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6. Opening & Closing Hours

Three Cases and Their Dynamics to Let Learning Thrive

Introduction

Collaboration in experimental learning, innovation, and transition environments such as Living Labs can be complicated to carry out in practice. Designers and design researchers are often involved in these processes based on their intrinsic emphasis on transformation of the status quo towards new ways of collaboration for sustainable common futures. We propose that these new ways of collaboration have to include joint learning processes. In this chapter, we reflect on the dynamics within such environments which affect the way they are open or closed in their learning processes.

We propose that Living Labs should not just be characterised as 'closed' when they only involve a limited amount of participants, such as a selection of users, or as 'open' when they involve more and diverse people, companies, etc. We propose that, seen from the perspective of learning dynamics, opening and closing entails more than just 'who is involved'. It is also about the way those involved are able to learn together.

In three different cases, we show different ways of working and learning by the involved parties when it comes to opening and closing dynamics. The dynamics between the different collaborating partners in each case are discussed using the four learning mechanisms in boundary crossing processes: identification, reflection, coordination, and transformation.

The chapter concludes that it is important that the different involved parties in a lab should together to address, decide on, and reflect on the decisions which affect the dynamics within a lab in which joint learning can thrive. We distinguish several topics for such considerations, such as goals, design space, information availability, and/or decision power. The insights from these three cases can be helpful for anyone pursuing collaborative transformations and striving to let learning thrive.

The Need for Approaches To Open up Learning

Our society is currently facing a number of grand challenges and transitions. These challenges even require the fundaments of our society to be revisited in order to keep it livable, resilient, and meaningful (e.g., Chen et al., 2016). In order to address these challenges in a timely manner, concrete actions are necessary. Within the built environment, where two of the three cases in this chapter are set, the socio-technical challenges are complex but real and visible to everybody. These include transition in materials and energy(use), mobility, safety, housing, space allocation, climate adaptation, and sustainable living spaces in general, all of which need practical and concrete actions involving all stakeholders in order for change and transition to happen.

Within the built environment, different traditional (professional) disciplines in the construction sector are rather risk-averse and reactive. This attitude is often prompted by strict divisions (in roles), starting between clients and contractors, and progressing to specialist disciplines. In addition, there is a paradox, prompted by the way we educate engineering and construction professionals. Building engineers are traditionally trained to propose solutions to well-defined technical problems. Their added value is apparent through the objective use of knowledge, so that not professionals themselves but their solutions come to the fore. As a consequence, they try to do their work from relative anonymity on the basis of agreed objectives and criteria that are usually translated in as specific as possible programs of requirements. This puts engineers and builders in a well-defined role, but one that is also difficult to change if the demand changes — as often is the case during innovation processes tackling open socio-technical challenges.

Continuing to seek refuge in the familiar rational efficiency of the traditional approach will therefore have to change; in any case more quickly than it incrementally does in the current practice. Our view is that professionals in general, and engineers specifically, should move more towards expansive co-design approaches, instead of further optimising their rational reductionistic practices.

Savanović (2021, p.169,) "argues that the built environment needs to learn how to incorporate the openness of the design process into the traditional and still prevailing engineering and construction processes. The creation, from a quadruple-helix perspective and active collaboration, of new (design) opportunities, options, and possibilities for alternative and joint sustainable future(s) together needs to precede (shared)decision making on which possibilities to further pursue or use. Moreover, it precedes the final definition of criteria for decision and selection-making. Introducing this change in the traditional (building) engineering processes and governance processes, where analysis and criteria definition are one of the first activities, is still not easy."

However, truly understanding and tackling these complex challenges remains difficult, because no single actor or organisation is, or can be, wholly responsible for them, while most aspects are interwoven and interdependent (e.g., Irwin, 2018; Van der Bijl Brouwer, 2022). These issues affect us all and in different spheres of life: as politician, voter, citizen, government official, business, technical professional, designer, or researcher (e.g., Smeenk, 2021). The collaborative and social-technological innovation and transformation processes that are needed to adequately meet these challenges are therefore dynamic, multi-stakeholder, and multi-sited (e.g., Kimbell, 2018; Vink et al., 2021).

The healthcare context, in which the third case is set, shows similar developments. Coming to actual implementation in collaborations between research and practice is still difficult (Gezondheidsraad, 2010). As an important way forward, there is a strong movement that advocates that clients participate as experts, under the motto 'nothing about us, without us' (Johansson, 2014). Furthermore, ongoing collaborations between researchers and practice partners are deemed important (Janssens, 2016).

What the above developments suggest is that an important process that we aim for in labs changing the status quo and working towards new ways of collaboration for sustainable common futures. Those involved need to be able to learn together. However, mutual learning is often assumed in participatory approaches, but rather taken for granted (Calvo, 2019). Pihkala & Karasti (2016) argue that more reflexivity is needed on the learning that takes place within the participatory design process.

In this chapter, we take a closer look at the learning that takes place within experimental environments, and we unravel the learning dynamics. We discuss three different case approaches to deal with this collaborative development challenge jointly. The three cases highlight the difficulties of finding a balance: to sufficiently address the multiple facets and voices, while also providing enough (externally expected) focus and momentum.

Theory: Boundary Crossing Learning Mechanisms

To discuss the dynamics in the learning processes between different collaborating partners, this chapter uses the four learning mechanisms which Akkerman & Bakker (2011) distinguish in boundary crossing processes as driven by the dialectic between different contexts. Table 1 summarises these mechanisms. Akkerman & Bakker distinguish two groups of mechanisms that focus on reflection and perspectives: *identification* of one's own identity and that of the other, and *reflection*, where those involved broaden their own perspective on the different ways of working on either side of the boundary. The two other mechanisms rather focus on activities: *coordination* of distributed work, in which those involved practically and efficiently coordinate their work, and *transformation* of previous ways of working and coming to new and hybrid ways of working.

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Table 1. Four boundary crossing learning mechanisms (Akkerman & Bakker, 2011)

Identification of one's own identity and that of the other
- Othering, reconstructing the boundary
- Gaining insight in how practices differ
- Accepting differences

Reflection on the different ways of working on either side of the boundary
- Defining and exchanging perspectives
- Developing one's own perspective (perspective-making) and taking others' perspective (perspective-taking)

Coordination of distributed work
- Dealing with a boundary by each going their own way as much as possible
- Translating and communicating, aimed at efficiency in distributed work

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Transformation of previous ways of working
- Joint work at the boundary
- Driven by mutual needs and a shared problem space
- Creation of new or hybrid forms

Moreover, Akkerman & Bakker (2011) note that boundary objects (Star, 1989) play an important role, especially in the mechanism *coordination*. They enable different groups to discuss and carry out their work. Between the people involved in the lab or experimental environment, a project proposal, memo, visionary visual or (paper) prototype can play such a boundary role. They are then boundary-negotiating artefacts, as indicated by Lee (2007). It is important to emphasise the fact that these negotiating artefacts can (and should!) be further developed into new versions of boundary objects. This dynamic is important to allow transformation of joint ways of working, moving beyond merely coordination, which is based on current, more separate approaches.

In the three described cases in this chapter, we will see that these dynamics play out differently, as well as the extent to which these boundary objects are seen as fixed, evolving, and immutable. The four mechanisms indicate how boundary crossing is more than just

interacting with boundary objects. Between the people involved in the lab or experimental environment, a project proposal, memo, visual or prototype can play such a boundary role. All three cases show examples of – if sometimes temporary – consolidation of content of their joint work.

Moreover, it is about the process and group dynamics surrounding (further development of) those boundary objects. They then enable different groups to share, discuss, and carry out their work – even in a newly transformed way.

Dynamics in Three Cases

We present three cases which all differ on the topics of the intended transformation, but also in the roles we as authors were involved.

The first case concerns a participation project of a foundation that was set up with the goal to develop a new smart and sustainable district as a co-design process between future residents (starting with a new process among themselves), policymakers, building professionals, and other stakeholders. The case follows a co-design process of 2 years that started with an ambitious transition vision and no restricting formal conditions. Eventually, it turned out to be restricted by all sorts of unexpected governmental, ecological, economic, and social developments and interdependencies. The involved author had an explicit role of participation program manager (co-designer and facilitator) and facilitated the co-design process.

The second case concerns an energy transition program in a municipality in which the national, provincial, and municipal government collaborated with businesses to make their own real estate energy-neutral through a new area development approach. This case shows a clear tendency to focus content-wise on (joint) transformation and process-wise on (formal) coordination. The involved author had an explicit research role from which he tried to implement a design research methodology in the developing energy transition program.

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The third case is set within two research programs by a Dutch funding party, aimed at enhancing long-term care while involving patients as well as practice partners. The experimental environment concerns the collaboration within the different consortia as they already start in the pre-project (definition) phase. Seven starting consortia used the same – new – organised way to jointly develop a research project proposal. The involved author had a role of facilitator of this new way of working and studied the process as design researcher.

We discuss all three cases along the four boundary crossing learning mechanisms. The results are summarised in Table 2.

Case 1: The smart and sustainable plot lab: an open promise

This case entails an ambitious urban planning program which aimed to create a hugely innovative smart and sustainable district, designed together with its various stakeholders, including future inhabitants. A foundation entity and accompanying program team was purposely set up, as a separate entity, apart from the city council and province, as well as universities and business in order not to be restricted by current traditional housing development ways of working, systems, procedures, etc., but to be more flexible, open, and actually work in an integrative way. A purposeful integral development program – explicitly not as separate projects – was set in place.

One of the authors was hired and assigned as a participation program manager to initiate the first experimental participative 'lab' environment for bottom-up 'co-building', and to facilitate the co-design process of the future residents; including communication between the future residents and the foundation. She, as a co-design expert, set up the participation process and aimed to empower future residents themselves to eventually take ownership and responsibility of the co-design process, as shown in Figure 1.

The assignment for this so-called *plot lab* included design of an open invitation in (social) media by an advertisement for an information evening (as usual when selling housing lots), with inspiring persona stories, explicitly inviting unknown ambitious *pioneering* future residents and house builders who are *willing to take risks* and be the first to live in the new, to be built smart and sustainable district. The pioneers were asked to co-design and co-develop a plot of

land of 20.000 m^2 with approximately 40 households. There was no predefined urban plan and no planning. The restrictions only concerned seven innovative themes (1. sustainability, 2. mobility, 3. social and safe, 4. healthy, 5. participative, 6. data for residents, 7. energy neutral), and the expectation that the future residents take not only housing but also infrastructure along in their joint and individual plans.
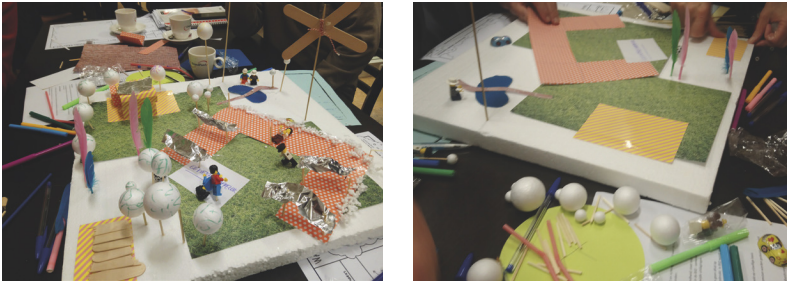

Figure 1. During the co-design process of their new neighbourhood, the involved residents developed mock-ups which functioned as boundary objects.

Identification

At the start of this lab, everything was open; the process and the housing plans were to be co-designed. At the first information evening, future residents were invited by the foundation director to collectively initiate their own experimental lab with support from the participation program manager as a co-designer. The factual information given to the residents was restricted to co-developing a plot of land of 20.000 m^2 with approximately 40 households, taking into account the ambitious seven themes and a fixed square metre price. Moreover, the future residents could decide themselves where they wanted their lots to be positioned and how the lots would fit together including a joint energy, water, mobility, and data infrastructure.

The first thing future residents warned for is that they did not want to be in an *'experiment'*. They emphasised they had a *real interest* to design, plan, build, and finance their aspired sustainable and smart futures, and that they were serious about realising their dreams with this once-in-a-lifetime opportunity. In the subsequent co-design sessions, all future residents spent a lot of time, effort, and risk (financial as well as social) to make this happen. They became a true community and felt they were trusted by the foundation program team and that they had the mandate to take the lead in planning and building their own neighbourhood.

Table 2. The topics to address within a collaboration when facilitating joint learning for the boundary-crossing learning mechanism (Akkerman & Bakker, 2011).

Topics to address	Case 1: The smart and sustainable plot lab	
Identification of the own identity and that of the other **Deal with:** - Different views on knowledge and learning - Different views and unclarity on the design space - The balance of who is open to whom	+Focus on what residents want and can do as a value in itself +Between residents interests are shared transparently, which creates trust +Insight in three different areas of interest between residents - Other parties find residents' insights interesting, but do not share their own interests openly - (perceived) Power of the foundation makes residents suspicious	
Reflection on the different ways of working on either side of the boundary **Deal with:** - Empathic formation - The time this takes	+Residents took time to exchange perspectives supported by appropriate creative methods, boundary objects and experts and made(shared) decisions - Lacking exchange and shared decision-making between foundation and residents	
Coordination of distributed work **Deal with:** - Different views / expectations on boundary objects - Knowledge asymmetry - Capacity differences - Power differences - Temporality	+The neighbourhood as focal point and boundary object +Residents invest much time and effort, take risks, and learn quickly together +The commitment, time, and creativity by the designer as facilitator - Knowledge asymmetry - Speed residents faster than procedures of foundation	
Transformation of previous ways of working **Deal with:** - (un)willingness or fear to step beyond usual ways of working - Temporary role of an external facilitator	+Designer dares to take responsibility for an open experimental learning process desired by the foundation +Idealistic residents take their mutual needs and role seriously - The foundation is accountable to the board. Designer is paid by the foundation. Residents are voluntary. So, accountability is not organised equally	

Case 2: A developing transition program	Case 3: Circling in research
+Shared understanding of technical goals - No explicit interest in each other's learning preferences	+Focus on the multiple perspectives, on all project aspects - 'who should be at the table' is not explicitly addressed in the method - The identification process was limited to a relatively small core group
+Many (informal) reflections occurring in sub-projects and sub-tasks - no consciously undertaken joint reflection	+Time was taken to really understand others' perspectives - Real empathy could still be better or more explicitly facilitated
+New insights and innovations process-wise - Traditional division of already known work	+Working on a proposal as a boundary object, provides access to information for all +External facilitator to support the process - Hard to refrain from seeing the proposal as fixed, once accepted - Unaddressed capacity (and hence power) differences between project coordinator and the rest
+Hands-on experience of working differently +Coupled to content development - Performed by hired market parties and only a small number of the involved governmental program partners	+Starting from a shared problem space - Not clear yet whether the learning dynamics, set in motion in this pre-project phase, will continue in actual project execution

Already by the third session, three future resident groups with similar ideas and wishes had emerged, namely, tiny houses, sustainable detached houses, and life-long collective buildings. Moreover, there were first ideas and plans on who would build close to whom, or together with each other, and how communal space would be developed and shared based on common needs and aspirations.

However, the interests and expectations of the foundation proved to be different from that of future residents. This became only apparent during the process. The participation of future residents resulted in concrete ideas and proposals that triggered the foundation to respond and also explicate its own (up until then implicit) expectations on aesthetics and quality. It set restrictive boundaries to the seven themes. Because the common purpose between future residents and the foundation suddenly seemed to be lacking, an inclusive co-design incorporating both groups and views never did (or had a chance to) happen.

A process of identification was visible among the future residents. They, in the spirit of true pioneers, were open to discovering what each other's views were, and to engaging in a joint learning process of who they are as a group, and what each individual wanted. Partly assisted by external architects, they were able to translate these new insights in joint proposals for the new housing development. They developed boundary objects and played with them. The same cannot be said for the foundation who needed to first experience what the boundary objects could be, based on which further decisions would be taken while not really engaging in joint learning or mutual identification of preferences.

Reflection
Everything was initially, or at least seemed to be, open. In the co-design sessions, future residents exchanged what they had in mind for their personal space and communal spaces. Most were attracted to the project by the seven idealistic themes, the overall communal aspect, the specific co-design process, and/or the prospect of building one's affordable own house. Their mindset was cooperative and necessarily reflective from the start. Facilitated by the participation program manager and her creative co-design methods (including boundary objects development and arranged expert exchange), they were challenged to exchange and

find their differences and shared interests, knowledge, strengths, and aspirations regarding the seven ambitious and idealistic sustainable and smart living themes. This gave them a lot of time together to exchange perspectives, get to know each other, build trust, and eventually support and help each other with individual and collective plans to co-design and co-develop a common neighbourhood.

The foundation director and municipality architect were invited in explicit reflection meetings to exchange progress on both sides. The architect and director were critical on the quality and aesthetics of the ideas of the future residents, probably from their predefined (not known to others) set of criteria, but they did not always think along or give support in tips, tricks, or a network that could help the future residents. So, there was reflection among the future residents, but almost no constructive reflection between the residents, building professionals, the foundation, and the municipality.

Coordination

The organisation of this *plot lab* started off innovative, with a foundation entity that was purposely set up apart from existing structures such as politics, universities, and business so as to not be restricted by current (more closed) systems, procedures, etc. The 80 future residents were grateful for the participation program manager's support in facilitating the first sessions, making everyone feel welcome, and using creative co-design methods to make them thoroughly exchange their own and collective wishes and ideas. The foundation connected and organised governmental officials, policymakers, business experts, and researchers for support and information.

A positive result was that insights about the smart and sustainable living wishes of the future residents were obtained and shared within the foundation, which gave a new perspective on what people actually aspire and wish for in building new neighbourhoods. Yet, while developing their plans further at a rather fast pace, the three future resident groups ran into unclarity, difficulties, and process delays mainly because of other foundation and municipality processes lagging behind.

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For example, the innovative zoning plan was not even started, the quality book not established, and the quality team not installed. These restrictive issues had a 'closing' effect on an 'open' experimental development process.

Eventually, coordination problems in temporalities and knowledge, information, and power asymmetries, led to communication and trust problems, irritations, mistakes, and finally deterioration and mistrust in the relations and dynamics between future residents and the foundation. The future residents depended on the way foundation professionals worked and vice versa. Residents felt that they were successful and fast moving and ready for the next step, but the foundation and its network partners were not. Many residents voiced their concerns about unclarities, first to the participation program manager and later directly to the foundation. At first, the participation program manager was able to further adapt the joint process in finding other relevant program elements to work on, share, and learn about. However, and since this (learning) coordination was not her sole responsibility, the participation program manager was unable to continue the co-design process and 'open' development of the project content.

Transformation
At the start of this lab experiment, the foundation program team, the participation program manager, and the future residents were enthusiastic and eager to work differently. This idea that the new district would be totally different, with true pioneers in the lead and with seven ambitious themes increased the enthusiasm that real transformation was possible.

However, by being fast and successful with this bottom-up co-design process with the future residents in the lead from the start, in addition to the foundation and municipality processes not up to speed, caused them to set off too quickly and then become overly enthusiastic. This caused the envisaged co-design approach to run into problems. Although some provisions were taken to be able to work outside the traditional systems, setting up a foundation and appointing responsible program managers, for example, the trailblazers were not able to keep that going, as they were not supported in their transformation process information demands. One could wonder if the setting up of a dedicated foundation was truly different compared to usual housing

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development approaches, since its director eventually had to comply with the rules and the usual actors in the current system. This resulted in the old roles and activities interfering more and more with the newly developed ones.

Discussion

In this example of a Living Lab, future residents were able to identify each other's housing preferences and wishes, reflect on them, and coordinate a joint plan. However, other import ant-actors like the foundation and the municipality were not able to critically reflect on their own role, coordinate the required efforts within their own organisations and network, and facilitate the transformations needed to make this lab plot a success.

The open process clashed with the emerging and gradual closed content requirements of the municipality which was outside the influence of the participants of the lab. For true transformation, the commitment and participation of these other parties' decision power was necessary. When this did not happen in time, the co-design and joint learning got stuck and in fact stopped, despite all (additional) efforts of the participation program manager.

One important factor was that for the future residents the innovation risks, especially financial and personal risks, were more direct and much higher than for the foundation and other actors. This meant that the interests of the future residents were much more oriented towards clarity and short-term 'closure' than the organisations who were risk-free interested in 'open' innovation. The future residents clearly had to deal with information asymmetry; much of the crucial information and expertise from the side of the other parties in the program organisation was not reaching them, which also prevented the other stakeholders from benefiting from the expertise of the future residents. Expertise and learning were not integrated.

Case 2: A developing transition program: a closed start

The second case concerns a joint (national, provincial, and municipal) government program. It aims to set an example of an energy transition approach by making governmental buildings in the centre of a major Dutch city climate neutral through a new area

development approach which is reflected in a developing program consisting of sub-projects and tasks. The selected and essentially technically oriented consortium advises the governmental parties how and which innovative solutions to implement and integrate.

The main challenge of the program is how to *jointly* manage the developments. In other words, how can the developing energy transition program, in addition to being a joint transition tool for involved partners, also serve as an individual handle for their different goals while safeguarding commonality in energy transition interests. To this end, an existing design research methodology (Blessing & Chakrabarti, 2009) is used by the involved design researcher which follows an iterative designerly way of working. This design researcher is not in the lead of this process, also not as a dedicated facilitator, but consciously takes a distant and rather 'free' or 'open' role: he observes, asks questions, but also makes remarks and proposes interventions based on written information, sub-projects, and joint (co-design) meetups. His approach, which is approved by the program director and steering committee to help develop and demonstrate another way of working, is to go back and forth by discussing 'what is' (descriptive), 'what needs to be done' (prescriptive), and then to evaluate what the new situation is (descriptive) and move further. He hopes to eventually make himself redundant. The idea is that this new approach, which helps to reframe both processes and tasks, will be adopted during the program development and sub-project activities, and directly put in practice by the involved stakeholders. The approach therefore results not only in describing the course of program development, but also in translating it along the way into program characteristics.

Identification
In the initially tech solutions-focused consortium, the program team did not dedicate time at the start of, or during the program development to identify, note, or make explicit the way the involved individuals and organisations learn. This means that identification did not really occur on this aspect.

The assignment of the involved researcher is to regard learning from the perspective of an energy transition mission. As a design researcher, he is also personally convinced that we learn best while doing and by working together, even if it is implicit, and

that we need to take questions and answer loops into account while innovating and implementing. In other words, he wants to transfer design research knowledge (attitude and skills) hands-on to practise in order to transform the collaborative work in a more integrative, flexible, and iterative open approach towards energy transition mission.

The technical development is based on a so-called 'Trias Territoria' working philosophy:

- Step 1: reduce the energy demand at building level, for example, through insulation, heat recovery, and energy-efficient lighting.
- Step 2: use and share local energy sources in the immediate vicinity, and determine what capacity they provide, and whether that capacity can be shared with other buildings in the area.
- Step 3: purchase sustainable energy from the region, such as heat, cold, electricity, or possibly hydrogen in the future.

An interesting development in the program was that, almost unnoticed, a group choice had been made to start first with the step two of Trias Territoria, or at least give priority to (joint) area measures, before choices for energy-saving measures at (individual) building level would be made.

This was a significant signal in the program, especially since one of the main explicitly stated goals was to learn in order to be able to repeat and pass on the developed solutions and new ways of working (technical, procedural, processes, rules, and regulations). What happened was that the explicit individual learning possibility presented by step 1 of the Trias Territoria approach was postponed and therefore not actively pursued by the program partners (governmental participants and owners). Instead, the development has been focused on step 2, innovation and implementation of joint solutions. The thinking was that this joint step 2 'hopefully' may prove sufficient enough to definitively avoid/skip the individual step 1.

However, what was hereby also unnoticedly skipped was the recognition of the own 'identity' regarding the task at hand (content-wise) and towards what is needed (process-wise) to meet this task. Instead of explicitly presenting and explaining to each other what the different perspectives and identities are, related to

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the possible actions regarding step 1, the shortcut of the available Trias Territoria step 2 (also literally focusing on the already available possible technical solutions) was taken. This way the true identity of 'the other', related to the task at hand, which was never really explicitly stated or consciously shared and discussed within the program team.

Reflection

The program team was willing and able to reflect, but rather on action than in action. The lack of deliberate identification meant that there was also no consciously undertaken joint reflection on the traditionally different ways of working by the program partners and involved stakeholders. Indirectly there were of course many (informal) reflections occurring in sub-projects and sub-tasks, often one-on-one, resulting in frequent improvement of understanding between the partners that were directly involved in a specific activity. However, leaving the rest of the program team often guessing what actually is taking place, and how it fits into implicitly already-taken decisions. The explanations offered during biweekly team meetings focus generally on technicalities of the proposed (sub)solutions, and what we learn from (trying to implement) them, but almost never on identity aspects or joint learning mechanisms.

Only afterwards are the efforts taken to (partly) describe what the lessons learned were and how certain results have been realised, in the so-called 'guidelines'. But even there it is explicitly stated, as one of the 'collaboration principles', that 'we are only looking at what connects us regarding the task at hand, and not what our differences are'.

Coordination

The learning mechanism of coordination, largely based on traditional division of already-known work between different disciplines in the sector, has led to new insights and innovations process-wise, specifically regarding procurement and contracting measures. This resulted in projects in which technical measures have been implemented.

Additionally, through reflection on joint ways of working regarding this type of familiar coordination and concerning regular program risks and subsequent measures, the whole program team follows a common learning curve directed to further process optimization.

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One of the explicit program goals is the development of new ways to collaborate (that unfortunately often end in a process separate from content), and from a knowledge development perspective as well as a descriptive-prescriptive-descriptive perspective iterations were introduced and followed. This resulting learning effect was exactly wat was wanted. Coordination mechanisms did not however result or contribute to new energy-content innovations that drive the wanted transition.

Transformation

Transformation as a learning mechanism (coupled to the content development) is essentially performed by the hired consultants and market parties, and only by a small number of professionals from the involved governmental program partners. Since these governmental professionals act both as (1) clients to the hired professional consultants and construction companies, and (2) owners of the real estate that needs to be improved through energy transition measures, they assume a rather reactive attitude towards collaborative transformation and further (teach-the-teacher type of) learning within their own organisations.

To contribute to the energy transition, this program coalition needs to (experience and learn to) work differently individually and collectively. This transition program has as one of the aims to be an example of how to design, scale, and disseminate a transition process and knowledge to other practices and education. However, due to a focus on the more short-term sub-projects successes and deliverables, the learning aspect has not yet been fully realised and a new way of iteratively working, in a descriptive-prescriptive-descriptive shifting from traditional risk management to transformative new collaborative design opportunities, only partially occurred.

Discussion

From the perspective of four learning mechanisms (identification, reflection, coordination, and transformation), this energy transition program has developed a clear tendency along the way to focus only content-wise on (joint) transformation and process-wise on (formal) coordination.

Analysing the case using four learning mechanisms indicates that the identification (of one's own identity and that of the other) was insufficiently done up until now, and that this hindered the learning process. This is partly due to the (own felt) pressure to realise concrete (technical) measures, and partly due to the general avoidance of taking new energy transition measures on one's own individual real estate first. One of the resulting effects of this (partly implicit) approach is the creation of a largely closed type of experimentation, even though the program team and involved partners are aware of the fact that they are dealing with socio-technical (meaning one has to deal with multiple subjective and more complex interpretations) instead of only technical tasks (which could 'objectively' be functionally predefined).

The major consequence being that the buildings' end-users are not yet directly involved in the experimentation and (program) development, which is the same as the citizens who live in the concerned central city area. The other important consequence, which the program team is not yet fully aware of, is the continuous struggle to utilise the program as a joint transition tool that also serves as an individual handle for different goals of different partners, while safeguarding commonality in transition interests. In order to be able to accomplish this goal, one has to know what the (learning) identity of the involved partners and stakeholders is, to be able to fully utilise opening and closing dynamics for improved participation and collaborative development. It seems however as if in thistype of developing program, identification could be accomplished only after transformation and reflection.

A combination of a generally proactive joint involvement of the steering committee, together with a specific use of risk management as a development instead of as a monitoring and/or assessment tool, seems to offer some guidance and opportunities for prescriptive actions concerning further coordination, reflection, and transformation. But in order to open up more as a co-design and co-creation experimental environment, this program will have to find ways to foster identification learning mechanisms.

Case 3: Circling in research collaborations: to open up a closed start

The 'Circling in research' approach was developed within the context of practice-based research on healthcare innovations. This was in reaction to several problems in this context: research questions do not always fit actual practice issues, the inclusion of everyday people is not always satisfactory, and research results do not land in practice. Within two research programs in the field of healthcare innovations, a supportive method was developed and applied by seven partaking consortia to address these problems. The developed method is an organised way to iterate on decisions of aspects of a research project proposal, by circling around these decisions with a diverse team of stakeholders.

The circling method presupposes that involvement of all relevant stakeholders from the start strengthens the quality of the plan and its contribution (e.g., Johansson, 2014). Scientific knowledge, practice knowledge, and experiential knowledge are all treated as equally valuable in the method. Therefore, it is seen as important that the key stakeholders are present or represented at the table while circling. The attempt was to make the seven projects open environments as to who joins the table (Jones, 2018).

The circling process distinguishes several key project facets: practice issue, knowledge gap, research question, project approach, project conditions, goals, and products. The goals explicitly include not only knowledge goals. The circling approach is based on the four goals which Greven & Andriessen (2019) distinguish in practice-based research: knowledge development, product development, system development, and personal development. As a consequence, not only a research approach needs to be developed, but also approaches for the three other goals.

In the two research programs, the application of the method was facilitated by the project team which developed the method. One of the authors of this chapter was part of this team. The seven consortia that tested CIRC can be seen as seven Living Labs that have the intention to develop and execute a research proposal. Each consortium consists of several stakeholders including clients, caretakers, doctors, and managers.

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Identification

One of the underlying design principles of circling is to foster a multi-voiced process, in which different perspectives do not have to merge and in which different goals and expectations can coexist. Special attention is paid to the process of meeting each other not only as a professional but also as a person. This stimulates bonding and the process of identification. One of the key findings was that the CIRC approach helped almost all of about 50 people who participated in the seven consortia to learn about the perspectives of others. For instance, by the participation of clients, nurses and doctors learned to see problems from their perspective.

However, the mutual *identification* process was limited to a restricted group within each forming consortium. Although CIRC promotes an open process for the development of research proposals, the seven groups which developed research proposals all included a rather limited group for practical reasons. Because the workshops had to be online, there was a maximum number of participants with which CIRC could facilitate a good dialogue. The consortia found several ways to address this limitation. Some held additional focus groups with stakeholders, and others formed a steering committee to give additional feedback. In some cases additional stakeholder groups were identified and invited to join in the research proposal.

Reflection

The challenge that is addressed in the circling method is how to make sure that these different voices are not only present at the table but *really heard*. The circling process helped to go beyond identifying different perspectives. It helped to understand one another and to be able to take another's perspective, for instance the different perspectives on what is 'knowledge' or 'good research'. Several elements of the approach are aimed to explicate underlying values. Some come from arts-based research, such as the contemplative dialogue (*www.musework.nl)* which fosters a process in which participants listen to each other very carefully. Still, the evaluations pointed out that real empathy between partners, and a safe space, could be even further stimulated.

Participants recognized this process of taking each other's perspective as being very helpful in developing the research proposal. However, what they did find difficult is that such reflection requires slowing down the process at some points. Slowing down was perceived as a challenge, as the consortia felt the time pressure to submit a proposal before a deadline. It helped that the participants in these two research programs were given dedicated time for this process. When they worked with the approach, they actually appreciated the slowing down and indicated that they indeed broadened their own perspectives.

Coordination

Central in the circling process is the development of a research proposal. This is developed as a prototype of the collaboration and can be seen as a boundary object in a *coordination* process. The prototype is an important way to provide clarity to all involved about the project, among which to the research funder, as it opens up information to the different stakeholders.

Not all seven consortia used the draft research proposal as a boundary object within their consortium. The ones that did were more successful in gaining support for the proposal in all stages of the process. The successful projects gave an update on the progress at the start of each meeting and created a document describing all information gathered and decisions taken.

The approach alternatively addresses the key project facets as described before. These are iterated upon instead of dealt with in a linear process. A certain logical route is presupposed in this, starting from practice issues and moving to goals and eventually a research approach. A process may start with a different step, for instance with a particular envisioned method. Participants will then need to loop back to check what the practice issue is, whether there is a knowledge gap, etc. Participants indicated that the process of 'circling' was helpful in postponing judgement and looking at the topic from different angles. However, it also made it more difficult to jointly decide on the focus of the proposal. Discussions were sometimes experienced as too broad and abstract.

Although the method promotes equality amongst partners, in practice there is often one party as the main supplicant. This introduces a tension to this equality and power differences. The other partners in a consortium (e.g., caretakers or clients) do not have the same time to extensively take part in the preparation. The circling approach prescribes suggestions for process steps in which a balance is sought between actions by this main coordinator and joint actions by all partners. Tips are provided for the process facilitator, to be process-sensitive.

Figure 2. The canvas which is used in the 'circling in research' approach to capture the insights during the process and develop the research proposal.

What proved challenging is that not everybody can be at the table, especially in the large and layered organisations which the healthcare organisations in these projects are. And even when people from different layers in an organisation are all present, power differences play a role. Although the method is intended to be helpful to this end, e.g., by using methods to build mutual respect and by paying attention to personal relations, the matter of power differences remains underwater and is not explicitly addressed. The evaluations showed that 'who is at the table' should be one of the key aspects to address and discuss as part of the project proposal under construction, including the topic of the related power differences. This was initially not part of the key canvas, but was inspired by the Co-Design Canvas by Smeenk et al., 2023, and thus it is now being integrated as part of it to make sure it is a returning topic, which can change during the process.

Transformation

One of the goals of introducing the circling approach was to stimulate a different way of looking at scientific research in which scientific knowledge, practice knowledge, and experiential knowledge are treated as equally valuable, both within the participating consortia as within the funding agency. We are now in the process of researching whether this new way of looking at research, as it was stimulated during the facilitated process, remains present during the execution of the research proposals. We did see a positive change with members of the funding agency who are now advocating the inclusive way of developing research proposals, as promoted within the circling approach, further within their organisation.

Discussion

This case shows how joint learning processes in practice-research collaborations can be supported by a conscious effort to open up the decision-making and learning process. It shows how it helps to explicitly dedicate time and effort to this process.

In the current way the circling process was executed, the focus was rather on *identification* (multi-voicedness), *reflection* (how can we really learn from others), as well as *coordination* (the project proposal as central object). We do not yet know the effect on *transformation*. The learning mechanism of transformation draws from the power of working together from a shared drive and by coming to new ways of working: daring to change or put aside your current ways of working also as researchers.

We already addressed that research projects have an inherent power difference built in. The coordinating party (mostly the researchers) have more time and resources to give direction to the project, whereas practice parties often have limited ways to steer the project. While the circling process is facilitated by an external facilitator, as in our case, these facilitators also have power to steer the process towards a certain way of working and learning together. The challenge for the circling method is to help a consortium to come up with their own, unique, and really shared way of working, fitting for the context and stakeholders involved. How can the canvas or other elements of the method support this?

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Conclusion

Collaborations in experimental learning, innovation, and transition environments such as Living Labs can be complicated to carry out in practice. In this chapter, we reflected on the opening and closing dynamics within three cases of such collaborations by using the lens of the four learning mechanisms in boundary crossing (Akkerman & Bakker, 2011).

Our three cases all show how we, as authors, took a facilitating role as designer, design researcher, and facilitator in collaborative experimental environments or labs. They illustrate how we are all driven, in these different contexts, by the need to (re)shape these environments in such a way that the involved actors can adopt new ways of working where joint learning can thrive. In the built environment as well as in the healthcare context, we recognize tendencies to adopt rather classic views of what 'knowledge' is. In this view, knowledge is viewed more as a product, whereas we also recognize the importance of viewing knowledge also as a process (Andriessen, 2008). In that light, the opening and closing dynamics we identify in experimental environments are all viewed by us in the light of *joint learning*.

All three of us, in more or less explicit facilitator roles, aimed to shape collaborations towards a new way of working which facilitates joint learning. This stems from our shared belief that the experimental nature of a lab or experimental environment should be about the whole process, about continuous learning and development of multiple stakeholders. We strive for change in the process to – in the end – attain different types of results and impact.

Looking back on our cases, we realise that we see it as important that (1) we, as such facilitators, reflect and do introspection on these – sometimes unspoken – ambitions of our own, and that (2) we share and further develop the ways of working which help to attain these ambitions.

In light of the first point, we propose that these ambitions can be too high. All three of us, therefore, are looking for ways to make ourselves redundant in time. This is probably for the best. As there is a risk of moving from missionary to table banger, there could be a point where someone else may better step in. This means

that during the process, design researchers need to balance their role. They are often involved in a – more or less explicit – role as facilitator. In this role, they need to beware to be overly present and indispensable in the process. Whereas they also need to beware of getting too much on the sideline, becoming 'already redundant'.

For the second point, by viewing the three cases in light of the four learning mechanisms, we conclude that a lack of attention to any of these is able to hinder the learning process. For instance, the developing energy transition program case illustrates how a learning transformation really requires a process in which the different partners understand one another's needs and interests (identification). Therefore, we conclude that all four learning mechanisms should be considered in any lab and given due attention in the specific context.

Within each mechanism, we gained an overview of attention-worthy aspects when it comes to opening up the learning process. The three cases show that there is more to opening up a lab than just 'who is involved'. For instance, the plot lab case shows how joint learning can get hindered and a lab can get stuck, even when there is an enthusiastic group who identify each other's preferences and wishes, reflect on them, and coordinate a joint plan. We recognize that experimental environments take all kinds of decisions along the way which affect the learning dynamics and the learning transformation. The three cases together provide a preliminary overview of topics which collaborating parties should address, such as different views on goals, design space, and decision power (the first column in Table 2). We can imagine that experiences from other cases can further add to this list. Ideally, the relevant actors should be involved in decisions on these topics which affect the learning dynamics. This means that explicit, joint, and periodic reflection on all these topics is needed. The circling case provides an example in which this is attempted from the early start-up of a collaboration.

We propose that the insights from the three separate cases, as well as the overarching insights, can be helpful for other designers, researchers and stakeholders who aim to start an experimental environment or a lab and or take a facilitating role.

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