Urban living labs: relationality between institutions and local circularity

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ABSTRACT

Mainstream concepts of circularity often overlook local socio-material practices in favour of market-driven, techno-based solutions. This paper argues for a community-based approach to foster a grounded socio-economic transition. It explores the potential of circularity initiatives becoming urban living labs (ULLs) by integrating institutional understandings of circularity with local vocabularies and practices. It aims to disentangle the tensions that such integration might have to overcome and define the (latent) potentials embedded in local practices. The study focuses on Fixoteket Hammarkullen, a collaborative initiative in a late modernist suburb of Gothenburg in Sweden. Using a qualitative methodology combining a historical narrative approach with actor–network theory sensitivity, it traces Fixoteket's evolution from an experimental reuse centre to a municipally managed space. Drawing on interviews, document analysis, site observations and a workshop, the contextual conditions that shaped Fixoteket's development are examined. These shifting relationships, roles and power dynamics have (dis)connected Fixoteket from the local community. Re-anchoring circularity in local vocabularies and networks could (re)activate its potential as a ULL. These understandings about the processes, collaborations and relationships can inform community-rooted social infrastructures and foster more inclusive, context-sensitive urban sustainability transitions.

PRACTICE RELEVANCE

The underlying conditions of Fixoteket Hammarkullen are examined: focusing on how it came about, how it works today and what potentials and obstacles exist when considering its future development. A key interest has been understanding how Fixoteket relates to existing local networks and how concepts such as circularity are understood and practised within these networks. The insights highlight the importance of understanding these local conditions and show how they are resources that can generate more inclusive, reciprocal, responsive and respectful actions that aligns with the lived needs of residents and local associations/organisations. The findings point towards potentials that are specific to the case of Fixoteket but also outline a process through which similar potentials might be disentangled in other cases.

1. INTRODUCTION

Circularity is, in many cases, framed as a key step in imagining sustainable urban transitions. However, mainstream, generalised understandings of the concept tend to foreground technology-driven processes for efficiency improvement and green market expansion, privileging material/market fixes over social change (Hassan & Faggian 2023), risking the continuation of current linear economic practices under a new set of labels (Ziegler *et al.* 2023). Such generalised understandings impact the way that specific projects and initiatives aimed at promoting circularity are conceived and evaluated, resulting from a process of institutionalisation and alignment with market-oriented business models. Institutionalisation is achieved through 'the process and outcome of creating, maintaining, and reinforcing […] rules, norms, and standards, so that they become accepted and taken for granted as part of the system' (Haghighi & Takian 2024: 2). In the case of circularity, firms 'sense and even shape the dynamics at play in aligning business practices with circularity goals' (Stabler *et al.* 2024: 11) while facing both 'institutional expectations to foster sustainability' (Stabler *et al.* 2024: 2) and pressures from sociocultural norms. These forces drive the institutionalisation and servitisation of circularity.

In applied settings, institutionalisation of circularity initiatives also tend to emphasise recycling and waste streams (Melles 2023), overlooking the importance of the entanglement of circularity initiatives with local practices, vocabularies and social network, a messy, continuous process of becoming. Through such entanglements globalised concepts (*e.g.* circularity) become subject to a continuous process of translation, interpretation and negotiation (Adelfio *et al.* 2021; Czarniawska & Joerges 1996; Tait & Jensen 2007). Understanding this process of translation and becoming is explored in this paper as foundational to making the concept of circularity matter, locally, in the long run. Accordingly, Nogueira *et al.* (2025: 77) highlight the importance of circularity 'practices developed at the micro-scale', which is interpreted as personal or local community level, supposedly generating a real 'social innovation'. The latter works as a term to express an innovation that addresses a societal issue and creates a value for society and which is usually driven by local actors (Engström *et al.* 2024).

Many circularity initiatives exist somewhere between institutions and local practices, relying on both for their success. Therefore, understanding the relationships between these two dimensions is key both in ensuring the continuation of existing initiatives and when considering their scalability and replicability. This paper explores such relationships by examining the case of Fixoteket, a reuse and repair centre (Bradley & Persson 2022; Brandão *et al.* 2023), situated in a stigmatised suburb of Gothenburg, Sweden (Hammarkullen). As a case, Fixoteket is valuable because of its relatively long history and because of how it has evolved over time. As a result of the collaboration between local community members and organisations, interest groups, the municipality and private and university actors, Fixoteket started and worked in the past as a platform for testing services and solutions concerning circularity and sharing. It also offered the opportunity to develop and experiment with co-design and design-build pedagogies through university collaborations (Brandão *et al.* 2021). However, a shift towards institutionalisation introduced new forms of engagement and governance that, in some respects, diverged from the initiative's original ambitions.

These shifts are examined in this paper, with the aim of deepening the understanding of how Fixoteket has evolved, over time, between institutions and local practices. A further aim is to reinforce the value of community-based circularity and the importance of understanding local vocabularies and translations of universalised notions of circularity (Genta *et al.* 2025) when working towards resilient local communities.

These aims are explored by constructing a historical narrative of Fixoteket, considering its evolution through the theoretical lens of urban living labs (ULLs). Even if ULLs as a concept are not *per se* exclusively connected to circularity, previous scholars have analysed examples of ULL as having the potential to support the integration and alignment of circular practices with community engagement (Innella *et al.* 2024). Based on such previous work, ULLs can be considered a useful lens both in understanding Fixoteket's past and present and in imagining its future. Ultimately, the paper explores how local vocabularies and practices might strengthen the impact of

institutionalised circularity initiatives and (re)activate their potential to support locally meaningful sustainable practices long-term. In other words, this study looks at the processes, collaborations and relationships through which circularity initiatives might become ULLs.

The paper is structured as follows. Section 2 explores the concept of ULLs, highlighting its relevance when considering circularity practices. Section 3 introduces the case study and context, giving a background to both Fixoteket and the area where it is located. Section 4 describes the approach and methods used. It also includes the author's positionality. Section 5 gives an overview of the historical narrative of Fixoteket in relation to local understanding and practices of circularity and discusses what potentials might be embedded in these understanding and practices. Section 6 reflects on the key points and limitations, and outlines avenues for further investigation.

2. ULLS AS COMMUNITY SPACES OF COLLABORATIONS, SHARING AND CIRCULARITY

A specific case study in Sweden is considered for its potential to become a ULL (Laborgne *et al.* 2021). ULLs as a concept are understood to encompass questions of space, governance, inclusivity and scalability in promoting circularity from a community perspective. Scholars such as Steen and Van Bueren (2017) have compiled various characteristics of ULLs, focusing on aspects such as their aims (innovation, formal learning for replication, increasing sustainability), activities (development, co-creation, iteration), participation, and working in a real context.

Building on the initial characterisation of ULL as sites for experimentation, leading to sustainable development in cities, Bulkeley *et al.* (2019) define several qualities that characterise them, such as: a location in a specific context, their role as a learning platform, the engagement of local stakeholders, the search for alternative ownership or leadership modalities and the possibility of improving or being exposed to evaluation processes. The same authors also classify them into categories of different governance types, which are strategic, civic, and organic/grassroots, and identify diverse dispositions forms, that is, 'the trial; the enclave; the demonstration; and the platform' (Bulkeley *et al.* 2019: 324). Mahmoud *et al.* (2021) also contribute to the question of the characterisation of ULLs, examining how they work in terms of scale, mechanisms, engagement and co-creation pathways. Further, according to Robazza *et al.* (2024), ULLs can foster community resilience and contribute to different positive impacts related to cohesion, empowerment, inclusivity, and adaptivity to changes through collaborative processes and the engagement of marginalised groups in placemaking.

More specifically, Belfield and Petrescu (2025) highlight the value of ULLs towards practices of commoning and sharing that influence neighbourhoods in terms of the co-creation of collaborative spaces, the building of solid trust relations, and the addressing of needs of local communities. ULLs can become contexts for the 'co-production and implementation of situated sharing and space-commoning knowledge, thereby fostering learning processes at the neighborhood level and beyond' (Petrescu *et al.* 2022: 255). By combining diverse knowledge types and situating them in a space that fosters communing and sharing, ULLs may increase community resilience and impact local planning and policy routines (Petrescu *et al.* 2022). The development and methodological value of ULLs have explicitly been connected to circular economy activities/projects by previous scholars (Innella *et al.* 2024), who have highlighted successful cases that integrate the engagement of local stakeholders with circular economy practices in the setting of ULLs.

If innovations for sustainability in ULL, including those related to the circular economy, become overly institutionalised or mainstreamed, they risk failing to generate structural transformations (Smith *et al.* 2017). In contrast, grassroots and community-based initiatives – though often perceived as niche or radical – can hold more significant transformative potential, provided they are not marginalised (Leach & Scoones 2007; Smith *et al.* 2017). Such alternative, bottom-up practices (Gibson-Graham 2006) – including right-to-repair initiatives (Bradley 2018; Callén 2016; Zapata Campos *et al.* 2021), food sharing (Dobernig & Stagl 2015) and forms of social entrepreneurship (Savini & Giezen 2020; Zapata Campos *et al.* 2021) – can be understood as challenging dominant

models of resource consumption. These practices can generate outcomes that are more 'inclusive', 'reciprocal', 'responsive' and 'respectful' (Gupta *et al.* 2016), aligning with local sociocultural values and the lived needs of community stakeholders (Seyfang & Smith 2007; Smith *et al.* 2017).

3. RESEARCH CONTEXT

3.1 HAMMARKULLEN: A NETWORK OF ASSOCIATIONS

Hammarkullen is a peri-urban area in the north-eastern part of Gothenburg, with a population of just over 8,000 (Stadsledningskontoret, Göteborgs Stad 2024). The area was constructed during the late 1960s and early 1970s as part of the nationwide Swedish Miljonprogrammet (Million Home programme). Initiated by the Swedish government, the programme aimed to simultaneously improve housing standards in Sweden and provide affordable and accessible homes. Today, despite the good intentions behind their conception, the areas constructed during this era, including Hammarkullen, have come to be associated with social and spatial stigmatisation (Brandão *et al.* 2021).

However, Hansson (2018: 93) highlights how Hammarkullen is an example of a neighbourhood characterised 'by a strong civil society network with the ability to mobilise participation as a result of local trust'. Similarly, Stenberg *et al.* (2021: 6) depict Hammarkullen as a 'multicultural neighborhood' where 'a great deal of social life takes place in the context of associations'. Stenberg further defines the area as being characterised by a certain level of complexity and relational networks with 'a large number of actors driving urban transformation activities' (Stenberg, 2020: 14). These characteristics make Hammarkullen an interesting context in which to consider the potential of a community-based approach to foster a grounded socio-economic transition.

Of particular interest is the diversity of organisational forms, which Fryk (2020) observes as distinguishing Hammarkullen. Fryk puts particular emphasis on the significance of residents in constructing a local community and their capacity for continuous organisation. Fryk also delineates two patterns of self-organisation in Hammarkullen: one based on similarity and the second, perhaps more distinctive, as a network of relationships between different groupings. According to Fryk (2020), these phenomena act as unifying forces that increase contact, communication and information flow between different groups (*e.g.* resident and community groups and local institutional actors), thereby strengthening the sense of social and cultural cohesion.

3.2 CASE STUDY: FIXOTEKET IN HAMMARKULLEN

The vision of a circular city is central to Gothenburg's implementation of the UN's Agenda 2030, a process that has been led since 2016 by the initiative Circular Gothenburg. In addition to promoting sharing, reusing and repairing within the municipality, Circular Gothenburg facilitates collaborations with civil society, industry and academia (*Cirkulära Göteborg* n.d.).

This study focuses on one such collaboration: Fixoteket Hammarkullen, one of four 'local reuse and recycling centers' tested in different areas of Gothenburg between 2017 and 2019. These centres aimed to improve waste management and resource utilisation, encourage sustainable consumption, reduce littering and foster local employment and well-being through multifunctional public meeting spaces. Visitors could exchange, repair, borrow and recycle items and participate in workshops and events focused on reuse and resource management. In practice, each Fixotek took on distinct roles in its local context (Wolf *et al.,* 2019). In Hammarkullen, for example, the space became an informal point of support for residents navigating interactions with public authorities. Fixoteket Hammarkullen occupies part of the ground floor of a large rental apartment block on Bredfjällsgatan, adjacent to the neighbourhood park and playground (Figures 1 and 2).

After the Circular Gothenburg project concluded in 2019, Fixoteket Hammarkullen has continued under the management of the municipal housing company Bostadsbolaget (BB) (*Fixoteket | Bostadsbolaget* n.d.; Wolf *et al.* 2019). This has ensured the longevity of the project but has also introduced new management structures and ways of engaging, which in some instances act at odds with both the original intentions and the future potential of Fixoteket.

Figure 1 Aerial view of the park in Hammarkullen, the location of Fixoteket marked in yellow.
Source: Daniel Rodriguez, 27 June 2024.

Figure 2 The entrance of Fixoteket, located on the bottom floor of an apartment building.
Source: Pia Palo, 27 June 2024.

4. METHODS

This paper draws on qualitative research methods and adopts an approach explored in previous work, in which the examination of a historical narrative was used in combination with an actor–network theory (ANT) sensitivity (Adelfio *et al.* 2021). ANT sensitivity is understood here not as a rigidly defined framework readily applicable to examine relationalities between humans and non-humans but as '[a] set of sensitivities' that allows for sensing (and making sense of) transformations, translations and changes in the making (Mol 2010: 265). In combination, ANT sensitivity and a historical narrative allow for an exploration of the temporal evolution of Fixoteket, how events – including those that might at first glance not seem connected – unfold in relation to each other.

Thirteen semi-structured interviews were conducted with participants involved in developing Fixoteket and/or connected to resident and community networks in Hammarkullen. The sample included individuals from academia, local institutions and community organisations (see Table 1). Participants were recruited through purposeful sampling (Stratton 2024), with the initial selection

PARTICIPANT ID	INTERVIEWED	PARTICIPATED IN WORKSHOP	AFFILIATION	AFFILIATION TYPE			
				A	IA	LIA	RCG
1	x		Employee at Fixoteket and former resident of Hammarkullen			x	x
2	x		University lecturer involved in Fixoteket student design projects	x			
3	x		University lecturer involved in Fixoteket student design projects	x			
4	x		Representative from the municipality engaged in the Fixoteket pre-study and innovation project		x		
5	x		Architect and former student who was part of the Fixoteket design projects	x			
6	x		University lecturer involved in Fixoteket student design projects, with long engagement with Hammarkullen	x			x
7	x	x	Former employee at one of the schools in Hammarkullen, engaged in local associations				x
8	x		Project manager at the tenants association			x	
9	x	x	Employee at Fixoteket			x	
10	x	x	Local resident, engaged in local associations				x
11	x		Representative from the municipal housing company Bostadsbolaget			x	
12	x		Employee at the local youth club				x
13	x		Representative from the municipal housing company Bostadsbolaget, responsible for waste management			x	
14		x	Employee at the local youth club				x
15		x	Employee at the local youth club				x
16		x	Local resident, engaged in local associations				x
17		x	Former university lecturer, with long term engagement in Hammarkullen				x
18		x	Employee at Fixoteket, and local resident				x
19		x	Teacher at a local school			x	
20		x	Local resident, engaged in local associations				x

expanded via snowball sampling (Etikan *et al.* 2016) as new actors emerged during the process. Interview questions addressed Fixoteket's history, present conditions, future possibilities and collaborations with other initiatives. Most interviews were conducted face to face in Hammarkullen between 23 April and 26 June 2024. Complementary site observations were made during two annual community events: the carnival (25 May 2024) and 'Inofficiella Grill-VM' (27 June 2024).

Following an initial directed-content analysis (Hsieh & Shannon 2005) focusing on the four guiding themes, inductive open coding (Bingham 2023) was used to enable a more fine-grained understanding of the material. The resulting set of codes then underwent a second round of analysis to regroup them into more synthetic but meaningful categories (see Table 2).

To trace the relationships between different key events and actors (*e.g.* people, places, tools) in the historical narrative, a series of visualisations, inspired by Petrescu (2012) were elaborated. These graphical representations, or relationscapes, acted as facilitators when analysing the unfolding, or evolution, of actions, engagements and relationships between human and more-than-human actants over time. Rather than looking at Fixoteket as an isolated project, the relationscape traces the way that it is entangled with other processes, both locally and at city level.

Analysis was also carried out in collaboration with the research participants. In a workshop, organised on 28 August 2024, initial insights, for example selected key interview quotes, were brought back into dialogue with research participants. The focus of the workshop was, first, to

Table 1 Table showing participant affiliations and affiliation types.

Notes: **A** = Academia: teaching staff and students from universities; **IA** = Institutional Actor: includes representatives from municipal government and publicly owned entities at the city level; **LIA** = Local Institutional Actor: publicly owned entities present in Hammarkullen, such as the local housing company; **RCG** = Resident and Community Groups: grassroots organizations, tenant associations, youth clubs, and other local civil society groups.

GUIDING THEMES	CODES	NEW CATEGORIES
Space	Social relations/connections	Social infrastructure
	Strategic location	
	Collaborations	
	Productive frictions	
	Identity	
	Making	Physical context
	Access and action	
	Specific/ad-hoc space	
	Spatial relations/connections	
	System of spaces	
Governance	Setup of organisation	Setup and functioning
	Roles	
	Management	
	Local community collaborations	Collaboration
	Partnerships	
	Identity and meaning	Rationale
	Metrics	
	Foundations for trust	
	Events	Testing
	Frictions	
	Experimentation and risk taking	
Inclusivity	Social value/function	Shared identity
	Identity and meaning	
	Foundations for trust	
	Collaborative learning process	Inclusive action
	Working from the ground	
	Co-creation	
	Frictions	
	Engagement	
	Activation and experimentation	
Scalability	Employment	Structuring
	Potential for expansion/improvement	
	Metrics	
	Business development	
	Support systems	
	Awareness	Communicating vision(s)
	Communication and target groups	
	Finding shared visions	
	Synergies/networks	Networking
	Programming with local resources/competences	
	Previous or existing collaborations	
	Potential for further connections	
	Learnings	Pedagogy
	Process	
	Testing	
	Obstacles	

Table 2 The process of content analysis, from guiding themes to codes and new synthetic categories.
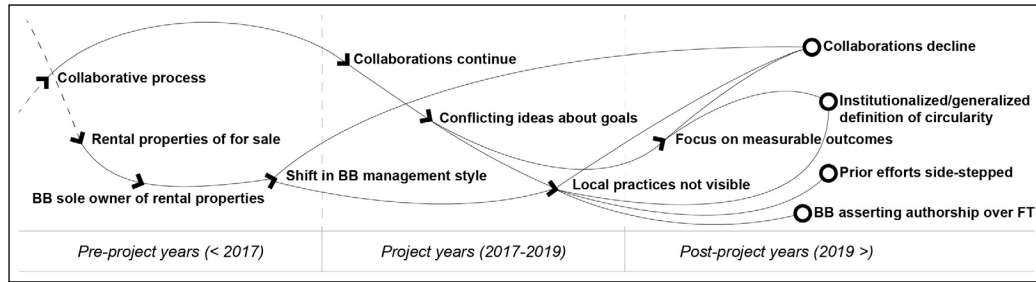
Figure 3 Overview of timeline, tracing connections between key events.

think about local vocabularies around, and understandings of, circularity and sharing practices, in relation to the research material. Second, it aimed to extend the historical narrative with ideas of what the future of Fixoteket might look like (how it might be reactivated as a ULL). Participants included both people who had previously taken part in interview and additional people also understood as key local voices who had either been unable to participate in interviews or who had been identified later in the process. The overall focus was to include participant with valuable insights into the future relationship between Fixoteket and the Hammarkullen community network.

The details of the set-up, which, in addition to exploring the co-analysis of interview material, experimented with the video documentation and the dynamic use the workshop spaces, are discussed in a separate contribution (Palo *et al.* 2025).

The work presented and discussed in this paper reflects a limited period of engagement, with activities taking place over the course of six months, from April to August 2024. It is, however, work that is part of a long-term commitment to the place and people that figure in this paper (Figure 3). It is a commitment that, for the authors of this paper, consists of different types of engagements, of course as researchers but also as students, educators and engaged citizens. This means that, although there has been a formal period of data gathering, there are experiences, reflections and hunches relating to prior involvements that have played a role in the writing of this paper. Although the authors were not involved in the operation of Fixoteket, previous work, mainly pedagogical, has been conducted related especially to Fixoteket's early days.

5. DISCUSSION

5.1 THE EVOLUTION OF FIXOTEKET: (DIS)CONNECTION TO LOCAL NETWORKS

The following sections look at the historical evolution of Fixoteket Hammarkullen, dividing this process into three key phases. These are: the pre-project years, the project years and the post-project years. To note is that the boundaries between these phases are of course not sharp, and what will be emphasised is how shifting relations, agencies and events have had an impact across times.

5.1.1 Pre-project years

Long before Fixoteket, the issue of waste and waste management was present in Hammarkullen. An extended period of property speculation, where a large portion of the rental housing stock was continuously changing owners, had led to the neglect of important waste management infrastructure. Open-air containers had been placed in the area intended for bulky waste, but owing to the lack of sufficient spaces for waste sorting they also came to be used for household waste. In 2014, a collaboration between university students, residents and the municipal housing company BB, which then owned around 60% of the rental housing stock, worked to address the waste management issue in the form of student design projects. This collaborative process exposed a need for, on the one hand, more spaces for waste management and, on the other, more accessible and inclusive information (Participant #6, personal communication, 2 May 2024).

The relationship between residents, university stakeholders and BB also had other significant effects on Hammarkullen. Following yet another sale of the portion of the rental housing stock not owned by BB, residents and the local tenants' association advocated for change. Demonstrations

were organised calling for the City of Gothenburg to allow the apartments to be purchased by BB (Participant #6, personal communication, 2 May 2024). The demonstration could be understood as indicative of a relatively high level of trust and respect in the relationship between the residents and BB. It also points towards a hope among the residents that having the municipal housing company as the majority owner of the apartments would result in better management.

The engagement of the citizens was successful, and in December 2015 BB became the sole owner of rental housing stock in Hammarkullen. This acquisition meant that the company's local organisation grew significantly, affecting their approach to and relationship with the community (Participant #6, personal communication, 2 May 2024). An interviewee employed at the local youth club expressed this as the emergence of two parallel views on local community development and a feeling from the side of the community of their actual needs not being considered. According to the interviewee, an example of this was when the housing company cancelled the contract that a large local association for Somalian culture had for meeting spaces, not providing any replacement. The interviewee also expressed that, when BB did ask for the opinions of the community, plans tended to be already settled and decisions already made. Moreover, if community members expressed reservations when asked for their opinion, they were met with hostility from the side of BB.

> Like there's no... There's no faith in people's own competence, so to say, in the area. They [BB] can sort of brush it off with an attitude like: 'These people are always just annoying and negative all the time. It's just how they are, and nothing to take seriously.'
>
> (Participant #12, personal communication, 12 June 2024)

Similarly, another interviewee, a resident engaged in several local associations, stated that:

> [T]here is no longer a good contact with Bostadsbolaget [...] Before, there were no problems with, but in recent years, it has been a bit so-so. Bostadsbolaget can say, 'No, we are not going to do that, we are going to do this and this instead'. And as they have said a few times, 'we are no longer interested in collaborating with such and such and such, we want to do this instead'. Even though they know that the collaborations that they had before and the things that were done before worked very well.
>
> (Participant #10, personal communication, 23 May 2024)

The pre-project years can thus be understood as having both positive and negative impacts on the potential for Fixoteket becoming a ULL. The student projects meant that multistakeholder collaborations were initiated through a co-creation process where local needs were identified and concepts for addressing them were proposed. Similarly, the demonstration shows various stakeholders' participation and points to strong trust relations. However, the change in BB's approach to the community severely damaged those trust relations and created significant friction. These dynamics continue to influence local interactions and are thus critical for understanding both the development and current functioning of Fixoteket. As the second interview excerpt suggests, there appears to be a tendency within BB to assert authorship over new initiatives and to sidestep prior community efforts, thereby constraining possibilities for sustained collaboration and co-creation.

5.1.2 Project years

In 2016, when the City of Gothenburg, more specifically the Department of Waste and Water Management (KOV), received funding for a pre-study exploring the possibility of local reuse and recycling hubs, a new collaboration around waste and waste management in Hammarkullen was initiated (Participant #4, personal communication, 30 April 2024). This built on the 2014 collaboration and engaged BB, the local tenants' association, university actors and residents. It was made possible by the organisation Miljöbron Väst (now Holohouse), which aimed to create meetings between industry and academia through student projects. As part of the project 'Re: Challenge – Returrum Hammarkullen', interdisciplinary student teams co-developed proposals with local stakeholders to support sharing, repair and reuse practices. One such proposal envisioned a multifunctional space for circular economy activities and community interaction.

Although never realised, it informed the development of Fixoteket and was cited as a model case in Miljöbron's 2020 report on their contributions to Sweden's environmental goals and Agenda 2030 (Hjerpe *et al.* 2020).

Between 2017 and 2019, Fixoteket in Hammarkullen was one of four Fixotek developed within the innovation project 'local recycling and reuse centers' (Wolf *et al.* 2019). Its development included the continuation of the collaboration with architecture students through two design studios – one focused on co-creation processes and one on design and build methods (Brandão *et al.* 2023) – resulting in the addition of two adapted container spaces adjacent to Fixoteket, housing a wood workshop (see Figures 4 and 5) and storage space (see Figure 6). Of note is that these containers are placed in the same place where the containers for waste sorting were previously, shifting the story of that specific spot (see Figure 7).

Figure 4 Exterior view of container housing the wood workshop.
Source: Pia Palo, 27 June 2024.
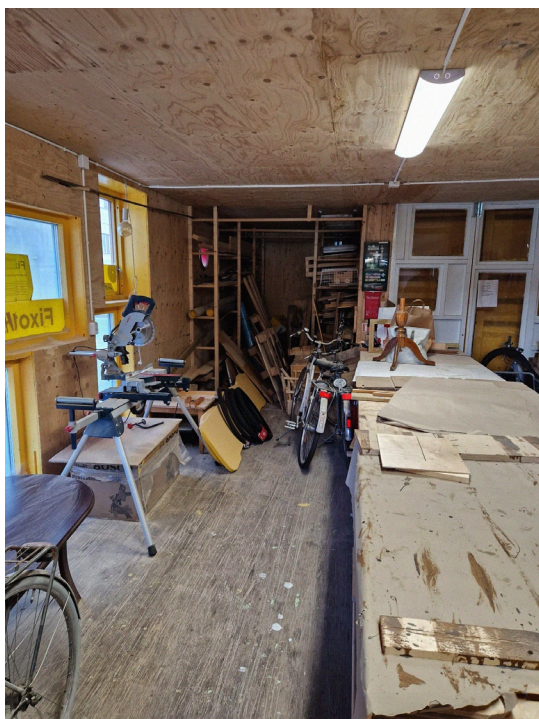
Figure 5 Interior view of the wood workshop.
Source: Marco Adelfio.

Figure 6 Exterior view of the container for storage.
Source: Pia Palo, 27 June 2024.

During the project years, there was a strong focus on experimenting and testing. Different formats for public–private partnerships, combinations of employed workers and volunteers, a work-training programme, opening hours and different types of events were explored. Although the time allotted for this trial phase was limited (Fixoteket was open to the public for only about a year and a half during the project years), it resulted in insights that were translated into a publicly available handbook for how to go about starting and running a Fixotek (Cirkulära Göteborg, 2019).

It is important to note that, during the project years, not only did ideas for collaborations come from the side of Fixoteket's project managers but they were also initiated by the community. One such collaboration was the cleaning day, which engaged teachers and students at a school in Hammarkullen, BB, Fixoteket and the national cleaning campaign Håll Sverige Rent. It was initially proposed by the student counsellor at the school, with the focus on breaking up the 'closed world' of the school environment and giving the students an opportunity to care for their neighbourhood and give them a feeling of being connected to and of having the ability to affect their neighbourhood. Representatives from both Fixoteket and BB came to the school to talk about littering and waste in Hammarkullen, and students were tasked to go out and pick up waste in the neighbourhood. It all ended in a public event, a celebration of the work where the students presented the waste they had collected. The collaboration not only dealt with the practical and pedagogical problem of littering but also addressed how students had been taught to think about their neighbourhood. The outsider view of Hammarkullen as 'bad and criminal' also came with an idea of it as dirty, a view that the cleaning day challenged (Participant #7, personal communication, 7 May 2024). From this initial collaboration around waste picking, the school and Fixoteket continued to collaborate. Clothes left behind at the school were collected by the student council and then taken to the free-shop corner at Fixoteket (see Figure 7).

These stories are hardly visible in the final project report (Wolf *et al.* 2019). Even though it will not be possible here to come to any definitive conclusion as to why, one initial reflection is that this might be a result of the project managers coming from the KOV, with no previous or continuous (during the project) anchoring in Hammarkullen. Another clue might be an internal tension within the project steering group around what kind of project Fixoteket was, which was brought up in the interview with the representative from the municipality. There were different opinions on whether it was mainly a social project or mainly an environmental one (Participant #4, personal communication, 30 April 2024). Was it meant to have measurable effects on the cost of waste management? Or provide a meeting place for the local community? The struggle of

Figure 7 Aerial view showing the placement of the adapted containers.
Source: Daniel Rodriguez, 27 June 2024.

finding common goals within the project was never fully resolved and remains in considering how Fixoteket might develop in the future. However, despite this uncertainty, the spaces and systems developed during the project years remain and, to a large extent, Fixoteket still works as a local meeting spot.

5.1.3 Post-project years

Reflecting on the project years, the representative from the municipality expressed that the kinds of collaborations (public–private partnerships) that Fixoteket was testing and experimenting with during the project years are the way forward.

> I think it has been, I mean, for me personally, I really think that it's a way forward, because we need to create local engagement for many reasons. Both for safety reasons, neighbors and people knowing each other and being able to engage. And it's a democratic issue as well, being able to be involved in your local society. And I think it also creates more of a sense of responsibility for your local surroundings and your neighbors and so on.
>
> (Participant #4, personal communication, 30 April 2024)

However, despite successful collaborations during the project years, Fixoteket's connection to the local network of residents and community groups declined – or, at best, stagnated – in the post-project period. One contributing factor may be the continued emphasis on tracking easily measurable outcomes, such as visitor statistics and the volume of materials collected for recycling or repurposing. While these metrics are seen as necessary to justify Fixoteket's ongoing existence, they demand significant time and attention from staff, potentially at the expense of community outreach and the development of a public programme. This narrow focus risks overlooking Fixoteket's role as a performative space where relationships, trust and community practices can be enacted and nurtured. Interviews suggest that these more intangible, 'softer' values are central to Fixoteket's identity and impact, yet they remain under-recognised in the dominant modes of evaluation. In the words of one of the employees:

> *Participant:* The motivation I get, what I get from people... It's kids that I can make smile because I've fixed their bike. The person who I have taught how to sew and who appreciates the help. Or some family who came and has no, not so good income and who come here and find what they need. And it's the appreciation they show of Fixoteket [...] So it's just that to really understand the meaning of these kinds of activities...
>
> *Interviewer:* Yeah, it's a little bit hard to translate...

Participant: Exactly, because when you translate, for example, we explain and summarize to a manager, and then that manager summarizes as well, then you've reduced almost… but it's concrete what's happening on the ground. If everyone could really be a witness to what happens here, then the city would invest so much in many more Fixotek.

(Participant #1, personal communication, 23 April 2024)

Another interviewee involved in several local associations expressed a similar sentiment:

There's so much more than the material that can be included in the circular. For me, it's very much a matter of thinking about the way we work here in Hammarkullen. You benefit from the knowledge and opportunities of others […] Because you work in this way, you have the opportunity to help others to do much more. You can do what you do with a smaller budget, and you know that you do not have endless resources. Having limited resources for me is usually not an obstacle. It doesn't stop me, but I think, 'Okay, I have some resources in terms of money, but I also have a lot of resources in terms of contacts and many other things.'

(Participant #10, personal communication, 23 May 2024)

This final quote points towards an understanding of the meaning of circularity specific to Hammarkullen, which is different from the way that Fixoteket is assessed. In the post-project years especially, it is evident that this difference has led to disconnections, limiting Fixoteket's ability to perform as a ULL.

5.2 FIXOTEKET BECOMING A ULL: DISENTANGLING POTENTIALS

Having examined the historical narrative of Fixoteket, some key challenges have been identified limiting its potential for future development (see Figure 3). Conflicting ideas about the goals with Fixoteket, a focus on measurable outcomes, and the institutionalisation following the end of the project years have led to the use of a generalised definition of circularity, despite a history of local initiatives that exemplify a more nuanced understanding of the concept. In sidestepping these previous initiatives, there has also been a tendency from BB to assert authorship over processes and actions, feeding a feeling of distrust on the part of the local community. As a result, collaborations between institutional actors and resident and community groups have declined.

The following section explores how these challenges might be addressed, by turning to what can be understood as the local practices of circularity and sharing in Hammarkullen, and how these might inform the future development of Fixoteket. As the local community has previously been defined as forming complex relational networks (Stenberg 2020) and as having a strong capacity for continuous organisation (Fryk 2020), locally anchored circularity is imagined as having the potential to strengthen and enhance the impact of Fixoteket. Thinking about Fixoteket as situated in this relational network repositions it, from being an isolated circularity initiative to becoming a platform supporting local practices – a ULL.

To disentangle the latent potentials that might make Fixoteket becoming a ULL possible, the etymological tools (the vocabulary), the engagement with praxiology (the meaning of the actions), the epistemological construction (the community knowledge and learning) and the ontological grounds defining locally anchored circularity in Hammarkullen will be made more explicit. The reflections have been informed by the codes derived from the analysis of the empirical material, which have been synthesised further, outlining two key interconnected dimensions of potentials for Fixoteket becoming a ULL. They are: a) a social infrastructure of trust and b) a rationale centring relationality, solidarity and pedagogy.

5.2.1 A social infrastructure of trust

As pointed out by one participant, circularity is much more than its material dimension. In Hammarkullen, the key resources to get things done are the networks, the trust between actors

in that network, and the way that they collaborate with one another. Considering the skills and knowledge of others – that is, the social infrastructure – is an important asset for residents and associations to make the most out of limited resources. As the historical evolution of Fixoteket has shown, there is a long history of multistakeholder collaborations in Hammarkullen, which Fixoteket has previously been part of. Although Fixoteket's participation in such collaborations has declined following its institutionalisation, there is a latent potential that might reactivate its ability to again perform as a platform for activities that bring institutional actors, community groups and residents together – trust. Even though there has been a diminishing trust towards BB, which manages Fixoteket, the gratitude that those who run Fixoteket are met with tells a different story. Their work on the ground touches people directly, and the fact that some of the employees have been there since the project years has built strong bonds with visitors.

Enabling solid trust relations is one key function of ULLs (Belfield & Petrescu 2025) and can be understood as one avenue for fostering more sharing and circularity practices. For Fixoteket, allowing for a more active focus on building and strengthening trust relations can therefore be understood as one potential for becoming a ULL, and a way to create strong foundations for collaborations. Building solid trust relations might also overcome the challenges identified related to previous efforts being sidestepped, and to BB asserting authorship over processes. The trust-based relations characteristic of Hammarkullen imply shared authorship and an awareness of other things that are going on in the neighbourhood. Things that are done are not understood as isolated but feed into other activities and initiatives. When it comes to the involvement of BB, making more space for trust relations to flourish through Fixoteket could, on the one hand, mean taking a step back, letting the local community take charge of Fixoteket's future development. On the other hand, it could mean taking a step closer, listening in to what is already going on, what is tried and tested, and where the need for resources is most urgent. In the day-to-day running of Fixoteket, making space for trust might mean moving away from the use of metrics and assessment criteria inherited from the project years, which put a limitation on what circularity means, which does not encompass the local understanding.

5.2.2 Relationality, solidarity and pedagogy

The interviews point to an understanding of circularity and a rationale behind related practices that embed it in everyday life and social relations. The cleaning days provide a good example. They filled a practical (removing trash) and pedagogical function (highlighting the impact of littering and the labour behind keeping the neighbourhood tidy). Ultimately, however, it worked towards building a positive local identity and aimed to strengthen the kids' connection to the neighbourhood. Another example is the summer programme Fixarna, run by the youth centres Mixgården and Minimix. For two summer weeks, kids and teenagers are tasked with planning for and organising a big flea market and event ('Inofficiella Grill-VM'), profits from which go to a charity cause (in 2024, to Médecins Sans Frontières for their work in Gaza). Here, circularity is coupled with a solidarity and pedagogy, or what the youth workers call 'democratic fostering' (Participant #12, personal communication, 12 June 2024). In the words of one of the youth workers:

> We want to teach young people what it means to be a citizen. How you can make a difference, how you can change what is wrong, what rights you have, what opportunities, what paths there are if you feel that 'I want to do something. I want to be involved and make a difference in my life'.
>
> (Participant #12, personal communication, 12 June 2024)

Through this lens, the two weeks become part of a life-long learning process, similar to how the cleaning days were thought of. What the two examples show is how the rationale behind doing circularity is rooted not so much in thinking explicitly about how much trash can be collected, or how the impact of activities can be measured, but about creating relationships through solidarity, responsibility and care. It is also a rationale deeply rooted in pedagogy, which, if adopted by Fixoteket, could mean a greater capability for long-term impact by extending the knowledge, experience and skills held by the employees who have been with the initiative for a long time to

others in the community. Since Fixoteket has a history of collaboration with these local practices, there seems to be a potential in adopting a similar rationale. Thinking in terms of relationality, solidarity and pedagogy when considering the future of Fixoteket could open it up to becoming a space for situating diverse knowledge in a space that fosters communing and sharing (Petrescu *et al.* 2022).

Although the institutionalisation of Fixoteket has meant challenges, the combination of an existing system, access to space, organisational stability and retained knowledge provides an important foundation – especially for other, largely volunteer-based associations in the neighbourhood. Examining the local vocabularies and practices of circularity in Hammarkullen points to the potential of integrating these into Fixoteket – re-anchoring it in its local context. This would allow Fixoteket to become a ULL, (re)turning it into an 'inclusive', 'reciprocal', 'responsive' and 'respectful' (Gupta *et al.* 2016) platform aligning with local sociocultural values and the lived needs of community stakeholders (Seyfang & Smith, 2007; Smith *et al.*, 2017). It also points to the potential of Fixoteket working as a platform between institutions and local practices of circularity that might mediate between the two.

6. CONCLUSIONS

This paper has critically examined the evolution of the circularity initiative Fixoteket with a focus on understanding its development in relation to Hammarkullen's broader relational networks, and to events not considered in previous reports on the project (Ordonez & Hagy 2019; Wolf *et al.* 2019). Although the work was conducted over a relatively short time, limiting the number of histories and perspectives that it could engage with, the findings show the importance, and potential, of rethinking Fixoteket by learning from and adopting local vocabularies and practices of circularity. The historical narrative shows how Fixoteket can be understood as emerging out of previous local collaborations – in the early period of the project working to a certain extent as a civic-organic ULL. However, the historical narrative also shows how a history of fractured trust has simultaneously limited its capacity to act as such – particularly after its institutionalisation. Beyond revealing these aspects, expanding the focus of the study to look at Fixoteket not only as an isolated project highlights the existing network in Hammarkullen as a latent potential for reactivating Fixoteket as a ULL through re-anchoring in place-based social and cultural practices. In the case of Hammarkullen, these practices are understood as a social infrastructure of trust, and a rationale centring relationality, solidarity and pedagogy.

These insights were made possible through the approach (ANT sensitivity) and methods (historical narrative), by placing the focus on the temporal evolution of Fixoteket. The research also encouraged thinking about changes in the making (Mol, 2010), that is, the continuous process of an initiative becoming a ULL. Although the study produced specific findings that are deeply connected to the context of the study, the conclusions can be applied to other cases where there is a disconnection between institutional circularity initiatives and local understanding and practices of circularity. Beyond highlighting the potential of considering such initiatives as ULLs, the findings point to the processual nature of initiatives becoming ULLs, and the need to understand the ways that development happens over time – between forces that can both support and limit the ability of initiatives to perform as ULLs. The findings also consider what the potentials are that might unlock this becoming – defining a social network of trust and a rationale centring relationality, solidarity and pedagogy – as keys. Although these derive from the local network, the process of arriving at them provides an example of methodological tools that enable these conditions to be disentangled.

An important next step in continuing the work initiated here would be to understand how the findings could fit into, and possibly change, the approach of institutional actors. Such an understanding would be key when it comes to considering how re-anchoring in place-based relational networks and practices might be facilitated through policy and institutional shifts that enable circularity initiatives in becoming ULLs. Such an investigation might also further expand on the understanding of how the meaning of initiatives such as Fixoteket, and embedded concepts

such as circularity and sharing, change as an initiative shifts back and forth between community anchoring and institutionalisation. Taken together, the findings can thus be understood as relevant not only to ULL scholars (by exploring the process of an initiative becoming a ULL) but also serve as a starting point for institutional actors to (re)consider how circularity initiatives are initiated and developed together with local communities.

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COMPETING INTERESTS

The authors have no competing interests to declare.

DATA AVAILABILITY

All sources and materials relevant to this study are included in the article itself.

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