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Planning a city lab around summer comfort: social learning through rhythmanalysis

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Abstract

Summer comfort in European cities is a growing area of concern, linked to climate change and the urban heat island phenomenon. City labs, which we consider as a subset of real-world labs, are a promising way to bring about transformative change. They imply forms of collaboration and experimentation across different actors in urban spaces. One way of approaching urban planning has been to uncover how users interact with spaces over time, or a rhythm-analytical approach. In this paper, we consider how rhythmanalysis can also be applied to the planning, co-design and implementation of a city lab. Based on an analysis of planning materials generated by researchers and non-academics between 2023 and 2025, and collaborations between researchers and twenty-nine partners, we describe instances where rhythms were aligned and harmonious, and conversely, moments of dissonance where objectives, timing and activities were not aligned. Building on an existing typology of rhythms, we describe moments of harmony and dissonance between organisational rhythms, infrastructure rhythms, but also social rhythms, including cultural norms and expectations. We reflect on how activities around summer comfort in 2025 also had to be planned for in relation to environmental rhythms. In the conclusion and discussion, we draw out key learnings on how a rhythmanalysis of planning a city lab can inform future efforts, particularly in considering the relations between human and non-human actors.

Introduction

How people living in urban spaces adapt to increasingly hot summers is a pressing issue in European cities, many of which are experiencing climate change exacerbated by the urban heat island phenomenon, whereby urban and built areas are several degrees hotter than surrounding areas. Supporting changes in how people go about their everyday lives in extreme heat warrants the use of participatory methods and a transdisciplinary posture, or working collaboratively and integrating knowledge across different disciplines and areas of experience or expertise (Defila & Di Giulio, 2015). The premise is that such forms of transformative research could lead to more innovative, democratic and inclusive solutions, critical to sustainability research and action (Fahy & Rau, 2013; Fazey et al., 2018).

While escaping any single definition, city ‘living’ or ‘real-world’ labs takes place in a bounded time and space, involving a multiplicity of urban actors in some form of experimentation (Caniglia et al., 2017; Culwick et al., 2019; Backhaus & John, 2025; Forbat et al., 2025; Di Giulio & Defila, Under review). This paper focuses on the creation of a city-based real-world lab addressing summer comfort in a (city name, ANON) neighbourhood called (neighbourhood name, ANON), at the junction of two rivers. An ‘extended’ core team made up of researchers, members of two associations and a graphic designer coordinated with no less than 29 other partners, including academic partners, but mostly contacts in different services at the City and Canton of (name ANON), along with representatives of diverse associations, a pension fund, a cooperative building, and utility company, among others.

Given the multiplicity of actors involved, the co-design phase of city lab very much resembled the tuning and rehearsal of an orchestra, before the curtain rises. Extending this musical analogy, we draw on rhythm analysis as conceived by Henri Lefebvre ((1992) 2004), in collaboration with Catherine Régulier ((1992) 2004 -a, (1992) 2004 -b), and as further developed by Gordan Walker (2021) in his seminal work on energy rhythms.

We apply rhythmanalysis to understanding the co-design, planning and implementation of a new, city lab in (neighbourhood name, ANON). Many of the joint efforts were harmonious. However, there were instances where coordination did not lead to synchronized and effective actions, which we discuss as part of a social learning process.

While living lab studies have explored spatial and organizational dimensions, few have addressed their temporal coordination in depth. Such an analysis accounts for the ways in which multiple rhythms interact, or what Walker (2021), building on Lefebvre, conceptualizes as polyrhythmia. We build on Walker's typology to distinguish environmental rhythms from social ones, which can be cultural (in relation to social norms and expectations), organisational (in relation to how different entities plan and organise), infrastructural (or the relation between infrastructures and their usage) and finally city rhythms (that encompass more generally the temporalities of people in urban spaces). To our knowledge, no contribution has applied rhythmanalysis to the design and planning of real-world labs.

We start by introducing our conceptual framework, based on a polyrhythmic analysis of practices and opportunities for social learning. We then present our data, methods and a timeline of activities. This is followed by our analysis of temporalities and rhythms of activities, involving 'city lab' actors, but also climatic conditions. In the conclusion and discussion, we reflect on how the learning process of planning, participation, co-design and experimentation can benefit from a reading of social and environmental rhythms.

Conceptual framework

Real world labs and trans-disciplinarity

There is no single definition for what are 'living laboratories', with the term 'reallabore' emerging in the German context, typically translated as real-world laboratories, and the founding of a European network for living labs (ENOLL) under the Finnish Presidency of the European Union in 2006 (Backhaus & John, 2025). Universities can play a lead role in governing living labs, often involving activities on their campuses (Tercanli & Jongbloed, 2022 Evans et al., 2015). In an exploratory review of sustainability oriented labs in real-world settings, MyCrory et al (2020) propose a typology of different types of labs, including real-world labs, which they see as putting forward potentially transformative, and transdisciplinary approaches, addressing real-world problems in set contexts, and involving the co-design, co-production and co-evaluation of initiatives or interventions. Building on this, we see urban, real-world labs as a subset of this category, one that focuses on real-world problems in urban settings.

Real world labs are one facet of trans-disciplinary research, involving the integration of different forms of knowledge, both 'certified' scientific and 'non certified' experience- or expertise-based knowledge (Collins & Evans, 2002; Defila & Di Giulio, 2015). They also involve different phases that feed into each other, are iterative, and can be repeated, going from gaining a common understanding of a problem (Pearce & Ejderyan, 2020), to co-producing solutions or collaborative design (Peukert & Vilsmaier, 2021), to reintegrating different forms of co-produced knowledge into societal settings, all of which imply forms of social learning (Schneider et al., 2019). There is a growing literature that places an emphasis on a preliminary stage, prior to this cycle, one where partnerships are being put into place and ideas are being explored (Horcea-Milcu et al., 2022). From the

initial engagement of partners to their continued involvement throughout the co-production process, time is an essential resource: it takes time to do trans-disciplinarity (Balsiger, 2015). Time is one thing, *timing* is another, notably in the coordination and alignment of time frames that can differ between that of partners and scientific dimensions of a project (Horcea-Milcu et al., 2022).

From ‘urban’ and ‘energy’ to ‘planning’ rhythms

One way of thinking about timing and coordination is through the notion of rhythms. For Lefebvre ((1992) 2004), rhythms involve some form of repetition over time and space, which also implies differentiation. To use the poetic example proposed by Lefebvre and Régulier (Lefebvre & Régulier, (1992) 2004 -b): “Each sea has its rhythm: that of the Mediterranean is not that of the oceans. But look closely at each wave. It changes ceaselessly.” (p. 79). Rhythms also relate to measurement, that can be both quantitative and qualitative: for example, in counting the passing of the seasons, or in bodily and sensory experiences of the seasons. Rhythms can be mechanical, like the movement of the hands on a clock, or organic, like the growth of a tree. They can be cyclical, like seasons, again, or linear, like the understanding of the passage of time in certain – but not all – societies. In his proposed rhythmanalysis, Lefebvre invites us to consider different rhythms together: one rhythm might be slower and the other lively, but only in comparison. Rhythms can emerge, peak, decline and end, and can be analysed in relation to each other as either coordinated or dissonant. Bodies and things move about space and in time in a polyrhythmic manner, and this analysis of multiple rhythms informs the use of space – as described by Lefebvre and Régulier in their analysis of Mediterranean Cities ((1992) 2004 -a).

Rhythmanalysis, and more generally an analysis of how space is socially produced in relation to locations, time and social relationships, has been used in different domains and disciplines, particularly among geographers as a way to highlight tensions between repetition and disruption, and what this tensions can reveal for social change opportunities (Edensor, 2010; May & Thrift, 2001). More specifically, a rhythmanalysis has been applied to the study of regions and cities. The literature is replete with examples of how urban planning should better account for such spatio-temporal relations (Crang, 2001; Güller & Varol, 2024, Du et al., 2024). Research in Switzerland has considered the ways in which the rhythms of the city should be reflected in urban planning, for example, in the analysis of the different usage rhythms of a neighbourhood park towards maintaining a public space (Cattacin & Gamba, 2025). At a broader scale, the rhythms of mobility across the territory of Switzerland highlight the importance of integrating individual and collective activities in spatial planning (Drevon et al., 2024). A rhythm does more than uncover recurring patterns, such an analysis also shows how territories are defined by such patterns (Brighenti & Kärrholm, 2018).

Lefebvre, in suggesting that “Everywhere where there is interaction between a place, a time and an expenditure of energy, there is rhythm.” (p. (1992) 2004: 15), creates an opening for the seminal work of Gordon Walker (2021) on energy and rhythm. If Lefebvre and Régulier had already used rhythmanalysis to explore everyday life dynamics and ties to broader settings, Walker demonstrates how such an approach matters when it comes to ‘stripping carbon out of energy systems’ (p. 2). He explores different sites of polyrhythmic formation – or inter-connections between the body, the home and the city – to show how energies circulate. Of relevance to this paper, Walker proposes different domains of rhythm: *Environmental rhythms* are at the level of the atmosphere, concerning weather systems or water flows. A category of

domains is 'social': *Cultural rhythms*, for example, relate to rituals, festivals or more broadly, cultural norms and expectations; *Organisational* relate to the rhythms of entities such as organisations; while *Infrastructure rhythms* refer to the movement of systems and structures, and *City rhythms* account for flows within urban systems.

From rhythms and social practices to social learning

In his essay 'The Critique of the Thing', Levebvre ((1992) 2004) argues that social life cannot be understood as inert things, but rather as something more dynamic – always in relation to rhythms. Rhythmanalysis is therefore conducive to a study of social practices, which share a similar ontology in that 'doings' are the central unit of analysis for understanding social life. In everyday life dynamics, there is an ongoing interaction between different rhythms. Rhythms are thus marked by temporal moments, such as events, but can also be seen as an overall movement, a flow, or what Schatzki (2019) terms processes. Some actions are repeated and become routinized and habitual and are collectively shared, as social practices. Such an approach helps extend the analysis beyond individual actions to consider what social mechanisms and broader dynamics condition everyday life. In a practice-based approach, activities or practices become the central unit of analysis, rather than people; agency is seen as distributed across different elements of practices, including meanings, competencies and materials (Shove et al., 2012), in one definition. Zooming into practices and considering how these 'elements' interact says something about agency, and can help describe social change (descriptive use of practice theory), but can also lead to social learning to further support social change (purposeful use of practice theory for change) (Sahakian & Wilhite, 2014; Sahakian, 2026 in press).

A link can be made between rhythms, practices and social learning: when different rhythms are synchronised, we may not find opportunities for change. But dissonance between rhythms opens-up moments of reflexivity, an opportunity for social learning. Thus, paying attention to rhythms in the process of planning a Living Lab has implications for social learning: analysing what practices are harmonised or dissonant in a polyrhythmic process tell us something about spatiotemporal organisation, and gives deeper meaning to what 'worked' or didn't work in the co-design of an urban, real-world lab.

Methodology

The qualitative data on which this paper draws consists of meeting notes (n = 74 meetings, 60 A4 pages), workshop outputs (n = 4 workshops), and interviews (n = 2), all collected between January 2023 and December 2025. The analysis of meeting notes only includes formal, scheduled meetings, and does not include many of the informal interactions and conversations that took throughout the project. In the first year of planning, most of the meetings took place between academic researchers towards laying the groundwork for the city lab. In 2024, the meetings with non-academic partners increased, with close to double the meetings with non-academic partners by 2025, during the 'active' phase of the city lab (Table 1).

Table 1
Meetings with different types of partners

Year	Academic team meetings	Non-Academic meetings
2023	15	6
2024	15	9
2025	14	25
Total: 74	**44**	**30**

The dynamic neighbourhood of (name ANON) in the city of (name ANON) was established as the preferred area for the real-world lab based on a series of factors, not least the interest of potential partners in this neighbourhood and the highly mineral, built infrastructures, conducive to stocking heat during summer months. At the junction of two rivers, the names of two rivers ANON (hence its name), the neighbourhood is experiencing gentrification but is generally an area of lower revenues than other parts of the city. It includes regular and social housing apartments; a cooperative building (115 households) set in an 'eco neighbourhood'; parks and other green spaces, including a historic cemetery; some university buildings; museums, art galleries, and many cafés and restaurants. The rivers have a cooling effect on the neighborhoodlike but, in hotter months, there remain streets and squares that experience relatively high temperatures, due to their mineral nature and a lack of air flow and shading.

The partners involved in the neighbourhood name ANON Lab are illustrated in Fig. 1 and are represented by activity. The University of (name ANON) is at the centre of the figure, as we were responsible for coordinating different aspects of the lab and we also held a budget for implementing some of the lab activities. We do not see ourselves as having any form of expertise that might be more 'central' than that of other partners. We term 'core team' the researchers assigned to this project, and the 'extended core team' the addition of members of two associations and a graphic designer, throughout 2025. The 'Open Spaces (program name ANON) program coordination' refers to the academics and one urban planning company involved in the overall research program (program name ANON), which included a work-package on summer comfort and living labs in (City name ANON) (where neighborhood name ANON is based) and another city name ANON (where a second real world lab on summer comfort was implemented). As with most trans-disciplinary projects, the team started out as inter-disciplinary: the program partners, responsible for co-developing the proposal, involved an academic trio of one sociologist, one urban planner and architect, and one micro-climate modeler. The jagged lines represent research-oriented activities, such as modelling heat in neighbourhood name ANON as part of the 'quantifying summer comfort' activities. Such efforts fed into the solid lines, representing 'city lab' activities.

<INSERT FIGURE 1 HERE>

Two co-design workshops took place in neighbourhood name ANON in October and November 2024, engaging with 25 and 21 participants respectively. The first was towards common problem identification, while the second served to ideate and prioritize possible initiatives. Analysed workshop material includes posters and notes taken in plenary and at different break-out tables, as well as meeting dynamics captured by a person assigned to documenting power relations and gendered relations throughout the 2h30 workshops. In

addition, two workshops on May 7 and 14, 2025, specifically focused on gaining input on cooling devices among two distinct groups: adults and young people. To complement this data, two semi-structured interviews took place in Fall 2025 with key partners.

The timeline below (Fig. 2) represents the key stages of the neighbourhood name ANON lab. After the exploratory phase in 2023, we hosted two planning workshops in 2024 and began to solidify our relationships with key partners. In 2025, we moved into the implementation phase, with a highly active phase during the summer months. Some of the main initiatives we engaged in were: 1) interacting with local residents around summer comfort, with the distribution of cooling kits including hand held fans, re-usable water sprays, cooling towels, and a map identifying hot and cool spots in the city; 2) communications around and attendance at a series of events over the summer, around the idea of keeping cool; 3) accompanying a total of six 'summer comfort' installations by the City of (name ANON) in (neighbourhood ANON), ranging from a full 'micro-oasis' installation, with shading, water spray devices, plants and benches; to a water spray installation on its own; and 4) financing the co-produced construction of shading devices at Artamis square.

<INSERT FIGURE 2 HERE>

Results

We now turn to the polyrhythmic interweaving of different planning practices that went into co-designing and delivering an urban, real-world lab around summer comfort in a (city name ANON) neighbourhood. We reflect on what worked well, where we were able to achieve harmony between different rhythms, but also what did not work so well – or where dissonance could be observed.

I. Achieving consonant and harmonious polyrhythms

A. Orchestration between research team members

Four 'pairs' of rhythms worked most effectively in planning and implementing the (neighbourhood name ANON) City Lab. The first ensemble consisted of the coordination between all members of the research program team working on creating a living lab in urban spaces, in two separate sites: city name ANON and another city name ANON. While the group was led by three tenured scholars and benefited from the engagement of senior and junior scholars, a person from a company focused on urban planning and development was also an active member of the group. Several meetings took place per year, mostly online. While the smooth coordination is not surprising, it is not always guaranteed: scholars who co-design a research proposal may or may not work harmoniously together once the project has started. One key factor was a shared understanding of the problem, and the complementarity of the skills and competencies. The more intense collaborations were between the sociology and urban planning groups, as the modelling group was not involved in city lab activities. Their role was to chart climatic conditions during heatwaves in three areas (two in one city name ANON, one in second city name ANON), which supported the selection of the city lab sites, and to model different structural interventions in relation to various heat factors (in second city ANON).

At the implementation phase and for city name ANON, other, non-academic actors joined the core team. This consisted of two representatives of community associations that had experience working on energy sufficiency and social change projects in local communities, including in the name ANON neighbourhood. This alliance created a synergy with another non-academic actor: a city name ANON pension fund that is also an important housing owner in city name ANON. The research team took the lead in supporting the two associations in requesting funding from this entity and brokered some of the meetings between the associations and the pension fund. While we were cautious to not take on a lead role and leave space for the associations, the contact person at the pension fund tended to turn first to the academic members of the team for their questions: we acted as an intermediary.

In addition to working with researchers who were assigned to this project, the project lead and senior researcher hosted several meetings with other research teams in Switzerland. For example, an effort was made to capture 'comfort' levels by partnering with a local College of tertiary education (HEPIA), with a scholar who has developed expertise in devising a back-pack mechanism for capturing temperatures, humidity and wind flow, among other factors. It was useful to be able to compare results from a summer 2023 walking tour of neighbourhood name ANON at this scale of data collection, with the modelling data provided by the program partner institution (ETHZ), based on meteorological temperature readings in relation to spatial arrangements, including building orientation, size, tree coverage, etc.

The city name ANON team coordinated with two other research entities, where there was alignment: in the summer of 2025, a researcher from the same university and another Faculty was leading a mandate by the Canton of name ANON on household waste management, and specifically opportunities for composting, in collaboration with a newly founded association, made up of former students. The link between food, food waste and hotter summers had come up at our co-design workshops: working together seemed evident, both because the timing was synchronized (we were also in an 'active' phase of implementing various initiatives) and because our request – to focus some of their activities in neighbourhood name ANON – was accepted. This was also due to another synergy: the compost team had approached the same pension fund mentioned above about launching a survey among their building tenants. We promptly agreed to advertise their survey on our posters in two buildings owned by that pension fund in neighbourhood name ANON. This worked well: the team was positioned in the lobbies of the buildings on precise dates, and inhabitants were happy to gain access to free composting material and participate in their survey. The posters were originally about organising other activities in the neighbourhood, such as walking tours, which did not work well at all. We will come back to this point later. Thus, the 'add on' activity was more successful than what the extended core team had planned for, although it was based on a more traditional research posture of gaining data through an online survey mechanism.

The second research-based collaboration was between the city name ANON core research team and another research team in the same name ANON program, focused on living lab approaches and mobility in the third city name ANON neighbourhood, outside of Zurich. Our 2024 City name ANON survey on summer comfort indicated that mobility is a key issue: survey respondents knew where to find 'cool spots' in the city but getting to such locations – and getting around more generally – was seen as problematic during periods of intense heat. The City name ANON team, through a co-design process, were actively distributing a 'cooling kit' in neighbourhood name ANON. A dozen kits were shared with the third city name ANON team and discussions

took place on how to design similar data collection methods to gauge the usefulness of such tools when getting around, to link comfort to mobility. The distribution did take place in summer 2025, but by early 2026, efforts to jointly analyse data have not yet taken place. This is no doubt due to the difficulty of researchers to add on additional tasks to scopes of work that are already time consuming.

One misalignment is worth mentioning: on two occasions, other research teams wanted to take an active role in the neighbourhood name ANON Lab. In one instance, a research team from the same research programme began studying summer comfort in neighbourhood name ANON without coordinating with us. We were concerned about mixed messages and at the same time did not want to claim ownership of an entire neighbourhood. This led to a protocol within the overall program to better synchronise any research or activity in the same bounded space, not least in relation to coordinating such efforts across common partners. The second instance was when another research team from another program wanted to launch a living lab in the same neighbourhood name ANON. Their funding fell through, but we were also concerned about overlaps, particularly when it came to the engagement of partners.

B. Orchestration between research team members and other, non-academic partners

An effective real-world lab implies a trans-disciplinary posture, one where problems emerge from a community setting. The City and the Canton of name ANON have already problematized the issue of heat waves: a 'heatwave plan' is effective in summer months, mostly focused on questions of health, and a 'heatwave cell' exists at the Canton level, advising on what constitutes a heat wave (more than three days of average temperatures at or above 25°C), and what emergency measures can be implemented (mostly targeting so-called vulnerable populations, or the elderly). This cell is piloted by the State Medical Service (*le service du médecin cantonal*) and convenes different actors. The city name ANON core team coordinated with this Cell, towards more traditional research: the design and delivery of a representative survey on thermal justice among the population, in coordination with the Canton service charged with sustainability and climate issues (*Direction de la durabilité et du climat*, DDC). As these partners were not directly involved in the neighbourhood name ANON Lab, we identify them with a jagged line in (Fig. 1), as research partners.

Two partnerships were particularly important to the neighbourhood name ANON Lab activities: one around the Artamis square, and the second with the City of name ANON. The first was between a housing cooperative (name ANON), a neighbourhood association (name ANON) and an urban planning agency specialized in participatory construction sites (name ANON). Together with the core city name ANON team, we held several meetings to address the issue of extreme heat in the Artamis square, that serves several buildings in the neighbourhood name ANON area, including the housing cooperative and a social housing building. In May 2024, an event was hosted by (three anonymized actors listed above) to begin to imagine what kind of shading could be made available in this space; the core research team had not been involved, we were thus arriving a bit later in the co-design process. Members of these three organisations attended our planning workshops in fall 2024, and we agreed together to implement a shading structure in the courtyard in summer 2025. The city name ANON team had funds to finance the participatory construction of shading infrastructure and to provide ice lollies to inhabitants at a launch event. However, the installations had to be 'temporary': they

could only be in place for less than 90 days, as such an installation required ‘a public event’ permit and not one for ‘permanent infrastructure’, more difficult to gain. We will return to this point below as it exemplifies dissonance between City regulations and the activities of city inhabitants. There was also the challenge of actively engage with the inhabitants around the square, which represented great diversity, from social-housing tenants to members of an ecological housing cooperative. Few people came to the different co-design and co-construction activities.

By far the most significant partnership was with the City of name ANON, thanks to the role of a key intermediary. At the level of the City (capitalized, when referring to the governance body and not the city as space), a person had been assigned as responsible for preventing and managing crises, including heatwaves. This key intermediary has a role of ‘Crisis management’ and became our gateway to various services of the City, convened as part of a sub-commission of the ‘heat wave crisis group’ to work specifically on public-facing efforts to attenuate extreme heat exposure. Convened by this person and for these meetings were the following services: Sustainability, Green spaces, Territorial development, construction and mobility, Urbanism and Youth services. The city name ANON core team had a seat at the table for most meeting, except for those involving budgeting. This alliance was tremendously synergistic: calendars were coordinated towards diverse activities planned for summer 2025. The City was planning to roll out, once again, a series of summer, temporary installations to mitigate summer heat. Based on our input and with feedback from the (housing cooperative name ANON) and (neighborhood association name ANON) participants, we were able to install more such installations in neighbourhood name ANON than was originally planned for. In a meeting with a representative of another City Service, we were told that it was unusual for the Territorial development service to be so responsive to feedback: “Having younger people in that service who are responsive to requests is new”, as she put it (translated from French).

The installations by the City can be seen as infrastructure rhythms, that punctuated the neighbourhood name ANON landscape from June through August 2025. The City saw our role as beneficial, as we were able to give input on how the installations were being used, based on observation sheets and short surveys done on location. In going through our notes, we realize that each general meeting with all City services concerned with urban heat was preceded by a phone call with the key intermediary, who played the role of coordinator and gatekeeper. The purpose of the call was to be best aligned expectations for the general meetings. It was this intermediary at the City who coined the notion of a ‘personal cooling kit’ and the City-based actors were keen to learn from our experiments with different cooling devices: they had purchased hand-held fans in summer 2024 for employees in certain services and would test the use of cooling scarves in summer 2025. They had also tested other types of equipment on outdoor workers, such as cooling vests. While the relationship with different City services in a coordinated manner was highly beneficial for the neighbourhood name ANON Lab, there were also some moments of dissonance, which we will turn to below.

We engaged with other partners in more one-off events. Thanks to the involvement of a Master student who has also founded an association, Rookie Slash, based on integrating youth migrants through street sports, a specific workshop was hosted in early 2025 to gauge what cooling equipment young people preferred. A second partnership was between the core team and the Swiss Food Academy. Although our first ambition, to deliver cooking workshops in primary schools, did not pan out, we were able to host cooking workshops on a street that had recently been made car-free, rue Plantaporrêts. The City was experimenting with the co-

construction of shading, with the support of the FMR agency. We also worked with the Museum of Ethnography and the neighbourhood name ANON Library to promote their 'cool' events in the summer months. The Museum plays a key role in this capacity: it installs deck chairs and invites the public to read or rest in its permanent collection, in one of the only artificially cooled indoor spaces in the neighbourhood. To a lesser extent, another partnership was also successful: the extended core team partnered with Grandparents for the Climate to support a temporary installation in this same car-free street, around energy usage and inviting people to make their own juice by riding a bike hooked up to a fruit mixer. The aim was to raise attention around energy and health issues in the summer.

C. Organisational rhythms meet ecological rhythms: the distribution of personal comfort devices

Organisation rhythms were involved in the distribution of the cooling kits in neighbourhood name ANON. The core research team expanded during the summer to include students and contracted again to a core team after the summer, with some exceptions. In addition to more formal meetings where notes were taken, numerous informal meetings took place, notably from June through September. The main task of the expanded research team was to be in outdoor spaces at different areas of neighbourhood name ANON, with a planning around days of week, times of day, and locations (notably, close to the City installations), to distribute cooling kits and interact with people on the question of summer comfort. A short survey was administered by the team, but very much designed to be conversational in style. Thus, we consider these moments as 'micro interventions' in public spaces around summer comfort and with the distribution of material, and exchanges which could range from several minutes of interaction to over an hour, depending on the availability of the person being engaged with.

Analysing the results of those interactions will be the subject of another paper but what we find interesting to discuss here are how organisational rhythms were synergistic or not with environmental rhythms, notably the outdoor microclimate. Simply put, all efforts to discuss summer comfort were more effective on sunny and hot days, and were least effective – and in most cases, simply aborted – on cool or rainy dates. To be relevant, our organisational rhythm had to match the microclimate rhythm. The neighbourhood name ANON lab led to a strange phenomenon within the city name ANON extended team: we were gleeful on extremely hot days; heatwaves were welcome because they allowed us to better engage with inhabitants of the neighbourhood on the topic of summer (dis)comfort. The dissonance between microclimate rhythm and with and between different organisational rhythms will be further discussed directly below.

II. Learning through dissonant polyrhythms

A. When organisational and ecological rhythms are out of synch

Engaging people around the topic of extreme heat was not so obvious on days when temperatures dropped. The implementation phase of the project was thus dependent on the ecological rhythms of local weather conditions. The ability to distribute different personal cooling devices was also dependent on other

organisational rhythms beyond our control: the delivery of certain ‘cooling’ materials from third-party providers.

The first materials we ordered were a small set of wooden and cloth hand-held fans, sourced in Spain. We wanted our tool kit to be, as much as possible, sourced in Europe. We held off on ordering a more significant batch of fans, because of concerns over costs. The cost difference between Chinese and Spanish manufacturing was close to tenfold. The hand-held vaporisers arrived at the start of the summer, and we were thus able to distribute that set – fan and vaporiser – during the first few hot weeks. Two items arrived later: a map we had co-designed at one of the workshops, that included both hot and cool spots in the neighbourhood, an indication of hotter or cooler pathways (based on data gathered in a preliminary phase by our ETHZ partners), and signals pointing to where the 6 City ‘micro-oasis’ and other installations could be found. The map also listed a set of events and activities we were either organizing or partnering with to promote, around summer comfort. On the backside of the map, we had illustrated tips for keeping cool, which had emerged from our co-design workshops – building on prior work done by *Direction of sustainability and climate*, at the Canton level (i.e., a call to gather ideas from the public on ‘what to do when you’re too hot?’ *Concours sur le frais – qu’est-ce que vous faites quand vous avez trop chaud?*). In addition, we had ordered neck towels in a particular fabric that was designed for being dipped in water, wrung out, and put around the neck for a cooling effect, which could only be sourced from a Swiss platform that verified the ‘sustainability’ of its product offering, including this product – solely produced in China. When the maps and towels arrived in the middle of the summer, the weather became unusually cool. Our teams had also adapted to the organisational rhythm of handing out and discussing the fans and the hand-held vaporizers. Thus, even when the rhythm of the day went back to summer heat, these items were not distributed as much as the first set of items.

B. When organisational rhythms are out of sync with city and cultural rhythms

Some of the failed initiatives were part of the activities proposed by our extended core team. The two associations we were working with had experience in engaging with the inhabitants of the name ANON neighbourhood and had worked on a campaign to reduce energy usage in the winter months, notably in relation to indoor comfort. The plan for summer 2025 was to host two walking tours in the neighbourhood, and visit two museum exhibitions – to demonstrate how to stay cool both outdoors, and in existing cool spaces indoors. Despite advertising these events through posters in buildings (including the pension fund building mentioned above), through information on the printed maps, and through social media, we had zero participants at three out of the four events. A handful of people attended one of the museum visits, many of whom were personal contacts of the association leads. We cannot easily explain the lack of interest, as walking tours programmed in the summer of 2024 had attracted over a dozen people each time. One hypothesis is around rhythms: the 2025 walking tours were scheduled on July 18, when families with children in school might have been on vacation; and on August 23, just after the start of the Fall school semester on August 18. In our debriefing, we agreed that June may have been a better time for the walking tours.

However, a stand on summer comfort hosted by the extended core team at the annual neighbourhood name ANON event “The street is yours” on August 30–31, 2025, was successful. Some fifty to sixty people visited

the stand per day, many of them young people, attracted to the hand-held water sprays we were distributing. An electric bicycle by ‘Grandparents for the climate’ complemented the offer: students could sow scarves by pedalling on the bike, with material taken from a local association working with textile waste. The idea was to create a scarf that could be dipped in water and produce a cooling effect on hot days (although the synthetic material manufactured in China clearly performed better in this capacity). The synchronisation of cultural rhythms around the attendance of this annual event made it easier to attract people, more so than engaging them outside of their usual, daily rhythms.

Another hypothesis is that the idea of walking outdoors in the city was not compelling enough and did not fit with cultural rhythms of what is expected to be done during hot days, such as swimming in the lake or the rivers – two activities that were most dominant in our survey responses for cooling outdoors. Going to museums is also not a typical ‘summer’ activity in city name ANON, where outdoor areas are privileged during the summer months. This brings out a tension between the environmental rhythms, whereby sustained heat is becoming more common, and cultural rhythms, where summer weather is seen as something to enjoy and look forward to. Meanings around what are ‘proper summer activities’ and associated practices are not changing as fast as the climate. However, sustained heat is a rhythm that many people find to be overbearing. People begin to lack sleep after more than three days of extreme heat and not being able to adapt working times to such heat is currently an institutional or organisational rhythm that will become more constraining as summer heat becomes more sustained.

C. When multiple organisational rhythms are out of sync

One of the failed interventions of summer 2025 was when efforts to work with two schools in the neighbourhood name ANON area did not pan out, and, to a lesser extent, efforts to work with a home for the elderly. Five meetings were held with the director of a primary school in 2024: they had a key issue, the overheating of their school courtyard. That urban space, used by students during the school week and by neighbours during the weekends, was described as a ‘micro-wave’ in the summer by a school staff member. The solution they had devised was to ask a foundation for funding, to install a permanent structure in the courtyard to attenuate the heat. For this, they had asked that we present different examples of courtyard installations, from European cities with similar climatic conditions, and that we provide data on urban heat from the ETHZ modelling work. While the director of the school seemed enthusiastic about our collaboration and time was set aside for our meetings, his staff members seemed less so – judging from bodily expressions during meetings, such as crossed arms. In the end, our input fed into their written proposal to the foundation and they were awarded the grant. But after that stage, the collaboration abruptly ended: we were told by the school director that his staff saw our involvement as a waste of time. In essence, their own organisational work rhythms were already overloaded with this new project, and ‘managing an extra partner’ was not something they were prepared to commit time to. We were told by the director that his team was ‘being squeezed like lemons’ and ‘in the red’, and that they were already being ‘imposed’ studies with other, University researchers in psychology in relation to their student population. The “time-benefit equation was not seen as beneficial”, as he put it.

There were two other missed opportunities: we approached the second primary school to explain that we wanted to offer, for free and to all their 8th grade classes, a cooking workshop on how to prepare a healthy and light summer meal. We were proposing to do so with a local association, Swiss Food Academy, that has

extensive experience with such activities in schools. Here again, we were unable to garner any interest in collaborating. We were told that there had been a change of direction and that the staff felt that any additional activities would prove to be additional work for them. The students were not consulted. Here, we only had two phone conversations with the school and our time invested was therefore not too intensive. The third failed partnership was with the elderly care home in neighbourhood name ANON. Despite a positive first phone call with the new director, it was difficult to follow up. Our proposal was to bring cooling equipment to senior populations and, if there was interest, take them on a walking tour of the neighbourhood to visit one the city installations. This did not pan out, also due to a lack of time to organise any kind of initiative on their side and, we were told, the recent change in Direction. We had reflected on the need to involve 'elderly populations' and 'young people' as vulnerable groups in moments of heat stress in our co-design workshops, but we were unable to reach these groups through such institutional intermediaries. We had more luck reaching out to them directly on the street, through our own efforts.

While this was not a failed partnership, per say, it is also worth noting dissonance between the Artamis Square installation and some City of name ANON actors. Housing cooperative name ANON and co-construction agency name ANON did not seek to create a permanent installation from the start: the shading and benches were installed with a 'event' permit, as explained above. At one meeting with the City in early 2025, the service responsible for Territorial development stated that they were not favourable to new installations in that square (despite it appearing as a clear hot spot in the neighbourhood, based on ETHZ modelling). After the summer, in a debrief meeting with the City, we presented the 'temporary' installation and were again told by the same service that it had not been approved by them. At that meeting, a person responsible for the Urbanism service stated her disapproval of the project in these terms: "Can you imagine if each neighbourhood in city name ANON starts coming up with their own outdoor installations?". There is clear dissonance between roles and responsibilities when it comes to attenuating heat through infrastructure in public space: for some, the participatory engagement of citizens is seen as favourable, for others, it is not commensurate with centralized planning (and, no doubt, concerns not only around aesthetics, but also safety and maintenance).

D. Smaller moments of dissonance between rhythms

In some instances, the rhythms of academic work were out of sync with the rhythms of our partners, and *vice versa*. Most notably, this related to the time it takes for researchers to analyse data and produce recommendations, versus expectations and needs of other actors. We were being asked to produce results by end of August 2025, both by the City and by the pension fund we had been working with. Our earliest possibility for the partial analysis of all the data collected was October. At the time of this writing in January 2026, we are still analysing some of the data. However, City budgets are allocated by November each year. Thus, only our preliminary results were able to inform future City plans.

Another point of dissonance was in the ordering of cooling kit equipment. The City of name ANON had to consider quite a strict procurement strategy, regarding buying local or at least Swiss made, shunning single use items, and avoiding the purchase of plastic items, among other factors. We had more flexibility, as the research team, to test and order different kinds of materials. Although we also tried to adhere to sustainability principles, there were instances where workshop participants had clearly expressed a preference for an item that was simply not available in Europe, as was the case with the cooling scarves. One hope is that by having

experimented with such items in the summer of 2025, a larger, institutional actor such as the City of name ANON might be in a position to encourage the local production of such a technology or, at the very least, ensure that it's production elsewhere meets high standards, in terms of social and environmental impacts.

Discussion

A rhythmanalysis of planning a real-world, city lab reveals insights on the coordination between human actors and their practices, but also with non-human actors, such as micro-climatic conditions. We draw out the following discussion points, as a form of social learning towards informing future efforts.

Organisational rhythms are central, as they allude to the ways in which different organisations can organize their time in different spaces and with various actors. In some instances, there was dissonance between academic and city-level actors, for example, around the time it takes to analyse results and produce recommendations. We could also consider the timeline in Table 1 and note that it took quite some time for the core team to arrive at an 'active phase': academic rhythms are perhaps not as quick to turn from research to action, or perhaps academics cannot so easily shed their skin of being 'researchers' first and 'action implementors' second. Being a 'researcher' is also what is seen as valuable by other, non-certified experts, in such a trans-disciplinary project. Recognizing these different rhythms can at the very least serve to better plan and manage expectations of different organisational partners.

Urban lab efforts can benefit from the implication of different 'intermediaries', playing the role of orchestra conductor, and able to coordinate multiple rhythms at once. This was the case for the core team at the University of name ANON, but also for the person managing the heatwave crisis cell at the City of name ANON. When an 'intermediary' does not play the role of aligning expectations and shared understandings of possible ways forward, the coordination of actors can fail – as was the case with our contact at the local school. The director did not play an effective role as gatekeeper and our input was often misaligned with expectations of the broader, school team. This is not a problem in and of itself, so long as a real-lab project is not counting on a collaboration with a limited set of actors. Widening the range of actors and possible activities in a real-world lab is perhaps more time intensive, but it allows for a testing of the waters and the possibility that some initiatives might not be carried through. Dissonance is not always a negative outcome: when actors and associated are out of synch with each other, this can also present opportunities: the standards that the research team could adhere to for the procurement of cooling materials were more relaxed than those upheld by the city, allowing different actors to take on different degrees of responsibility in a real-world lab experiment.

Given the time constraints of the neighbourhood name ANON Lab and our ambition to propose initiatives for summer 2025, the core team supported activities that interacted with people in neighbourhood name ANON, by handing cooling devices and supporting the construction of one temporary installation. In most instances, we piggy-packed on existing installations, events and initiatives planned around comfort in neighbourhood name ANON. Our scope of action was focused on changing the habits and rhythms of people in urban spaces, by making personal cooling practices more normal, for example. This builds on prior lab-based experiments on indoor comfort in winter months (ref ANON). But we did not manage to work at the level of other, entrenched, institutional rhythms, such as changing working or school schedules to adapt to summer heat.

There was also an entrenched cultural rhythm that was difficult to change: expectations around summer months in city name ANON are that people can enjoy being outdoors, yet the city is also experiencing increased periods of sustained heat, due to climate change. Environmental rhythms are changing faster that cultural rhythms and the associated habits around what are seen as 'normal' summer activities. We also did not work at the level of changing infrastructural rhythms; for the City of name ANON, outdoor spaces have been a priority until now, but more attention needs to be placed on indoor spaces, potentially leading to city lab activities in 2027 that will consider the links between indoor and outdoor living. As the intermediary at the City put it in an interview, "I am not worried about public space, the train has left the station. For me, what we now need is a simple and autonomous methodology for interior spaces". An indoor cooling kit has been discussed, one that would install ceiling fans and other mechanisms for sleeping comfort.

Conclusion

In this study, we reflect on the polyrhythms involved in co-designing and implementing a real-world lab on summer comfort in the city of name ANON. The co-existence of different rhythms and their spatiotemporal organisation reveal insights that can inform future efforts. What we have learned from this analysis is that organisational rhythms matter, but interactions and coordination between institutional actors and their practices must also account for the cultural and urban rhythms of people living in urban settings. Interactions with non-human actors, such as installations for summer comfort and personal cooling devices, also matter. Particularly for a real-world lab focused on climate change and urban summer comfort, the micro-climatic rhythms were central to the implementation phase. Our study opens to future research directions: we suggest that working with a multitude of actors can be fortitions, to account for some dissonance and non-alignment of practices. In other words, it is worth exploring many different actions, in assuming that some may fail. We have also found that dissonance is not always a negative occurrence, it can open opportunities for experimentation. However, it is not clear exactly how many rhythms can be orchestrated at a given time. Coordinating too many rhythms in parallel could become problematic. The role of 'intermediaries' becomes essential, as actors or institutions that have the mandate to take on an orchestrating role. Building trusting relations with such actors is central, so that short term wins can lead to sustained activities over time.

Declarations

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Author Contribution

The main and sole author of this paper wrote the proposal for funding, with a colleague at (University name ANON), co-coordinates the overall project, and manages the city name ANON case. She developed the conceptual framework for this paper, did the literature review, gathered some of the data (meeting notes,

interview transcripts), analysed all of the data (including the addition of workshop outputs, generated by participants), and wrote the article.

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Figures

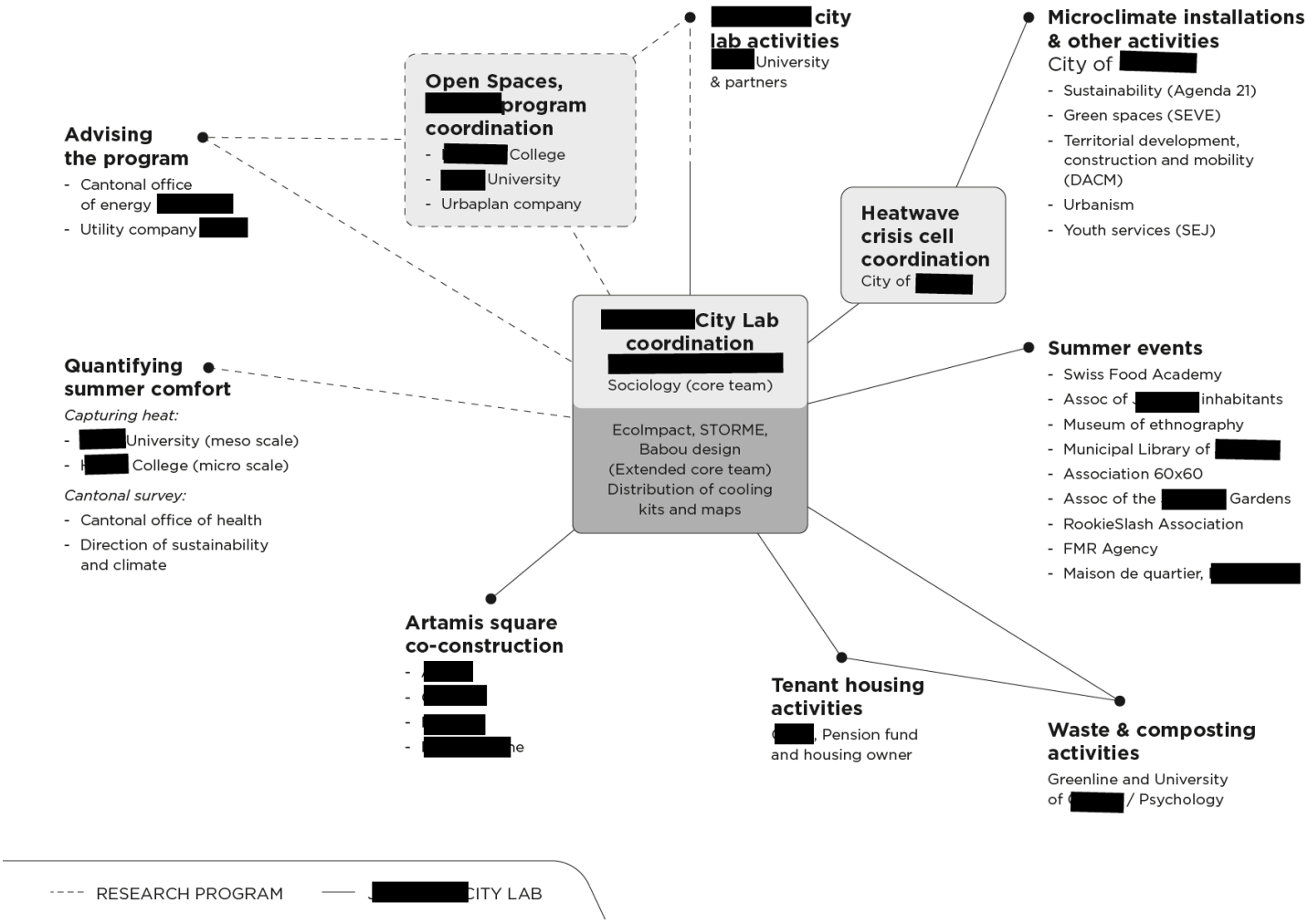


Figure 1

Activities, partners and inter-relations: neighbourhood name ANON **Lab. Source: author's own** (note: black marks serve to anonymize for peer review).

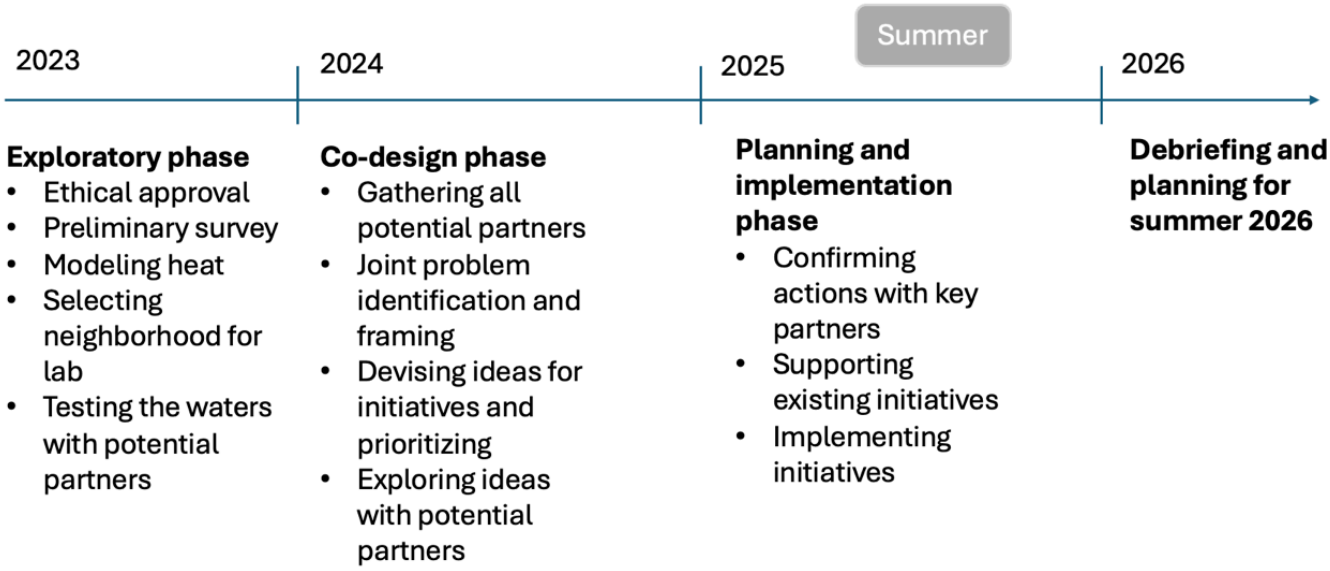


Figure 2

Timeline of neighbourhood name ANON **City Lab phases**