Labbing for sustainability transformations: Learning about challenges and strategies for impact

Creating impact in labs oriented at sustainability transformations is challenging. Combining the experiences of ten projects and sharing the insights in "Labbing", gained through engaging in various activities within transformation-oriented Labs from the fields of agriculture, food, and healthcare, the author team established a Community of Practice at the Vrije Universiteit Amsterdam, to identify impact challenges inductively and recommend practical strategies for addressing these.

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Abstract

While the issue of creating impact in real-world labs for experimenting with sustainability transformation has been studied, little is known about how to assess and understand impact in practice. Deciding on "what counts as impact" is challenging as problem definitions and solutions are political and contested. In our research projects for sustainability transformations in fields such as agriculture, food, and healthcare, we encountered typical questions of creating impact in real-world labs. We established a Community of Practice to explore the different challenges pertaining to these impact questions. We identified four overarching challenges related to impact: 1. measuring the impact of Labs, 2. dealing with positionality and power dynamics, 3. fostering impact within and beyond projects, and 4. ensuring impact across different contexts. This paper offers practical strategies for responding to these challenges: 1. tailor-made training for Labbing, 2. reflexively engaging with power dynamics, 3. forging rich, translocal learning and impact. Sharing learnings from our experience with Labbing may broaden the repertoire of fellow Lab practitioners in enhancing and strengthening their impact.

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Labbing for impact

In efforts to support sustainability transformations in fields like agri-food, energy, and health, scholars have articulated the need to embrace experimental governance approaches that include societal stakeholders and multiple perspectives in research, innovation, and policymaking (Lang et al. 2012, Caniglia et al. 2021). Such transdisciplinary experimentation efforts are increasingly conducted in the context of real-world labs, also labeled as Living-, Transition-, Social- or Transformation Labs (Drimie et al. 2018, Schäpke et al. 2018, Pereira et al. 2020, Parodi et al. 2022, Steen and van Bueren 2017). We use "Lab" in the following to make it clear that we include not only real-world labs, but also other labs. Labs are non-physical spaces in which different groups of stakeholders (practice, policy, and research) with their own "languages" and ways of knowing, meet in semi-closed, temporary, reflexive arrangements (Loeber and Vermeulen 2016) and experiment towards transformation. They are paradoxically often both shielded from, as well as engaging with, "real-world settings". They ideally present a safe space in which, through facilitation, groups can meet and work together in a way that might not have happened without the Lab. While we recognize Labs are not the panacea for creating meaningful change, the assumption is that because of their design and specific ways of working (often challenging dominant ideas and modes of working), Labs may create societal impact by catalyzing sustainability transformations.

In recent years, a range of frameworks for assessing the impact of sustainability initiatives have been developed (Loeber et al. 2011, Lam et al. 2020, Verwoerd et al. 2020). With regard to Labs, studies have articulated a variety of impact types (Kok et al. 2023), orientations (McCrory 2022), mechanisms (von Wirth et al. 2019), assessment criteria (Ståhlbröst 2012) and success factors (Bergmann et al. 2021). Yet, scholars have also indicated that developing and assessing uniform impact (design and evaluation) frameworks is notoriously challenging, as both concrete outputs and various less tangible outcomes during and beyond the project should be considered (Lux et al. 2019, Bronson et al.

2021). In addition, *what* is seen as impact and by *whom* is deeply political and often contested, which means that articulating or measuring impact is equally contested (Regeer et al. 2016, Sharp and Salter 2017). This has resulted in an increased consideration of dynamic processes alongside outcomes, but has also brought the intertwinement of evaluation, governance, and learning in methods, such as *Reflexive Monitoring in Action,* in experimental transformative spaces, such as Labs (van Mierlo et al. 2010, Rijswijk et al. 2015). To date, little attention has been given to understanding the dynamics through which different, potentially contesting, conceptualizations of impact become manifested in Labs, and how those working in different types of Labs engage with the resulting challenges in practice. In particular, there are opportunities for scrutinizing how these challenges unfold in different Labs, and how to bring together these different insights across contexts and projects (McCrory et al. 2020). In our Labs and, subsequently, in the Community of Practice (CoP) we maintain a plural and situated understanding of impact that is co-defined with a variety of Lab stakeholders, ranging from ecological change, to governance, or network building.

Another issue concerns the many different ways in which researchers and practitioners engage in Labs (Wittmayer and Schäpke 2014, Bulten et al. 2021). As a collective of authors, we have worked on different transformation-oriented Labs, where we have been engaged in a variety of roles (see online supplement, *Overview Labs*[1]), such as designing and coordinating Labs, training Lab coordinators, facilitating learning and reflection in and between different Labs, as well as monitoring and evaluating Lab activities. Along the way, we often conduct research (Defila and Di Giulio 2015). Our experiences in these projects teach us that depending on Lab contexts, phases, and our own roles, different dilemmas pertaining to the conceptualizations of, and actions to create, impact emerge in project practice (Van Waes et al. 2021).

This paper addresses these issues by bringing together the practical experiences of researchers with "Labbing": different ways in which a plurality of stakeholders engages with(in) Labs (e.g., monitoring, participating, facilitating, etc.), often with the overarching aim to iteratively co-create meaningful impacts that move beyond the Lab. Collectively, we engaged in Labbing in a variety of domains oriented towards sustainability transformations. Here, we first explore the challenges in understanding and creating impact whilst Labbing. Then, we elaborate on our collectively formulated strategies employed in response to these.

Methods

To facilitate learning across research contexts, the authors initiated a CoP (Wenger 2011). Wenger (2011, pp. 1 f.) outlines three characteristics of CoPs: first, a CoP has an "identity defined by a shared domain of interest"; second, CoP members form a community amongst which knowledge exchange takes place (e.g., through discussions); third, CoP members work in prac-

tice, through which they develop a "shared repertoire of resources". CoPs allow for multi-layered understandings of paradigms, a necessary skill for working in settings in which a variety of methods and knowledges are used (Denscombe 2008).

Across our institute, researchers with Labbing experience were invited to join a monthly CoP starting November 2022 (see online supplement, *Methodology,* table 1[1]). We combine experiences from ten projects in different stages of completion, working towards sustainable agri-food systems, inclusive employment, responsible research and innovation, and integrated social care (see online supplement, *Overview Labs*[1]). Through thematic analysis of our shared practical experiences with Labbing (on which we elaborate in the online supplement, *Methodology*[1]), we identified two themes: challenges and strategies of creating impact in Labs. Both are presented in the results section, after which we present a reflection.

Results

In this section, we first explore the different challenges that emerged in the practice of Labbing, specifically in creating, understanding, and measuring the impact of Labs, followed by an elaboration on the approaches we have taken to address these issues.

Dealing with impact challenges in transformation-oriented Labs
We have identified four overarching challenges related to impact: 1. measuring the impact of Labs, 2. dealing with positionalities and power dynamics, 3. fostering impact within and beyond projects, and 4. ensuring impact across different contexts. Each challenge is supported by practice-based descriptions in the boxes that stem from a particular Lab (e.g., "Social care Labs 1" refers to an experience in the respective project, as outlined in the online supplement, *Overview Labs*[1]).

Measuring the impact of Labs
Many Labs face demands from funders or policymakers to measure their impacts. Yet, due to their experimental nature and "fuzzy" practice, Labs often – and intentionally – do not have clear, pre-set, and measurable envisioned outcomes. This leads to two interwoven challenges: 1. providing space to value the plurality of what may be considered impact, and 2. navigating the demand for quantifiable outcomes. Box 1 (p. 66) illustrates this challenge in practice.

Funders or policymakers may find their preference for quantifiable outcomes challenged by what practitioners value. After projects become established, accountability-oriented evaluation mechanisms and a funder-driven focus on key performance indicators, can cause means to become ends; leaving little room   >

BOX 1: Measuring impact – Social care Labs 1

We saw a discrepancy between perspectives on impact between policymakers and professionals. Policymakers preferred quantified results on the effectiveness of social care reforms, whilst professionals saw fruitful changes in their interactions with families as successful, or their increased ability to arrange suitable care (they were working with families with intergenerational issues that would not be "solved" during the Lab phase). To align practice and policy, we 1. discussed with different stakeholders their views on impact; 2. facilitated the sharing of these views to exemplify the existence of multiple perspectives on impact; and 3. assisted in creating meaningful measures: practice instruments for professionals and families that also allow for relevant data collection for organizational evaluation.

BOX 2: Power dynamics – Inclusive employment Labs

During a meeting with our supervisory committee of stakeholders, consisting of an employment agency, the Ministry of Social Affairs, inclusive technology development organizations, and experiential experts, we presented our draft report on including persons with limited cognitive abilities in Labs aimed at experimenting with inclusive technologies. We explained that involving them too early leads to uncertainty and stress, but involving them too late leads to lock-in and tokenistic involvement. Nick, one of the experiental experts, stopped us and asked: "How come you suddenly feel you can talk *about* us and our involvement?" We realized we had neglected experiential experts as equal members of the Lab. Nick had good suggestions on how to improve the text, but mostly he gave us a strong reminder of the power dynamics at play and the challenge to maintain a safe space in which all voices are heard.

BOX 3: Power dynamics – Agricultural transition Labs

In our Labs, we noticed that by default, disciplinary researchers demarcate societal challenges into disciplinary frames. Meanwhile, societal actors see themselves as "commissioners" who are looking to researchers to answer their questions. As co-researchers, we tried to break through these internalized, socially entrenched patterns by advocating upstream engagement during meetings with researchers, and by inviting stakeholders to participate. We found that it was important for us to show our wish to engage with the societal stakeholders' input. For the disciplinary researchers involved in the project, it was important to learn how to forge collaborations with societal actors and how this enables engagement with more meaningful, societally informed questions.

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for collectively finding and articulating what meaningful impact means for those participating. Moreover, quantifiable outcomes are often preferred in public debate, neglecting the complex reality of Labs and transitions. Even when all stakeholders agree on the impacts, the challenge of *measuring* or *knowing* whether the Labs contributed to this remains. To work collaboratively on impact measurement, it is important to take power balances between those at the table into account. This difficult endeavor will be explored in the next section.

Dealing with positionalities and power dynamics

In Labs, it is important to be conscious of which actors are invited to participate and the relationships between these actors: whose voices are dominant and whose are silenced? The groups with power and space to voice their opinions influence the ways in which impact is seen, assessed, and created. Researchers have a role in facilitating safe spaces and inviting vulnerable or marginalized groups, or other groups that may not usually have a voice, into the conversation at hand (box 2).

Next, we turn to the many roles researchers can have in Labs, in relation to the other stakeholders involved. In some Labs, we observe a tension in how the researcher is perceived by other participants. Academic researchers can be expected to provide evidence or to legitimize ideas, while they may prefer to facilitate societal change whilst critically observing Labs in a wider context (box 3). This tension requires navigating pre-set ideas and shifting through power balances, leading to questions on how to address the differences in expectations of actors involved within Labs.

Fostering impact within and beyond projects

Within many of our projects, we face "projectification": Labs operate within short-term, accounted, and demarcated projects with pre-set goals and project architectures, hindering iterative and long-term creation of meaningful impact (box 4, p. 67). This brings a challenge for those facilitating or organizing Labs: how can stakeholders' diverse values, epistemologies, and expectations be embraced, when funding and project structures strongly shape the direction of Labs? In other words, how do Labs connect to, or create friction with, wider societal norms and conventions?

Projectification and funding structures can drive and limit the scope of achieved or perceived impact. Sometimes, Labs were rather autonomous and independent in achieving contextually meaningful impact, as they had "unallocated funding" that could be used, or they had long-term support from large institutes. Other Labs were completely dependent on short-term funding from projects, which led to an equally short-term horizon regarding actions for impact, with outcomes beyond the lifetime of a project rarely considered. Pre-project, this means such Labs might mold their identity and actions into project calls, becoming project-driven instead of impact-driven. This challenge is particularly visible in large-scale projects. As authors, we also find ourselves trapped in pre-determined project-cycles (box 5, p. 67). We are also guilty of writing such pre-set proposals because we believe they are more successful in acquiring funding on which our institute depends. We should be aware that flexible articulations of envisioned impacts, as well as the way in which projects are structured, may be critical to ensure adaptivity and rich learnings from Labs.

Ensuring impact across different contexts

Labs are often part of a wider socio-technical transformation strategy aiming to adopt new practices emerging through experimentation. Hence, an important aspect of stimulating trans-

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BOX 4: Beyond projects – Agricultural transition Labs

We find that our pre-determined research project structure limits the flexibility in our research actions to act on newly gathered stakeholder input. While "we" (transformation researchers) see flexibility in how our descriptions of action could be fulfilled when altering directions based on stakeholder input, for many "other" described research actions, input from societal stakeholders feels "outside the project scope". Instead of adapting the project to new insights, they say: "We need to start a project 2.0 to cover that too". We note down necessary changes and advocate for them in project meetings. So far, it seems to have effect, at least in how the research team is framing the work to be done in the upcoming years.

BOX 6: Across contexts – Agri-food Labs

Our project had 25 Labs spread across Europe. Each Lab had different aims and was embedded in different kinds of host organizations (museums, governments, universities) and countries, each with their own socio-political contexts. This meant that each Lab had to design its very own focus points and transformation journey. Our role was to support and train them – but in what exactly? Which topics were most relevant to them? While we tried to support diversity as trainers, evaluators, and project managers, we had to cluster their different experiences into more general lessons for the funder. This meant that we became intermediaries, navigating between diversity for Lab journeys and directionality on the project level.

BOX 5: Beyond projects – Urban Food System Labs 1

As facilitators of reflection and Lab coordinators, we experienced friction between changing project needs and the demands of the project agreement. Due to the competitive proposal stage, the project is ambitious and under time pressure. As the project continues, it becomes difficult to break with pre-defined impact measurements and attune to emerging Lab needs. We need to perform "well" in the project for future funding opportunities. We started an *impact task-force* within our consortium, tasked with monthly reflections on the envisioned impact of the project. We aimed to strike a balance between implementing the proposals' promises and making necessary changes, moving along with developments on the ground.

BOX 7: Across contexts – Urban Food System Labs 1

In our role as facilitators of reflection processes with Lab coordinators, we saw that Labs struggled to find a meaningful degree of abstraction of their deeply contextual experiences and that they tended to share their lessons and experiences on a detailed, local level. To tackle this, we set up a reflexivity team formed by researchers who would analyze the Labs' experiences and decontextualize them into learning questions and activities that were applicable to multiple contexts. Thereafter, we asked the Lab coordinators to reflect on these themes in a timeline-based, aggregated, transformation journey of all living labs. We asked the coordinators to define which types of actions were the most transformative, according to them. This resulted in interesting translocal discussions.

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formation is making the experiences and lessons learned from Labs visible. At the same time, new practices and impacts emerging in specific localities are situational, which makes findings hard to render relevant to other settings. Most projects we participate in consist of multiple Labs that are located across different geographical, socio-cultural, and political contexts, but are aiming to find shared learnings (box 6).

Hence the question for Labs is how to share impacts in a context-sensitive manner: how can we exchange *lessons* learned in a way that the effort holds relevance for, and contributes to, similar dynamics elsewhere (box 7)?

Strategies for reflexive Labbing

There is no blueprint for dealing with challenges related to impact in Labs. Based on the challenges and our experiences with Labbing, we identified three interrelated strategies for engaging with the concept of impact in our CoP: 1. tailor-made training for Labbing; 2. reflexively engaging with power dynamics; and 3. forging rich, translocal learning and impact. Our strategies do not "solve" specific challenges but respond to them in an interconnected manner.

Tailor-made training for Labbing

Depending on the context and needs of Lab participants, a variety of practices and skills are necessary for facilitating, designing, monitoring, or studying Labs. Those involved in such processes, may need training to navigate these complex practices.

Therefore, training programs are important in many of the projects we are involved in. These programs include trainings on systems thinking, experimentation, content (such as on food systems or health), co-design, listening, prioritizing, and achieving shared visions and aims. In projects with multiple Labs, setting up reflexive learning spaces and CoPs for practitioners and researchers who are Labbing helps to further strengthen skills to manage the aforementioned challenges and the strategies below, as well as create an atmosphere of trust, shared learnings, and reflexivity (Svare et al. 2023).

Reflexively engaging with power dynamics

For engaging with the politics, power, and positionality of Labs in their wider contexts, we argue for the need to cultivate reflexivity and, most importantly, learning to stay with the "trouble". That means acknowledging, exploring, and engaging with power relations shaped in Labs (Fritz and Binder 2020). We argue for explicating and carefully navigating these politics to keep long-term normative ambitions in view (e. g., inclusion, sustainability, etc.), without putting the responsibility solely on individual researchers (Luger et al. 2023).

We argue that it is critical to reflect upon how and by whom Labs are set up, funded, facilitated, and monitored. Ideally, collaboratively defining an understanding and aspiring impact is part of the project work itself, notwithstanding the need to present a convincing, but tentative, understanding of impact in the   >

proposal stage. A variety of creative tools and methodologies can be employed to level playing fields, at least temporarily, in efforts to empower and amplify the voices of less powerful stakeholders and to use the agency of powerful actors to create transformative impact. For example, actor analyses can help gain an understanding of who is a stakeholder in a setting, including unusual suspects, while system analyses can create an understanding of power balances and decision-making mandates (Van Mierlo et al. 2010).

Forging rich, translocal learning and impact

As knowledge and innovations produced in Labs are often grounded in context-specific experience and communicative practices, learning across sites and time can be difficult, if not seemingly impossible. Fostering translocal learning between Labs can help enhance transformative capacities (Kok et al. 2022). To facilitate learning across and beyond Labs, participants need to move beyond solely "testing" interventions and providing quantifiable outputs, towards a narrative explanation of findings that includes information on the joint analysis process, thus making it possible to follow how learning in a real-world setting took shape in a Lab. In system transformation efforts, this idea has been translated into audio-visual learning histories, such as timelines and eye-opener workshops. Dynamic Learning Agendas articulate

Discussion

Starting our CoP, we focused on a practice-based, inductive approach to sharing experiences related to impact in Labs. We see Labbing as a way of "doing" transdisciplinary experimentation and focused on the "how" question of creating impact, within, between, and beyond Lab contexts. The current discourse on impact in and of Labs seems to be shifting from outcomes to an acknowledgement of the complexity and dynamic nature of Labs, bringing attention to processes, power dynamics, and moving beyond measuring impact of single Labs to the interaction between Labs, projects, and society (McCrory et al. 2020, Bronson et al. 2021). Our article aims to contribute to this discursive shift by offering practical strategies to work on challenges that are widely shared in our Labs. While we are aware that our experiences mainly cover a European perspective, Labbing researchers are likely to recognize some challenges and strategies, or may have discussed them in light of their own research (Lang et al. 2012, Fritz and Binder 2020, Pereira et al. 2020, Bronson et al. 2021).

The CoP helped us to make sense of our own experiences by enabling us to share and scrutinize our experiences and to draw analogies between each other's work. One of our CoP members posited that the CoP helped to "increase accountability through the critical questions and reflections from CoP members". An-

Future work can further interrogate how institutional conditions and funding programs can support the implementation of different strategies, and how these (and other) strategies can be implemented across a variety of Lab contexts.

reflective questions through which long-term aims are translated into actions, which provide guidance while Labbing (Regeer et al. 2009, Van Mierlo et al. 2010). Another approach is not to formulate concrete lessons, but to articulate *sensitizing questions*. In other words, the critical thoughts participants, in hindsight, believe would have been relevant to consider and can help others to think through their own situation: "Is the problem discussed recognizable? If so, how does it play out in your Lab, and what can you do about it?" Or: "If it isn't relevant right now, is it something to anticipate?" In this way, such questions help the reader to critically think through their own plans and practices (Loeber et al. 2022). Moreover, an iterative understanding of impact and its plurality can be facilitated within projects, for example through an *impact taskforce* (box 4, p. 67) or through the co-creation of meaningful measurements. These tools help us translate experiences and insights across contexts within, between, and beyond labs.

Finally, coming to terms with our own diverging politics as researchers should be an ongoing effort, as well as sharing and learning across our projects and disciplines. Therefore, in the last section of our paper, we outline how our CoP has helped us reflect upon our shared practices.

other CoP member emphasized that it "helped to develop a wider consciousness of the different levels and workings of political economic power, how power can work through (different phases of) labs, but also how it can shape dominant discourses operating within labs on what is considered impact". Taking a more inductive approach towards explicating shared challenges, as opposed to deriving them from existing literature, enabled participants to learn across projects and develop a shared set of strategies in dealing with impact related challenges[2]. We argue that there is a need for taking ownership of unforeseen impacts and for celebrating the value of different types of less tangible impacts (Lux et al. 2019).

Conclusion

Labbing is a challenging endeavor. As such, when attempting to capture the impact of Labs, our aim was to understand the dynamics through which different, potentially contesting con-

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2 Jung and Wentland (2024, in this issue) further highlight impact-related challenges, specifically the need to examine the limitations of measuring them.

ceptualizations of impact become manifested in Labs and how those who are Labbing, engage with these resulting challenges in practice. Our CoP has allowed us to articulate, share, and reflect upon our experiences and challenges in Labbing. By drawing analogies, we conceptualized four challenges: 1. measuring the impact of Labs, 2. dealing with positionality and power dynamics, 3. fostering impact within and beyond projects, and 4. ensuring impact across different contexts; and we developed three strategies: 1. designing tailor-made training for Labbing, 2. reflexively engaging with power dynamics, and 3. forging rich, translocal learning and impact.

Our work contributes to the literature by scrutinizing how these challenges unfold in different Labs, and by bringing together insights across contexts, Labs, and projects. Interestingly, the CoP proved to be a useful method to facilitate translocal learning across contexts, without a strenuous comparison of our Labs. We hope the challenges and strategies provided can help other researchers and practitioners engaged in Labbing with their work towards sustainable and inclusive futures. Future work can further interrogate how institutional conditions and funding programs can support the implementation of different strategies, and how these (and other) strategies can be implemented across a variety of Lab contexts.

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