Experimentation at the Heart of Societal Change

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1. Experimentation at the Heart of Societal Change

Editorial

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Introduction

Today's applied design researchers are where the action is. They have always operated as a catalyst of change: propelling and steering design and society into brighter futures (Andriessen & Van Turnhout, 2023). But now, more than ever, design researchers teamup with a broad range of stakeholders to get things done. They surround themselves with engineers, entrepreneurs, policy-makers, professionals, citizens, and take leadership in sparking ideas, making things tangible, creating meaning, and driving change. In the wake of the many societal transitions needed to combat today's challenges, everyone needs to change their ways, their thinking, and the structures they reside in. Applied design researchers can play a crucial role in making that effort worthwhile. They can be facilitators that help others to bridge boundaries of spheres of life, disciplines, sectors, and domains (Smeenk, 2022).

This book is about Living Labs and other Experimental Learning and Innovation Environments such as Field Labs and Urban Innovation Labs. These are spaces deliberately created to try new things and learn together (Overdiek & Geerts, 2021; 2023). Although a variety of terms may be used, each with their relevant differences, in this chapter we will use the term Living Labs as an overarching concept. In Chapter 2, we will further discuss how we define the concept, in relation to related concepts.

In Living Labs, municipalities may meet with entrepreneurs to improve the safety of a neighbourhood. Designers may engage with citizens based on technology probes, unleashing the creative potential of the public. Maker spaces may form the culprit of novel connections and collaborations. Music festivals may be employed both as models for society and as a safe space to explore different ways of organising it. In all of these environments, applied design researchers can play many roles, acting as initiators, developers, discoverers, change managers, networkers, interpreters, and reframers (Joore et al., 2018). In doing so, they foster safety, creativity, encouragement, and reflection. They conceptualise, materialise, test, and organise meaningful conversations among stakeholders.

But how do they go about this? What are the challenges that applied design researchers face in their efforts to promote experimentation that is valuable for obtaining new insights, imagining alternative futures, developing new knowledge, and accelerating transitions in society? And how do they navigate these challenges? What is their unique contribution and how can they improve? This book is the result of a collective reflection process on the practices of a wide range of applied design researchers united in the Network Applied Design Research (see Joore et al., 2022). It highlights their work in the Netherlands and furthers the field by sharing practices, reflections, and open questions.

Three Interconnected Perspectives

This book is structured into three parts, each focussing on a specific aspect of the Living Lab. Part 1 of this book explores Living Labs and their relationship with societal change processes, which can be considered as the macro level of our research. Living Labs are often set up in – or close to – reality, such as a neighbourhood or a company's work floor, but they also intend to provide safe havens where practical constraints are temporarily set aside, for innovative ideas to develop freely. Applied design researchers must balance creative exploration within the lab, with the practical realities of implementation in the external world. They need to transcend the temporality of the lab to connect to the larger transitions it tries to stimulate. It is necessary to translate lessons from the lab to the real world and to communicate the value of the results of the lab. How do applied design researchers navigate this delicate balance between creativity and pragmatism, transitioning new ideas from the lab into the complexities of the outside world?

Part 2 of this book is focussed on the social dynamics that take place in the Living Lab itself, which can be considered as the intermediate or meso level of our research. Applied design researchers need to take into account different perspectives, encouraging participants of the lab to collaborate across different spheres of life, disciplines, sectors, and domains. One challenge is to promote interdisciplinary teamwork while respecting each other's interests, expertise, experience, and influence (e.g., Smeenk, 2023). How can the setup of the Living Lab (the setting, the space, the participants, its activities, and ways of working)

contribute to planned spontaneity? How do we get participants to share their interests, exchange ideas, and cross social, cultural and economic boundaries? And how can design researchers intervene to facilitate this process?

Part 3 of this book is focussed on the actual practices of applied design researchers within a Living Lab, for instance with regards to their engagement with tangible prototypes as boundary objects, which can be considered as the micro level of our investigation. In this part, we discuss how we can foster boundary-crossing in experimental learning environments using tangible materials. Objects such as prototypes may prompt dialogues and discussions on alternative futures, reveal values, beliefs, mental models, worldviews, and enhance stakeholders' shared understanding. They can form tangible bites for thought. However, choosing and developing the right prototype for each situation is a nuanced process, including a balance between the material, mental, and social aspects of design conversations. How do we make this work?

The book's central premise is that the impact of a Living Lab primarily depends on how applied design researchers relate these different scales or levels to each other. The lab's success depends crucially on the ability of design researchers to tie the lab to the real world, manage the social dynamics within the lab, and develop practices that positively influence those dynamics. These relations need to be seen, acknowledged, established, imagined, built, tested, and nurtured or questioned by, amongst others, applied design researchers.

The three themes of the book may be depicted as a concentric set of challenges, as presented in Figure 1. We materialise to facilitate productive social dynamics in a Living Lab to ultimately change society. One could examine this set of relationships from the inside out, starting with prototypes, and seeing how they facilitate social dynamics that lead to changes in the real world, or the other way around. We have made the – somewhat arbitrary – choice for the latter. That means that this book is organised from the outside in, starting with the relationship of Living Labs to the changes in society, followed by the relation between the setup of the lab and its internal social dynamics, and ending with the potential of materialisation in the labs to strengthen these dynamics.

But before we start diving deeper into the relationship between applied design researchers and Living Labs, we will first set the stage. For that purpose, in Chapter 2: *'Living Labs and Other Experimental Environments – Dynamics and Directions',* Anja Overdiek and Elise van der Laan present an overview of the state of the discussions regarding Living Labs. The chapter gives a historical account of Living Labs tracing how the concept emerged and evolved. They sketch the potential of Living Labs to drive societal change, made possible through the real-life characteristics and multidisciplinary approach in Living Labs. At the same time, the value of such labs still needs to be proven. Therefore, Overdiek and van der Laan set an agenda for applied design research related to Living Labs, focusing on co-design methodologies, new types of transition labs, reliability, scalability, ethics, and learning in experimental environments. The ultimate goal is to harness the potential of Living Labs for systemic change and address complex societal challenges through innovative design approaches.

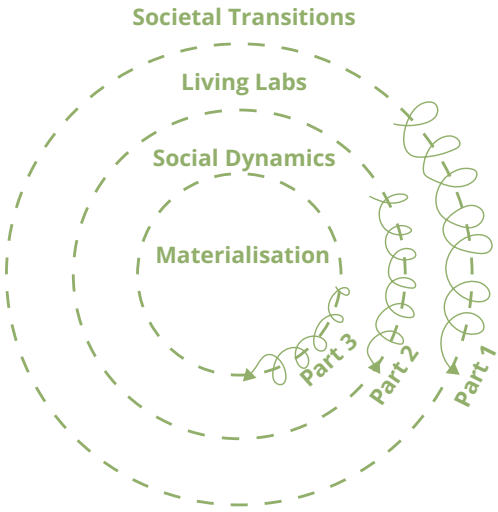

Figure 1. Three parts of the book.

Part 1: Living Labs and Societal Transitions

How do Living Labs contribute to societal change? Despite the real-life settings of many labs, they are in a way also separated from society. This is because Living Labs often are a temporary construction in a constantly evolving society, and also because

they are purposely set up locally and as a safe space of trust, new rules, and tempered expectations to conduct experiments together harmlessly. How can Living Labs be set up so that they contribute to societal transitions in the best way? And what challenges do design researchers face in doing so? The chapters in this part tackle such questions.

In Chapter 3: *'The Art of Connection. Beyond the Borders of Safe Zones: a Living Lab Case Study',* Jeroen van den Eijnde and Masi Mohammadi discuss the challenges they face in managing the expectations of diverse stakeholders involved in a Living Lab. They focus on a project called 'The Art of Connection', which explores the potential of interactive public spaces in fostering social interaction among residents, including vulnerable elderly individuals, in a City of Arnhem neighbourhood. They reflect on how constraints in the way this lab is set up may complicate the uptake of some of its results in society. For example, funding conditions, co-financing dynamics, and time-related project financing raise questions about ownership and sustainability. They describe how, despite these complexities, they try to bridge the gap between abstract project goals and the daily lives of local residents.

This question of how labs contribute to society is picked up further in Chapter 4: *'Co-designing towards Transitions? Facilitating More Than Experiments in Living Labs'.* In this chapter, Janneke Sluijs, Maria Arias, Morgan Duta, Ju Laclau Massaglia, and Anja Overdiek start from a critique on the impact of many design interventions on broader transition processes, emphasising the need for explicit connections between local experiments and larger transformations. The authors argue that designers can go beyond individual interventions by becoming 'convenors' in transition processes, leading multi-stakeholder networks through a Living Lab methodology focused on collective knowledge creation, imagination, testing, and implementation. They propose designers' suitability to co-design with networks for transformative adoption, particularly in the food, energy, and healthcare sectors and suggest an approach and a particular set of skills for this.

Going even further, Aranka Dijkstra, Peter Joore, Sybrith Tiekstra, and Marije Boonstra treat the question of how labs contribute to societal change as an empirical one. In Chapter 5: *'Exploring the Potential of Festivals as Living Labs for Systemic Innovation – Insights*

from the Interdisciplinary Innovation Program DORP', they evaluate the potential of festivals as spaces where one could experiment with systemic change. As temporary mini-societies, festivals present systemic sustainability challenges, making them ideal for experimenting with sustainable system innovations in areas like water, energy, housing, logistics, waste management, food, and behaviour. Using the Living Lab Activity Framework (LAFF), they track a number of projects and their progress across different innovation stages and system levels within the Festival Living Lab. The analysis suggests that the approach facilitates learning across various system levels, supporting the idea that festivals can serve as effective Living Labs for diverse types of innovation, including sustainable system innovation.

Part 2: Social Dynamics in Living Labs

Drilling one layer deeper, we should wonder how the lab can be organised to be the safe space needed to foster and nurture fresh ideas and novel approaches to societal challenges. How can the social dynamics between the stakeholders in a lab be fostered? What settings, spaces, participants, and ways of working contribute to the free exchange of ideas and the crossing of cultural boundaries between the lab members? How do we plan spontaneity of the lab (Van Turnhout et al., 2017)? The three chapters in this part suggest there are multiple ways forward.

In Chapter 6: *'Opening & Closing Hours – Three Cases and their Dynamics to let Learning Thrive'* , Wina Smeenk, Perica Savanović, Marieke Zielhuis, and Daan Andriessen explore collaboration dynamics in experimental learning environments. Multi-actor environments can be challenging and the authors investigate at what point a more open or a more closed approach is appropriate. They use boundary-crossing theory as a theoretical lens. The authors suggest that in many cases, an imbalance of the learning mechanisms (reflection, identification, coordination, and transformation) occurs. The dynamics of open or closed Living Lab moments form an important consideration. One should not only look at being open or closed to the participation of stakeholders, but also consider other open and/or closed aspects such as goals, approaches, design spaces, information availability, and decision-making.

Koen van Turnhout and Daan Andriessen provide a different perspective on the importance of social dynamics in labs in Chapter 7: *'Experimenting with Novel Knowledge: A Plea for Communities of Practice'*. They raise the question of how learning environments can be organised so that the individual learning of participants adds up to knowledge that transcends the realities of the lab. Building on two Communities of Practice (CoP), the Design Science Research Group and Workplace for Musal Research, they reflect on the intricacies of CoP design and management. They show how CoPs can be effective for individual learning, but how collective learning is more challenging and embedded in the epistemic cultures of the participants. They propose to integrate CoPs into normal Living Labs, for example, by forming guilds.

Next, in Chapter 8: *'The Open Lab as Boundary Object'*, Peter Troxler and Manon Mostert-van der Sar delve into the social dynamics of the makerspace. They suggest the MakerLab is set up as a third space and can be compared to a boundary object, stimulating serendipity, interdisciplinary collaboration, and innovation. The MakerLab exemplifies inclusive educational approaches, promoting interdisciplinary learning and social integration. According to Troxler and Mostert-van der Sar, open labs can serve as arenas for addressing societal challenges through applied design research and provide a space for experimentation, knowledge sharing, and cultural engagement in higher education and beyond.

Part 3: Materialisation within the Living Lab

When asked how exactly they further the collective thought in a multi-stakeholder environment, many applied design researchers will point to the value of material artefacts, either in the role of prototype or in another form. Conversations about things and objects are simply different and often more productive than conversations without such tangible references. But how does this work exactly? And what are the corresponding requirements for the materialisation itself? Authors in this section do embrace tangibility, while at the same time arguing to look beyond the traditional notion of prototypes.

First, in Chapter 9: *'Bridging Multi-Stakeholder Dialogue about AI Systems in the Lab: How Virtual Can We Go?'*, Tiwánee van der Horst, Anja Overdiek, and Maaike Harbers focus on tangible artefacts that mitigate the difficulties in developing responsible applications of emerging technologies, particularly Artificial Intelligence (AI). They introduce a designed boundary object as a tool to facilitate conversations about systemic issues related to AI's ecological and societal impacts. The study compares the effectiveness of a designed boundary object in physical and virtual contexts, revealing that the physical experience was more cohesive and effective in bridging perceptions and facilitating multi-stakeholder alignment. The authors conclude that physical experience might be crucial, specifically in the first phase of a Living Lab where multi-stakeholder dialogue must be bridged. In later phases of the lab, virtual interactions might be more viable.

Somewhat closer to traditional prototypes, but still very explorative, are technology probes (Hutchinson et al., 2003). In Chapter 10: *'Between Experiments – Leveraging Prototypes to Trigger, Articulate, and Share Informal Knowledge – Case of the Cities of Things Living Lab'*, Tomasz Jaśkiewicz and Iskander Smit argue that prototypes can be a means of explorative co-creation. It explores 'civic robots' as tangible boundary objects in connecting diverse stakeholders and fostering emergent knowledge generation. The Cities of Things Lab 010's initiative involves co-creating neighbourhood robot prototypes called *'WijkBots',* to disrupt the commercial-driven trend in emerging robot technologies and prioritise community needs. These *'civic robots'* enhance stakeholder communication and understanding, including academia, industry, government, and citizens. This chapter emphasises the vital role of prototypes in sustaining Living Lab initiatives, aligning diverse interests, and driving sustainability within networked labs.

Guido Stompff, Mark Jacobs, and Donagh Horgan delve into the meaning of the term prototype itself. In Chapter 11: *'Ceci n'est pas un Prototype – Prototypes and Idealtypes as Representations of What Works and What Matters'*, they examine the impact of prototypes on the design thinking process. Students and coaches lacking design expertise, struggle with the production and refinement of prototypes as a working method. Surprisingly, stakeholders vary significantly in their view of what a 'prototype' represents.

For some, it signifies the final design outcome, focusing on 'what works'; for others, it embodies the ideal, emphasising 'what should be'. The authors propose clarifying the term '*prototype*' for representing what can be and introducing '*ideal type*' for representations corresponding to the ideal, fostering separate discussions on 'what matters' and 'what works', especially relevant in social innovation and social design where diverse stakeholder perspectives and values exist.

In Chapter 12: *'Concerning Apples & Oysters'*, Catelijne van Middelkoop and Ryan Pescatore Frisk put the material aspect of Living Labs in a much broader, historical, and educational context. Working from the history of art education in Europe, they show how the practices at SintLucas connect educational, cultural, and technological thinking through materiality. They discuss 'Transition Atelier The Last Makers', a Living Lab concept that facilitates collaboration between humans and non-humans, fostering innovation and learning in a real-world setting. It explores boundary materials to generate ideas and alternative futures, emphasising long-term problem-solving and sustainable decision-making through (un)making processes. Collaboration challenges require ongoing reflection for effective knowledge development and education.

Conclusion

All of the following chapters will discuss the unique contribution of applied design researchers to Living Labs and other Experimental Learning and Innovation Environments. By exploring this subject from different perspectives, ranging from the macro level focussing on the relationship of the Living Lab and the overarching societal transitions, to the meso level related to the social dynamics within the Living Lab itself, to the microlevel of specific material practices, the reader will discover how these levels are interconnected, and how applied design researchers may support these vital and indispensable connections.

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