

Transnational learning between cities: A critical commentary on the meta-lab approach and pathways forward

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Abstract

Mobility experiments are increasingly integrated into urban governance and research projects to test or design new responses to local sustainability challenges. However, practitioners have wrestled with what and how they can learn from local experiments in other urban contexts. To what extent are lessons unique to the specific place and context of the experiment? How, if at all, can they be translated (or 'rolled out') to other places? The meta-lab has been proposed as an approach to facilitate transurban learning. It provides a multi-actor platform for joint learning and the translation of lessons across urban contexts, responding to an ongoing concern raised in studies on Urban Living Labs regarding the limited capacity of experiments to contribute to system-wide sustainability transformations. Despite offering a promising framework, the meta-lab encounters several obstacles in addressing the conditions necessary for effective knowledge transfer, particularly when applied in a transnational context. The paper draws on an international research project involving cycling experiments in five cities across Europe. Based on experiences from the project, it identifies five key challenges of the meta-lab approach: three specific to a transnational context, further exacerbated by two more general challenges. In response, we outline pathways forward, underlining the need for conditions that support multi-actor interaction and commitment.

Introduction

In recent decades, cities have become prominent sites of various types of experimentation, including mobility interventions, bringing Karvonen's (2018) notion of the "city of permanent experiments" closer to reality. This is also reflected in the proliferation of transition experiments and Urban Living Labs (ULLs), multi-actor platforms for co-creation and the implementation of such "real-world" interventions (Backhaus et al., 2025; Bulkeley, 2023). Transition experiments are often initiated to test and generate insights from innovative solutions to sustainability challenges in planning and governance (Evans et al., 2016; Sengers et al., 2019). However, studies have problematised how institutional and funding structures shape experimentation and constrain its impact (Mukhtar-Landgren et al., 2026). More broadly, studies have stressed that impacts beyond local socio-spatial settings often remain limited (Bylund et al., 2022) and, even within the same urban context, the effectiveness of learning and the integration of lessons into policy and planning are contested (Raven et al., 2026). This has partly been attributed to a lack of a structured learning approach, limited focus on larger-scale diffusion, and insufficient structures to enable the upscaling of learning processes (Beukers & Bertolini, 2021; Scholl et al., 2022).

In response to the lack of infrastructures for wider transurban learning, Scholl et al. (2022) propose the concept of the meta-lab. The meta-lab itself does not facilitate any experiments but serves as a joint learning platform that connects local learning from ULLs and experiments across different urban contexts. As a relatively new concept, the application of meta-labs has so far remained limited but appears to require certain conditions for meaningful knowledge exchange that are not addressed in its current conceptualisation.

This perspective paper critically reflects on the meta-lab approach's potential in an international context based on its application in a research project involving mobility experiments in small- and medium-sized European cities in five countries. It addresses the application of the meta-lab but does not discuss its actual impacts in detail, as a recent evaluation study does (Dijk et al., 2025). We observed that language, distance, and limited contextual understanding between partner cities posed transnational barriers, along with more general barriers related to timescale and differences in experiment focus. These factors impeded the creation of a genuinely interactive learning space and limited the potential to translate learnings across cities. Thus, the paper illustrates that connecting experiments in a transnational meta-lab generates distinct challenges that differ from those arising within national contexts and constrain the conditions necessary for effective knowledge exchange.

Meta-lab approach

The meta-lab approach combines ULL methods, where co-creation and local experimentation are central, with transurban meta-learning processes that focus on the transfer of knowledge across urban contexts (Bylund et al., 2022; Scholl et al., 2022). A meta-lab positions itself as an action research approach, which, in its most basic formulation, means that researchers share the process of scientific inquiry with actors in the field (Nielsen, 2014). The involvement of stakeholders as active partners makes their commitment to taking part in these learning processes, including their willingness to learn from other contexts, particularly pertinent. A meta-lab is defined by Scholl et al. (2022, p. 3) as:

“a transurban multi-actor network to connect and where possible align the learning processes across thematically related ULLs in different urban contexts through a central learning agenda [...]. It also goes beyond the mere comparison of differences between local solutions and forges joint learning processes”.

The approach aims to facilitate a transurban learning network by bridging local learning interventions with a central agenda focused on overarching questions concerning broader, system-wide transformations. In this sense, the meta-lab responds to the double challenge of effective learning and innovations that are relevant to the local context, while, at the same time, scaling them out. Two processes are central to this endeavour: de-contextualisation and re-contextualisation. De-contextualisation refers to the process of drawing broader lessons from urban experiments by “stripping’ them from their embeddedness in the local context” (Scholl et al., 2022, p. 7). Re-contextualisation refers to the subsequent process of embedding these lessons in a new context. To ensure consistency in the focus of local experiments, the meta-lab framework is structured around a joint learning agenda that lists *substantive, operational, and strategic questions* to guide the overall learning process. In larger programmes, the coordination of the transurban learning processes can be grouped into three learning spaces: (1) a space facilitating dialogue among practitioner ambassadors from each experiment, (2) a scientific space for analysing data from experiments, and (3) a transdisciplinary learning space, bringing practitioners and researchers across local experiments together to share and discuss learnings. In our case, learning spaces were established for the academic

partners across the involved cities ('scientific learning space') and for all project partners ('transdisciplinary learning space'), where experiments were compared, broader lessons were shared (de-contextualisation), and their relevance to other contexts was explored (re-contextualisation). The involvement of stakeholders from different countries and sectors complicated the establishment of a practitioner learning space. Instead, we kept the interactions with practice partners at the local level, except for the shared sessions.

Applying the meta-lab approach to mobility experiments

This perspective paper extends the original application of the meta-lab, which is based on a project involving mobility innovations within Dutch cities (Scholl et al., 2022), to transurban learning across national borders. We applied a meta-lab framework in a European research project, which centred on peri-urban mobility experiments to cultivate learning about just mobility transformations in low-density urban contexts. The experiments were conducted in five different small- and medium-sized cities across Europe through collaborations between university and local practice partners (e.g. civil servants or business representatives, see Table 1), with different levels of involvement across the cities. In the physical interventions, each city experimented with different types of bicycles and cycling practices, related to either business or personal cycling (see Table 1), thereby generating varied insights relevant to different stakeholders.

In line with the meta-lab approach (Scholl et al., 2022), we developed a central learning agenda for the project, consisting of seven substantive questions that guided the overall learning process (see Appendix). Guided by this agenda and in collaboration with their local practice partners, each city partner developed its own local learning questions (agenda), tailoring the experiment to local policy and planning needs.

Table 1
Cities and project partners of the research project

City	Experiment	University partner	Practice partner
Bellinzona (Switzerland)	Children and parents cycling to school	University of Applied Sciences and Arts of Southern Switzerland	Municipality
			Two local NGOs advocating for cycling
			Private company providing mobility tracking services
Bristol (UK)	Parcel delivery by cargo-bikes	University of Oxford	Local government
			Industry partners (last-mile freight company)
Graz (Austria)	Children and parents cycling to school	University of Graz	Municipality
			Local Children's Office
			National initiative VCOE - Mobility with Future
Maastricht, (The Netherlands)	Commuting to work by e-bikes	Maastricht University	Municipality
			Regional public-private mobility partnership
Poznań (Poland)	Business trips with e-cargo bikes	Adam Mickiewicz University	Poznań City
			S&M entrepreneur Lab

Two meta-lab sessions (reflecting the 'transdisciplinary learning space') were conducted: The first was held in the preparation phase (autumn 2024) and served to develop and discuss each city's experiment design and associated local learning questions with the other cities; and the second took place after the interventions (spring 2026) and sought to share (de-contextualise) and discuss (re-contextualise) learnings from each city experiment. The two sessions were held online, recorded and transcribed. The reflections presented in this paper are based on examining the transcripts and notes taken by facilitators, as well as collective discussions within the research group.

Reflections on challenges and pathways forward

Several practical obstacles became evident when reflecting on the outcomes of the co-creation process of the meta-lab. This section discusses observed constraints specific to the international nature of our project, which were exacerbated by issues relevant to any meta-lab. By discussing barriers specific to our application of the meta-lab, we outline recommendations and pathways forward for future applications.

Learning conditions for transnational meta-labs

Scholl et al. (2022) outline certain conditions for a successful meta-lab including mobilising local actors through socialising and in-person meetings and involving city partners that are not too different in terms of challenges, priorities and governance systems. Their points are valid but difficult to meet in cross-national collaborations with straight-line distances between partners as long as 1,350 kilometres. Such collaborations also raise additional challenges. We have identified three – language, distance and contextual understanding. In our project, the effects of these challenges were exacerbated by two broader challenges that may affect any meta-lab – the long timescale over which the meta-lab operates, and the absence of a genuinely co-developed approach to learning across experiments.

Transnational challenges

Language barriers. Despite advanced translation tools, such as captions in online meetings, language can act as a barrier to meaningful interaction. A condition for interaction in our meta-lab sessions was that the different lessons were presented and discussed in a single language: English. While we could adapt the preparatory materials and local city discussions to local languages, at the joint meta-lab sessions at least part of the discussions had to take place in English. We conducted the meta-lab sessions via Microsoft Teams, which has built-in real-time transcription. However, captions were either not used or were insufficient for participants who did not speak English to follow these discussions. Some city practitioners did not appear to feel comfortable in such a setup or to have the proficiency needed to fully follow the discussions, which impeded meaningful knowledge exchange.

Distance-related barriers. Distance across national borders complicated opportunities for regular in-person interaction and socialising. This not only created a barrier to getting to know each other but also limited opportunities to visit the experiments in the other cities and gain contextual insights. While local academic and practitioner partners had opportunities to meet in person during our project, cross-border networking took place only through the (two) shared meta-lab sessions. One session was held entirely online, while the other coincided with an in-person project meeting attended by the academic partners, with practice partners participating remotely. Although the meeting location was reachable by train from all partner cities, some journeys took more than 10 hours. Given the time and distances involved, we did not expect practice partners to participate in person. We decided against flying city actors to an in-person meeting for two reasons: (a) to reduce the time commitment required of participants and (b) to reduce the CO₂ emissions generated by the project's activities, in light of broader concerns about academic flying (De Vos et al., 2024).

Contextual understanding. To cultivate an interactive learning space, participants need some level of understanding of both the project's approach and the various local contexts of the involved partners. Involving many international actors, especially when the same organisational representatives need to participate throughout, can make it difficult to organise more than a few sessions, which limits the time available for getting to know each other's work. This is further complicated when participants only meet

online, as they did in our project. Preparatory work is therefore crucial to support participants' engagement. In our project, we summarised the findings from each city experiment and shared them with participants prior to the second meta-lab session. Some partners also held a briefing meeting locally prior to the meta-lab, focusing on their own work. During the second meta-lab session, which lasted 2.5 hours, each city presented its work on the experiment and broader learnings it generated. In hindsight, practice partners' prior familiarity with the contexts of the other experiments seemed insufficient for them to engage meaningfully beyond their local context – and it became evident that more preparation and/or sessions were needed. The lack of contextual understanding may have been further exacerbated by some practitioners' limited inclination to discuss forms of cycling beyond their own areas of interest. The interventions experimented with very different forms of cycling, and some practitioners' professional roles focused only on specific forms. The limited inclination also appeared to be influenced by time pressures and a limited sense of ownership of the project as a whole.

The three challenges are particularly relevant to the application of a meta-lab within an international project involving partners across national borders. They appeared to influence partners' willingness and capacity to learn and may also contribute to a limited sense of ownership of the project, as observed by Dijk et al. (2025). We also faced several challenges that may apply to meta-labs more generally, two of which we have highlighted because they may exacerbate the internationally specific challenges identified above. These are the long timescale over which the meta-lab operates (relative to typical local projects) and the resulting complications in maintaining commitment and continuity, and the lack of a learning strategy for a project involving diverse experiments.

General challenges

Timescale and working temporalities. From committing to the project in 2023 and participating in the first preparatory meta-lab session in 2024 to attending the second learning-exchange meta-lab session in 2026, over three years passed. This is not uncommon in research, but in other sectors, shorter timeframes and deadlines are more common. Involving a diverse range of actors working with different temporalities in a lengthy process can make it difficult to anticipate the extent to which they will be willing and able to commit themselves (Jensen, 2023). This may be further complicated by the fact that the same people or organisations are not involved throughout the entire project, a challenge also observed in our project due to changing priorities, limited time, people retiring or changing positions, or external disruptions such as businesses going bankrupt. Issues related to commitment may already emerge during the recruitment phase; for example, we experienced difficulties in some cases with identifying and engaging relevant stakeholders willing to participate in the meta-lab sessions. This may partly be attributed to the additional burden that participation can appear to add to the already busy schedules of stakeholders (including civil servants and private companies) – a sentiment expressed by partners unable to participate. We deliberately opted for fewer meetings to minimise this burden, but this reduced opportunities to become acquainted with each other and with the work in each city. This

highlights a trade-off between participant burden and opportunities for learning and exchange. The lack of funding to support participation may have further exacerbated this challenge.

Lack of thematic focus in a learning approach involving diverse experiments. The meta-lab needs a sufficient degree of ‘thematic focus’. In our case, the combination of various types of cycling – personal cycling, business operations, and last-mile freight delivery – may have constrained the conditions for knowledge acquisition without further positioning the experiments in relation to one another within the broader learning strategy of the meta-lab. Cycling-related professions constitute a fragmented field; for example, actors working with last-mile delivery are very different from organisations working to promote cycling among schoolchildren. This differentiation in cycling practices may, as mentioned, have played a role in participants’ commitment to learning from **other** contexts.

The two broadly defined challenges – the timescale and insufficient thematic focus for diverse experiments – appeared to intensify the effects of the other three barriers. In the following section, we reflect on how they could have been (partially) addressed.

Reflections on pathways forward: Recommendations

To support smoother interaction and joint learning, several alternative setups are possible. Their application will vary across contexts and raise challenges concerning meaningful and equitable participation. Instead of proposing an alternative application, we have outlined four recommendations that respond to the five challenges we encountered, as discussed above, to support stronger international and collaborative applications of the meta-lab approach.

- i. **Active dialogue should be prioritised and supported through language assistance.** Meta-labs should facilitate active dialogue between partners rather than rely primarily on presentations of each city’s work. To mitigate language barriers, organisers could introduce and encourage greater use of real-time translation services for online meetings, something we did not do in our project. For both online and in-person meetings, practice partners should be given the opportunity to speak in their own languages, and the organising partners could act as translators and interpreters.
- ii. **More meetings with flexible participation structures and targeted city-to-city exchanges can strengthen relationships and contextual understanding.** For projects involving long-distance collaboration, either all or most meetings may be held online. However, an in-person meeting involving representatives from both practice and academic partners could strengthen relationships without requiring all practice partners to participate. It may also be sufficient to keep all meetings online. In our case, two shared sessions seemed too few, and additional sessions could strengthen relationships within the project and provide a better contextual understanding of each experiment. These sessions would not necessarily need to involve all practice partners every time. As meta-lab sessions can be difficult to coordinate due to the many stakeholders involved, city-to-city meetings can help bridge the time between sessions by maintaining interest, sharing

project progress, generating new questions, and preparing participants for future shared sessions and knowledge exchange. Additionally, providing easily accessible preparatory material could support more informed shared discussions. As described earlier, we distributed short textual descriptions of the main findings of the experiments, which could have been complemented by the video diaries we produced in each city covering the different stages of our work.

- iii. **Shared learning strategies should accommodate diverse cases and be developed collaboratively to ensure their relevance across partner cities.** Projects involving diverse experiments and thus different actors and, to some extent, different sectors, need a thematic focus that connects the experiments and the learning generated. How one defines and characterises the experiments in relation to each other could draw inspiration from case study strategies (Flyvbjerg, 2006), for example, by considering whether the cases concern institutionalised, common or deviant experimental mobility practices. In our case, they constitute a set of diverse examples of what cycling can be, each of which could be further defined within its socio-spatial context. The hosting city could work with partner cities to identify what characterises each experiment and why learning from it may be relevant to other cities' contexts. A guiding question could be: What can this experiment teach us, given our own context and practices?
- iv. **Dedicated thematic 'tracks' can help structure learning across diverse experiments within the meta-lab:** One of the strengths of experimenting with various types of cycling in the research project was that it illustrated the wide diversity of cycling practices and functions. However, for nurturing knowledge exchange, it may have been practical to separate the different types of cycling experiments – delivery and personal cycling experiments – and to create separate 'tracks' (learning spaces) for them. This would have simplified the process of becoming familiar with each other's contexts.

Concluding remarks

The paper has identified five challenges that impeded joint learning in a transnational research project: three related to its transnational application: *language*, *distance* and *contextual understanding* – which appeared to be exacerbated by two more general challenges: *timescale* and *learning strategy*. Our project highlights that more care and time could have been invested in cultivating conditions for learning engagement, especially with regard to stakeholders' commitment to learning from other cities and their familiarity with the experiments conducted in those cities. This requires addressing issues related to opportunities for meaningful interaction, creating spaces to build relationships, and developing a deeper understanding of the different socio-spatial settings of the experiments. The application of meta-labs will vary across projects and learning networks, and we have outlined four recommendations that respond to the challenges encountered. They focus on strengthening active participation through language support and flexible participation structures, as well as structuring learning across diverse experiments.

Our commentary has not explicitly engaged with the challenges related to the different roles of participants (including facilitators) and the epistemic implications of these roles. In our application, we as researchers acted as the main mediators of knowledge exchange, which clearly raises implications concerning who became the gatekeeper of knowledge. Regardless of how a meta-lab is facilitated, such implications may be present in one form or another, making ongoing reflexivity important in relation to the roles and interactions of those involved, as well as the actors and voices that are not included (Lindberg et al., 2024). Such procedural and epistemic reflexivity seems important for future application to ensure that transurban knowledge production remains genuinely participatory rather than dominated by academic gatekeeping.

Abbreviations

- ULLs – Urban Living Labs

Declarations

Author Contribution

Nikolaj Grauslund Kristensen wrote the manuscript and, together with Marc Dijk, led the preparation of the meta-lab sessions. All authors contributed to the preparation and facilitation of the meta-labs and to reviewing, commenting on and revising the manuscript. The first four authors are listed in order of contribution.

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Data Availability

We recorded and transcribed the two Meta-Lab sessions via Teams, with the informed consent of the participants. This perspective paper draws only indirectly on the data from these meetings and does not explicitly refer to or quote any statements made by the participants or make individual references to anyone involved.

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