needs for the next 1,000 years. (Råängen, 2020)

This statement is taken from the website of the Råängen (the raw meadow) project in Lund, Sweden. At its heart is a 12-hectare plot of land owned by the Swedish Church through its local cathedral organization. Råängen is part of the large-scale development in Brunnshög (around 270 hectares), which will become a new neighborhood in the northeast part of the city (see Figure 1). In addition to housing, the area will include a 'Science village' with two large research facilities: the European Spallation Source and MAX IV, a synchrotron radiation facility. By 2040 the area of Brunnshög is envisioned by the city to host forty thousand residents and knowledge-intensive workers in a dense urban environment. The area has, like much recent Scandinavian urban development, high sustainability standards, which include a tram line, excellent biking infrastructure, a low-temperature district heating system utilizing excess heat from the research facilities, low-energy houses, underground waste management systems, and urban greening.

The plot of land of Råängen is financially and institutionally linked to the cathedral building in the city center. The Cathedral of Lund dates back to at least the

Figure 1. Map of Brunnshög development area. Source: Lund Municipality (2020).

year 1123 when the first altar was consecrated. It was originally a Catholic church but has been Protestant since the mid-16th century. The history of Lund Cathedral is reflected in the thousand-year time frame, which has long been a part of the self-identity of the cathedral. Their treasurer, who plays a key role in the Råängen development, told us a story that illustrates this: When he was first introduced to his job by the bishop, she emphasized how they all share a responsibility to care for both their history and their future. In particular, she urged him to think about the future; recognizing that the cathedral has been here for a thousand years, they should consider what it implies for the church to be around for another thousand years. So, while not being an idea newly conceived for Råängen, this time frame was incorporated in the objectives for the project.

In considering this long-term perspective, the cathedral's decision makers did not articulate a clear vision, but rather developed a reflective and gradual process with the cooperation of a variety of artists, architects, writers, and thinkers. As such, Råängen can be considered a 2,000-year program (see the timeline in Figure 2). This, according to the curator, might sound "a bit crazy" (Art and Christianity, 2020), but it allows for the recognition of the work and traditions of the past while projecting themselves into an unknown future.

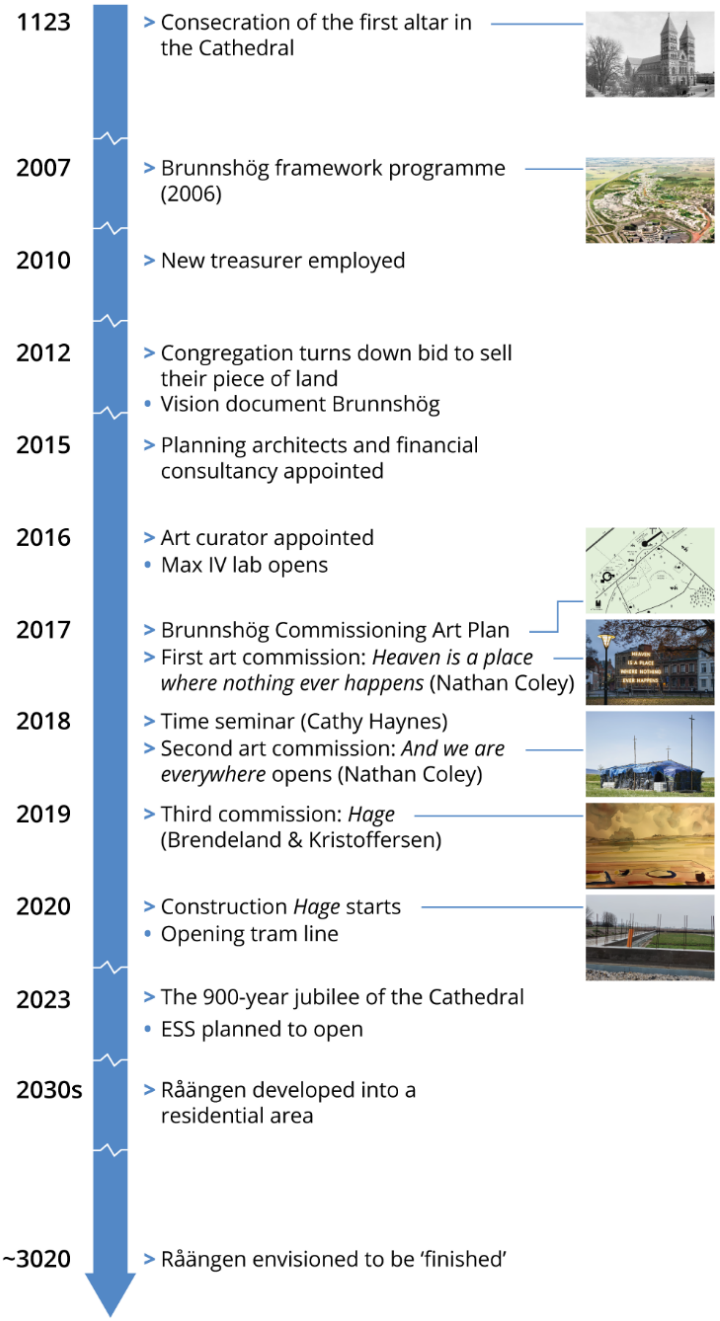

Figure 2. Timeline of the Råängen development.

3.2. A Church Decides to Become a Developer

The story begins when the city approached the cathedral managers with a bid to buy a piece of their land in 2012. At that time, the cathedral's management had recently undergone organizational changes. Their property management committee had appointed a new chairman, a former banker, and recruited a new manager for the treasury, a former farmer. New to their positions, both of them were reconsidering the cathedral's property management, and the Brunnshög development spurred an interest in exploring new ways to responsibly enhance their financial returns. Normally, the Swedish Church would sell off their land to the municipality for this kind of urban development. However, despite their relaxed attitude, as a deep-time organization, toward short-term financial rewards, the cathedral decided not to sell. As one board member put it:

> The main reason in the start was that if we sell the land to the municipality, we get the price for farmland. We know that if we do develop it ourselves, we can make 10 to 20 times that price….After we had decided, no we won't sell to the community, we started the process: What will we do with that? [The purpose is] not only to make money.

Or, as the treasurer summarizes it somewhat differently: "The theological values are important, but we have to have money to actually finance them with." Thus, while the decision not to sell the land was backed by the more financially experienced members of the board, financial concerns were not the sole reason why they decided to also develop the land themselves. In the words of the treasurer, they saw it as "a value development," which cared for other values central to the church. The chaplain explained that in one of the board meetings they reflected on the long history of the cathedral and saw an opportunity in the Brunnshög development to address issues like climate change, immigration and building a city together with others. At that time, however, the cathedral was not sure how to convert these convictions into ideas that would be useful for spatial planning. To support them in discovering these values and to help them with the planning process, White Arkitekter was contracted in 2015. They were tasked with a scoping exercise "to define the parameters of the Church's development in Brunnshög" (Fernie, 2017) and to compose a sustainability program for the area. The scoping involved a series of conversations with the cathedral managers to explore what values were most important to the church. As emphasized by one of the architects, this conversation resulted in a value-based planning approach structured around three guiding concepts: *landskap* (landscape), *grannskap* (neighborhood) and *värdskap* (hostship).

To strike a balance between the spiritual and managerial arms of the cathedral organization, a twin leadership was set up for the project, chiefly represented by the chaplain and the treasurer. These leaders view the endeavor of Råängen as a learning process characterized by raising questions and challenging suppositions, all as part of a continuous reflection on the role of the church in urban planning. Importantly, while this process has no clear vision, it is placed against a 'backdrop' of religious beliefs and sacred conceptions of time. For instance, the treasurer mentioned how he invited construction workers to the cathedral and told them how their work would become part of "the values of the church and the longevity of the house." In a similar vein the chaplain refers to this 'backdrop' as a "kind of mind map, or an image, to remind us about this social thinking around urban planning."

3.3. Heaven Is a Place Where Nothing Ever Happens

After deciding to become an urban developer and defining the core values directing their plans, the next step for the Råängen team was to initiate a reflective dialogue with various actors. This was done by launching an art and architectural program that involved a series of temporary art commissions. These commissions offered entry points into reflections on fundamental values such as religious convictions, time, and the church's role in society (Fernie, 2017). The renowned artist Nathan Coley was contracted for two temporary art installations in 2017 and 2018. The first exhibit brought to Lund an existing art work by Coley: Heaven Is a Place Where Nothing Ever Happens, a light sculpture referring to the Talking Heads song, which was installed adjacent to the cathedral apse for five months (see Figure 3). Its placement in the middle of Lund's medieval cityscape and its somewhat seductive character helped attract attention and develop a conversation with local residents and students, as well as on social media.

The Råängen team also arranged public events and seminars with Nathan Coley and other artists. For example, the English artist and writer Cathy Haynes was invited to reflect on the concept of time (Haynes, 2018). In April 2018, a public 'time seminar' was arranged in the cathedral (see Figure 4), in which Haynes and the chaplain reflected upon "the unique nature of long-term projects and the concepts of earthly and heavenly time" (Art and Christianity, 2020). At the seminar they considered how Western conceptions of time are often portrayed similarly across contexts, while sacred time "has a more complex structure, form, variety and rhythm than the standard tick-tock or the straight line of progress" (Haynes, 2018). Religious conceptions of time do, indeed, conflict with linear notions of land management and urban development. Yet, the linear and relatively short-term perspective of time is also present in the Råängen experiment, which became apparent in our interview with the property asset consultant. Talking about the calculations of future costs and revenues, he mentioned his quantitative analyses to allow for alternative development models, which would, for example,

Figure 3. Heaven Is a Place Where Nothing Ever Happens, by Nathan Coley, Lund 2017–2018. Source: Peter Westrup.

allow private parties to take most of the profits for the first decades.

3.4. And We Are Everywhere

Coley's second commission, And We Are Everywhere, had a different geography. It was located at Råängen in the middle of grassland (see Figure 5). This first physical intervention in the area was meant to challenge existing assumptions about hostship, migrants, and the role of the church in the new development. The intervention consisted of a large sculpture built from materials used in improvised migrant camps such as plastics and wooden boards. While it was praised in the local press for bringing social aspects to the planning and housing debate (Sommar, 2018), it was far from an easily accessible work of art. As the curator stated:

> It was aesthetically disturbing (it didn't look like art!) and asked uncomfortable questions about Sweden's

Figure 4. Time seminar in Lund Cathedral, 18 April 2018. Source: Peter Westrup.

Figure 5. And We Are Everywhere, by Nathan Coley, Lund 2018–2019. Source: Peter Westrup.

> relationship to immigration, people with no home, the church's place in the land. We were intrigued by the silence with which it was greeted, but of course, this was all part and parcel of people 'expressing' their discomfort.

Another respondent was less appreciative of this "silence" and felt the project could have done better to activate the land and engage with the local public. For the core cathedral team, And We Are Everywhere was of great importance, however. In a number of conversations that accompanied the piece, Coley pushed them to reflect on their ambitions and, in particular, shaped their commitment to create a neighborhood for all in Råängen. As the chaplain reflected on the influence of this intervention:

> The absolute strongest impression it had on me, afterwards, was that we were strongly put into the area of discussion of refugees and homelessness. How should we organize our societies when we know that there will be even more people running away from their countries because of climate change, wars, and so on?

According to the curator, the objective of the temporary art commissions was to let art shape the conditions for further development at Råängen. Coley's commissions functioned as a means to provoke, defamiliarize, and challenge the suppositions of the church and turned out to be invaluable to the cathedral. The artistic interventions, as well as conversations both in small settings and in public seminars, helped the Råängen team to articulate the project's principles and objectives, although what this involved was not always clearly expressed by our interviewees. The treasurer emphasized how he needed time to reflect in order to understand what Råängen is about and what the conversation with the future situation meant for him:

> I think it is not so obvious for people outside looking at the project to, but eventually they will see that Heaven stood here, And We Are Everywhere was put up there and then Hage [the third commission] will come, and then this, they see the sequences and eventually the first house will in some way be a commission.

The treasurer emphasized how the artistic interventions not only provoked reflections on the role of the church but also helped to craft a story about the urban area yet to be built. A similar claim is made by one of the architects: "So, what we were doing is sort of setting up this story for developers or builders or potential residents to kind of buy into."

This should be understood in the context of Råängen being an almost 'empty' area in need of a future story. The previous farmland "has an abstract, almost invisible history," as emphasized by the curator (Fernie, 2017, p. 8). By facilitating a continuous conversation with the future situation and documenting the process, imaginatively and on site, the Råängen project is crafting its own story, which may appeal to its future community and inhabitants as well as various stakeholders and developers.

3.5. Hage

The third commission is of a different nature. In contrast to Coley's temporary projects, the Hage (Garden) commission represents the first permanent installation on site, a public space currently being constructed in the form of a garden with a communal area (see Figure 6). Initially, the intention was to "construct a series of temporary installations in the landscape that would take people on a journey through Råängen. But after a few meetings and site visits and conversations…we agreed that this was a good option to build something permanent" (Art and Christianity, 2020). The commissioned Norwegian architects Geir Brendeland and Olav Kristoffersen came up with the idea to build a public space, configured as an enclosed garden with brick walls on three out of four sides opening up to the landscape outside and a pergola with a large table for picnics and gatherings. While the garden relates to Christian notions of stewardship, its construction as a public space also allows the church to invite people to come to Råängen and create a relationship with the site.

Hage is one step in a sequence of commissions that functions as a bridge to the development of housing on the site. This sequence serves as both a form of storytelling and a physical intervention, with the idea of a residential area emerging around the public garden, which will then "shift from being an object in the landscape to a local park for a new community" (Råängen, 2020). In one sense, letting the first physical investment take the shape of a public space is a statement, shifting emphasis from visitors to future residents. Simultaneously, Hage is still an interrogation of values and is driven by the philosophical concept of metamorphosis, from rural farmland to urban residential area. In another sense, its permanence will inevitably influence the urban transformation around it and direct further sequences of urban experimentation, as emphasized by one of the architects: "I think Geir [Brendeland] described it as…a grain of sand. You know, this sort of small thing and hopefully things get built around it."

3.6. The Shovel in the Ground

The interviews and emerging insights raise questions about how Råängen will develop in the coming decades and centuries. As the treasurer remarked, at a certain point "the shovel has to go into the ground," meaning that sometime in the coming decade buildings will start appearing, according to the planning requirements for the area and because Råängen needs to start seeing financial returns in order to maintain the cathedral building. Thus, while Råängen has a slower and more reflective development process than the rest of Brunnshög, it is likely that the spatial structure will become more concrete through drawings, financial analyses, and physical interventions, which will narrow the possibility space for every step in the urban transformation of the area.

Furthermore, as the planning process progresses, the Råängen project's multi-layered and complex relationship with the municipality will intensify. While the collaboration has been constructive—as, for example, when the municipal planning council approved a building permit for Hage despite missing the required detailed zoning plan—it also has become clear that Råängen does not fit the development logic of Brunnshög, with its clearly defined objectives and the necessity to build infrastructure quickly. While one of the city planners referred to

Figure 6. Construction of Hage developed by Brendeland & Kristoffersen. Source: Peter Westrup.

Råängen as a positive "infection," for the most part the municipality is unintentionally ignorant about the principles of the Råängen project. An illustrative example is the boundary to the neighboring park. In its zoning plan, there is a noticeable bump in an otherwise straight border. The Råängen team asked for a less straight line between the properties in order to connect to the park in a flexible manner. However, in response to their request, city planners simply curved the border somewhat and adapted it to an existing pipe running through the landscape—much to the shock of the treasurer, who felt the municipality did not understand the spirit of the process. Perhaps this is a trivial example. However, it could be that this 'infection' is still in an early stage and will grow as the spatial structure of Råängen emerges and starts to interact with the rest of Brunnshög. From that moment onwards it will become much harder for the municipality and other actors involved to (implicitly) ignore the interventions in Råängen.

4. Reflections about the Long Term

In order to draw broader insights from the Råängen case, we have structured the following discussion around the three concepts of tangibility, conditions, and interaction between time scales.

4.1. Tangibility

It is noteworthy that Råängen's engagement with the long term started with a short-term and market-driven event: through the Brunnshög plans, the cathedral's farmland turned into property with potentially very high financial value. From that moment onwards Lund Cathedral chose a unique planning approach, markedly different from usual Swedish planning practice. The long-term future was rendered tangible through two approaches. First, the tripartite value structure of landscape, neighborhood, and hostship was selected to guide the planning process. The coming decades will shed more light on what this value set means for the planning decisions that will be taken in Råängen. Second, framing the project as planning for another thousand years prompted an interrogation of the very nature of time. The future was rendered tangible not as some kind of end state, but as a process always in the making. The church managers chose not to immediately begin developing visions for their land—through a spatial design studio or a scenario planning approach—but rather commissioned artists and architects to stage interventions that sparked a conversation about the future. Coley's commissions primarily resulted in important internal reflections among the church managers. This did not lead to concrete courses of action so much as it established a shared understanding about the benefits of a reflective and open approach to spatial planning. Hage, the final commission that we studied, can also be considered a careful and reflective step in this process. However, as this commission will also physically alter the area, it gives a different dimension to the tangibility of the long term. It has become difficult to imagine the future of Råängen without a public space in its center, around which subsequent steps in the urban transformation will take shape.

In terms of tangibility, it is also interesting to consider how different presentations of the future interact. Internally, this could be seen in the peaceful coexistence between the more traditional financial analyses assessing the potential future revenues of the land and the artistic and architectural commissions. When we asked, somewhat naively, during the interview whether his analyses could reflect a time span of a thousand years, the financial analyst indicated that this would not make any sense given the uncertainties that come with projecting so far ahead. However, whereas these financial analyses would typically be leading discussions about what to do, here they were considered one part of the conversation, less important than the tripartite value set. Thus far, the interactions between different presentations of the future of the overall Brunnshög development and the Råängen development have been fairly limited, although a few small conflicts suggest Råängen might act as a 'positive infection' for the whole area and for the municipality at large. As the planning process continues to unfold in the coming decades, it will be interesting to study the interaction between the Råängen experiment and the wider Brunnshög development. Will the artistic commissions remain inquisitive and philosophical, or will they more closely resemble the usual visual discourse of urban design? And to what extent might the value-based planning of Råängen affect the longer-term plans in the wider Brunnshög area?

4.2. Conditions

What were the conditions under which Råängen could contemplate a long-term future? Somewhat ironically, a contingent event in the market (Brunnshög) freed them from having to pursue short-term financial interests. The future revenues are projected to be high, and thus Lund Cathedral won "the jackpot," as one observer put it. However, Råängen's engagement with the long term cannot be explained by such contingencies alone. The leadership team consists of a unique combination of financial and practical savviness (a former farmer and a former banker) and theological concerns (a progressive chaplain with a PhD). They were all new to urban planning and had to rely on financial and urban design expertise. Their lack of experience with urban planning did not make them easy to manipulate, however. On the contrary, theology and the values of the church acted as a kind of "mind map," as described by the chaplain, which always leads to reflections on the future role of the church. This process is incremental, but certainly not directionless. Asking open-ended questions about urban planning enabled them to have unprejudiced conversations with the future situation and to consider the values

that needed to be addressed in the development of the area. As emphasized by the curator, these conversations became "a kind of tool for the church…to think about the values they want to embed in this new neighbourhood" (Architecture Foundation, 2020). These conversations were also set against the timeless purpose and values that reside in the Swedish Church, a deep-time organization that counts engaging with the long term as part of its identity.

4.3. Interaction between Time Scales

Given that the Råängen experiment is still in its early stages and few irreversible decisions have yet been made, we could not observe any explicit interactions between different time scales. It is clear that the municipality has both a stronger emphasis on short-term decisions with long-term implications (such as the tramline cutting through Råängen) and an eye to the 'short long term' through a planning horizon of 2040. In the future, more interactions with the Brunnshög process will emerge, a process that declares itself to be "flexible and adaptable to future needs" (Lund Municipality, 2020). Within Råängen, different time scales also need to interact more explicitly. For instance, the cathedral managers imagine that a developer will, at some stage, be awarded a contract that controls the future for a few decades. They will then need to decide how this contract relates to their long-term considerations and tripartite value structure and how to ensure that developers come to accept these values as their own. The story about Råängen, which is gradually being crafted by the artistic commissions and conversations, might enable this, as well as the Hage communal garden that, as the first permanent construction on site, is a manifestation of the kind of value-based urban transformation Lund Cathedral aims for.

5. Conclusions

What can planning practice and research learn from Råängen's experiment with planning for the long term? One observation concerns the central role that artistic interventions have played in the conversations thus far. Whereas art in planning processes is often—as Råängen's curator puts it—a kind of 'veneer' laid over decisions about land use and urban design that have already been made, here we saw something different. The art commissions helped to frame the problem and offered a chance to interrogate the values that are so central in this case. Moreover, Coley's interventions in particular were not chiefly interested in engaging the local community, but rather explored the role of the church in the twenty-first century. Coley's approach thus echoes Bishop's (2006) critique of socially engaged art: The collaboration with a community should not be valued over the aesthetic quality of the art work. This resonates with some of our findings: Coley stressed that his artistic interventions have an inherent quality, regardless of who was involved in creating and discussing them. However, we observed that this form of art can also have implications for long-term planning, particularly in the ways those unable to participate are represented. In this case, such interests were geographically and temporally far away (i.e., migrants and future generations), which the church has to engage with in planning for another thousand years. Råängen thus demonstrates the value of two roles of art in planning: The interrogation of ethics during the decision-making process and a type of participation that is less invested in those present than in considering the interests of people elsewhere around the globe or in time. All of this can be related to contemporary sustainability debates about ecological democracy (see, e.g., Eckersley, 2004) and intergenerational equity (e.g., Caney, 2019; World Commission on Environment and Development, 1987).

Another key insight from the Råängen case is that a collaborative reflection on the long term is almost inevitably a conversation about values. There are no clear means and ends in the conversation when the future is so far away. For the period we analyzed empirically (2012–2020), it is important to note that there was a kind of tabula rasa for value reflection—a piece of 'empty' farmland. Such reflections become much harder if, say, residents are demanding concrete improvements to their neighborhood or a sneaky developer is trying to interpret a contract to his advantage. In such situations, reflections about the long term and concomitant values need to be organized much more carefully. Or, in Mische's (2014) words, it might be easier to stage a site of hyper-projectivity around a piece of farmland than around a dense urban area where present interests are well-represented. This challenge, however, does not mean planning should refrain from experiments with the long term in complex situations. Indeed, a deep-time organization like the church might have the financial resources and theological language to do so, but as Hanusch and Biermann (2020) show, there are other kinds of deep-time organizations, such as banks and ecological foundations, that in their practices incorporate long-term concerns in similar ways.

Of particular interest to spatial planning in this case is the notion of irreversibility: Reflection about decisions that cannot be undone and shape cities for a long time. Some urban experiments are reversible, such as the 'living street,' where residential roads are temporarily closed off to car traffic (Bertolini, 2020). In other cases, however, the decisions in an urban experiment are not as easily adaptable. Take, for instance, the experiment of Oosterwold, 4,300 hectares of former farmland near Amsterdam where residents self-build not only their homes, but also the complete infrastructure. While such an approach is obviously fascinating from a legal and planning-theoretical point of view (e.g., Cozzolino, Buitelaar, Moroni, & Sorel, 2017; Van Straalen, Witte, & Buitelaar, 2017), it will be almost impossible

to repurpose that area if different problem definitions and solutions arise in the future. In Råängen, the actors involved are—often implicitly—aware of the fact that it is hard to change tack once building commences, and therefore time for reflection is included in the project as often as possible. The lesson for other urban experiments is that, when the outcomes are irreversible, there is an even greater need to organize reflection and conversations about the long term.

Finally, Råängen can teach us important lessons about how the long-term future can be brought to the present. We observed a plurality of what Pelzer and Versteeg (2019, p. 24) call 'imaginative logics,' defined as "the set of principles underlying or constituting an imaginative intervention, by means of which an abstract phenomenon is made present to the audience." Using their typology, we observed a 'doable' imaginative logic for the financial analyses and the municipal zoning plans, laying out a clear course of action. Most of the artistic interventions can be described as 'guerilla' imaginative logics, attempts to provoke an audience by comparing a church to a migrant shelter or suggesting that heaven might be a boring place. Moreover, throughout the process we observed a 'procedural' imaginative logic, wherein the future is not so much presented externally but as something that people—in this regard mostly the church board—need to imagine themselves. None of these are accompanied by detailed plans, but rather involve continuous conversation with a future situation in which questions are prioritized over answers.

It is all too easy to be cynical about the challenge of experimenting with the long term and discard Råängen as too particular an example. Indeed, the combination of a deep-time organization (the cathedral) and sheer luck (Brunnshög development) is not often found. Yet, there are many other urban experimenters who have some flexibility that allows them to take the long term into account. In his recent book, Krznaric (2020) calls for more long-term thinking. One of the strategies he outlines is cathedral thinking, plotting projects that span generations, such as religious buildings or sewage systems. Urban experiments are by nature different, since they are more versatile and flexible. Yet, the Cathedral of Lund teaches us that this is by no means a reason not to look far ahead and engage with the longer-term future—indeed, an experimental form of cathedral thinking.

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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).

References

Architecture Foundation. (2020, April 29). *100 day studio: Land in common* [Video film]. Retrieved from https://www.youtube.com/watch?v=syH0m-hgIR0

Art and Christianity. (2020, April 20). *Jes Fernie: Holy ground lecture for Art and Christianity* [Video film]. Retrieved from https://www.youtube.com/watch?v=b5ftLrgP4zw

Bendor, R., Maggs, D., Peake, R., Robinson, J., & Williams, S. (2017). The imaginary worlds of sustainability: Observations from an interactive art installation. *Ecology and Society*, *22*. https://doi.org/10.5751/ES-09240-220217

Berman, M. (1983). *All that is solid melts into air: The experience of modernity*. London: Verso.

Bertolini, L. (2020). From "streets for traffic" to "streets for people": Can street experiments transform urban mobility? *Transport Reviews*, *40*(6), 734–753.

Bishop, C. (2006). The social turn: Collaboration and its discontents. *Artforum*, *44*(6), 178–183.

Brown, H. S., & Vergragt, P. J. (2008). Bounded socio-technical experiments as agents of systemic change: The case of a zero-energy residential building. *Technological Forecasting and Social Change*, *75*(1), 107–130.

Bulkeley, H., & Castán Broto, V. (2012). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, *38*(3), 361–375.

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. *Futures*, *86*, 136–153.

Caney, S. (2019). Democratic reform, intergenerational justice and the challenges of the long-term. *Centre for the Understanding of Sustainable Prosperity*. Retrieved from https://cusp.ac.uk/essay/m1-11

Caprotti, F., & Cowley, R. (2016). Interrogating urban experiments. *Urban Geography*, *38*(9), 1441–1450.

Cozzolino, S., Buitelaar, E., Moroni, S., & Sorel, N. (2017). Experimenting in urban self-organization: Framework-rules and emerging orders in Oosterwold. *Cosmos+ Taxis*, *4*(2), 49–59.

Dewey, J. (1938). *Experience and education*. New York, NY: Macmillan.

Eckersley, R. (2004). *The green state: Rethinking democ-*

racy and sovereignty. Cambridge, MA: MIT Press.
Evans, J. P. M., Karvonen, A., & Raven, R. (2016). *The experimental city*. London: Routledge.
Fernie, J. (2017). *Brunnshög commissioning programme art plan* (Independent report).
Florida, R. (2002). *The rise of the creative class: And how it's transforming work, leisure, community and everyday life*. New York, NY: Basic Books.
Fuenfschilling, L., Frantzeskaki, N., & Coenen, L. (2019). Urban experimentation and sustainability transitions. *European Planning Studies*, *27*(2), 219–228.
Glaeser, E. (2011). *Triumph of the city: How urban spaces make us human.* London: Pan Macmillan.
Hajer, M. (2009). *Authoritative governance: Policy-making in the age of mediatization*. Oxford: Oxford University Press.
Hajer, M., & Zonneveld, W. (2000). Spatial planning in the network society-rethinking the principles of planning in the Netherlands. *European Planning Studies*, *8*(3), 337–355.
Hanusch, F., & Biermann, F. (2020). Deep-time organizations: Learning institutional longevity from history. *The Anthropocene Review*, *7*(1), 19–41.
Haynes, C. (2018). Heaven is in the east: How sacred architecture plays with time. *Råången*. Retrieved from https://konst.raangen.se/programme/cathy-haynes
Healey, P. (1992a). Planning through debate: The communicative turn in planning theory. *Town Planning Review*, *63*(2), 143–162.
Healey, P. (1992b). A planner's day: Knowledge and action in communicative practice. *Journal of the American Planning Association*, *58*(1), 9–20.
Healey, P. (2009). The pragmatic tradition in planning thought. *Journal of Planning Education and Research*, *28*(3), 277–292.
Hillier, J., & Healey, P. (Eds.). (2010). *The Ashgate research companion to planning theory: Conceptual challenges for spatial planning*. Farnham: Ashgate.
Hoch, C. (1994). *What planners do: Power, politics, and persuasion*. Chicago, IL: American Planning Association.
Hoch, C. (2016). Utopia, scenario and plan: A pragmatic integration. *Planning Theory*, *15*(1), 6–22.
Kronsell, A., & Mukhtar-Landgren, D. (2018). Experimental governance: The role of municipalities in urban living labs. *European Planning Studies*, *26*(5), 988–1007.
Krznaric, R. (2020). *The good ancestor: How to think long-term in a short-term world*. London: WH Allen.
Lund Municipality. (2020). Brunnshög project. *Lund Municipality*. Retrieved from https://www.lund.se/en/brunnshog/about/project-phases
Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. *Research Policy*, *41*(6), 955–967.
Mische, A. (2014). Measuring futures in action: Projective grammars in the Rio+ 20 debates. *Theory and Society*, *43*(3/4), 437–464.
Pelzer, P., & Versteeg, W. (2019). Imagination for change: The post-fossil city contest. *Futures*, *108*, 12–26.
Råången. (2020). Commissions. *Råången*. Retrieved from https://art.raangen.se/commissions
Schön, D. A. (1983). *The reflective practitioner*. New York, NY: Basic Books.
Schön, D. A. (1992). The theory of inquiry: Dewey's legacy to education. *Curriculum Inquiry*, *22*(2), 119–139.
Scott, J. C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven, CT: Yale University Press.
Sengers, F., Wieczorek, A. J., & Raven, R. (2019). Experimenting for sustainability transitions: A systematic literature review. *Technological Forecasting and Social Change*, *145*, 153–164.
Sommar, I. (2018, May 28). Kyrkans stadsplanering är vad Sveriges bostadsmarknad behöver [The Church's urban planning is what the Swedish housing market needs]. *Sydsvenskan*. Retrieved from https://www.sydsvenskan.se/2018-05-28/ingrid-sommar-kyrkans-stadsplanering-ar-vad-sveriges-bostadsmarknad-behover
Sorensen, A. (2015). Taking path dependence seriously: An historical institutionalist research agenda in planning history. *Planning Perspectives*, *30*(1), 17–38.
Torrens, J., Schot, J., Raven, R., & Johnstone, P. (2019). Seedbeds, harbours, and battlegrounds: On the origins of favourable environments for urban experimentation with sustainability. *Environmental Innovation and Societal Transitions*, *31*, 211–232.
Van Straalen, F. M., Witte, P., & Buitelaar, E. (2017). Self-organisation in Oosterwold, Almere: Challenges with public goods and externalities. *Tijdschrift voor economische en sociale geografie*, *108*(4), 503–511.
World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.

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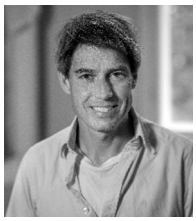

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