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Understanding the Role of Future Visions as Infrastructure for Sustainable Living

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Abstract

This paper responds to the exigent need for empirical work addressing longitudinal ecological sustainability. Now more than ever, there is a need to address anthropogenic impacts through long-term thinking. We report on conceptual understandings of future thinking and its relationship with practices based on an institutionalised longitudinal vision of a sustainability community in India. We present empirical findings from ethnographic research on the community's ongoing infrastructuring efforts towards the actualisation of its shared vision. The findings critically examine the interrelation between the town's vision and its practices to co-imagine, evaluate and establish alternative ways of living. We contribute to sustainability research and praxis in PD through our framing of visions as both generative infrastructure and infrastructuring constellations of practice.

Keywords

Infrastructuring, Future Visions, Participatory Visioning, Sustainable Living, Auroville

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1 Introduction

In work with communities, infrastructuring has become an important consideration in recent years within Participatory Design (PD) [34], to avoid design projects that focus on producing short-term design products. The focus has shifted towards creating social, technical, and environmental infrastructures that enable participation and innovation in communities to continue independently outside a design project over the longer term [18, 19, 34]. In this paper, we define infrastructures through PD research as designed structures and facilities, physical or otherwise, that involve the underlying arrangements, capabilities, and relationships that support sustained collective action and innovation within the community [25, 33, 36, 45]. Infrastructuring is the process of bringing to the

surface the tacit arrangements, capabilities, and relationships already embedded in communities [17] to challenge, augment, or change them. In addition, infrastructuring is also the act of sustaining the designed participatory infrastructures over a period of time by the researchers or by the community themselves, to build social and material capacity for participation and innovation [10]. This might include things like community forums, regular meetings, co-created guidelines and documentation, mentorship programs, design or prototyping kits, technology for environmental sensing, or software.

Future visions have been an important part of PD [28] and are used for several purposes. Most commonly, they are drawn on to broaden the design space for community PD projects [48]. It can be challenging for communities to think outside of established ways of doing things, and this limits the design space that is considered in PD activities [56], particularly when it comes to designing for sustainability [17]. Future thinking or future visioning can help communities to break out of familiar ways of thinking and consider more radical alternatives for the future and design [8, 24]. Typically, such initiatives work towards informing the design of a product to help bring about change in the present. Another role for future visions is to establish some shared direction for the community in order to guide innovation and change [43]. In this way, future visions might be considered as enabling infrastructuring or as infrastructure themselves, which scaffold community activities. However, to our knowledge, future visions as infrastructure have not been explicitly examined in the literature.

Future visions and the process of designing them are important for facilitating longer-term thinking in design. Designers have long been preoccupied with the notion of newness and futures, where design is seen as a normative practice that is concerned with "*changing existing situations into preferred ones*" [54, pg. 130]. Speculative approaches in participatory design (PD) are used to challenge normative socio-technical systems, encourage criticality, and create opportunities for expansive thinking [17]. PD is increasingly engaging with stakeholders to imagine alternative futures [57], co-designing with grassroots communities and citizen-led initiatives [7] and fostering resilience in the face of uncertainty about the future [6]. However, the role of future visions in offering shared, longer-term direction for communities remains underexplored. Visions in PD are often treated as a means to an end—supporting the design of technologies or other infrastructures—rather than as objects of design in their own right. In this paper, we argue that future visions themselves should be elevated in participatory design work with communities. We ask whether visions might function



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(a) Organic farming in Auroville employing mechanical insect traps and companion planting.



(b) Eco-friendly buildings built utilising local materials and earth construction techniques.

Figure 1: Auroville - sustainable practices and infrastructures

as infrastructure, supporting shifts in community practices toward more sustainable ways of living. In doing so, we highlight potential linkages between infrastructuring and future visioning that merit closer attention in PD practice.

To illustrate this potential, we report on an ethnographic study of a community in India that was initially established around a spiritual vision and has, over almost six decades, in dialogue with this vision, developed into the town of Auroville, now home to thousands of inhabitants. In Auroville, the vision has come to constitute shared meanings, ideas, and ideals that are embedded in everyday practices (see Figure 1) and that shape long-term change. We acknowledge the uniqueness of this town and community, as

well as the fact that the founding vision was not defined democratically. Nevertheless, Auroville offers a rare opportunity to examine how everyday practices are negotiated over multiple generations around a shared vision. Although the vision was not established through participatory means, the town has collectively co-created infrastructures and practices over time and is now recognised globally for its sustainability efforts. This study focuses on how the vision has influenced community practices over time, particularly through bottom-up forms of self-governance and the integration of sustainability into daily life.

We argue that the vision did and continues to have an infrastructuring effect on this development. The vision is open to interpretation, at both individual and collective levels, through the creation of negotiated community life. By understanding how it serves as infrastructure for longitudinal community development, we aim to highlight how PD researchers might examine the potential of future visions (democratically defined or otherwise) as infrastructure in the early stages of participatory design work with communities. Accordingly, we argue that opening up the design space around visions and visioning in PD requires attention to the material and everyday work through which visions are negotiated, mobilised, and materialised in community life.

Overall, this study was primarily guided by the question: *What is the role of visions in influencing longitudinal sustainability practices?* Specifically, we contribute a case study where a future vision has had a multi-generational infrastructuring effect within a large sustainability community, shaping both the city and everyday life. This work aligns with the conference theme of peace, dialogue and coexistence, offering insight into how visions contribute to ways of living together. In this paper, we outline how these dynamics unfold in everyday community life through ethnographic work and develop insights for future visions as infrastructure. We conclude by proposing considerations for researchers to support the conceptualisation of future visions as infrastructure in PD with communities.

2 Background Work

2.1 PD processes aimed at longitudinal sustainability

Since its conception, PD has continued to address political, social, and community-focused issues through various long-term sustained outcomes [43, 62]. This has been made possible through social cohesion, which fosters participation [34] and empowers political outcomes [5]. One of the approaches that brings all these aspects together is infrastructuring [34, 50, 59], which is pivotal in the design and theorising of longitudinal engagements [11, 32] concerning both humans and non-humans [9]. These longitudinal engagements are often built through the relational mode of practice [1, 2] during the design process.

Infrastructuring builds these socio-material relations through ongoing processes and activities of social life [18], thereby building support for future grassroots-led actions [19] and creating social innovation infrastructures [42, 51, 61]. PD researchers have also considered sustaining engagements through iterative processes and addressing issues at larger scales [32, 39, 55]. Additionally, a constellation of participatory activities is also seen to support

engagement and engender long-term community change. Baumann et al.'s participatory work in local urban neighbourhoods presents the value of infrastructuring participation through constellations of physical and digital flows [7]. They also look at the outcomes of community focused PD as infrastructures of imagination to be worked on by the community members in the longterm [8].

In recent years, PD has further explored environmental and social sustainability [15] through a range of approaches or constellations to reach diverse stakeholders, scales, and interests, thereby sustaining engagement over time [5]. Within these longitudinal considerations, researchers have also explored the context of the 'living lab' [10], where the everyday becomes part of the research. Similarly, Zivkovic proposes the *systemic innovation lab* as a new model for tackling wicked problems by combining systemic design, solution ecosystems, and systemic innovation. Unlike traditional labs, it integrates place-based, collaborative, and adaptive approaches to enable coherent action across diverse scales, actors and systems [63]. They extend PD by shifting participation from designing solutions to collectively shaping and governing whole systems over time by treating communities as ongoing partners rather than end users. Alongside this, communities are themselves known to invent and test practices that blend technological, lived experience and practice-based knowledge. Local community can be determined as a living laboratory [16], much in line with Arturo Escobar's approach of 'life projects' [27] and 'the sustainable living experiment' [44].

The sustainable living experiment builds on the idea of 'experiments in living' where the worth of different modes of life can be explored practically [46]. Noortje Marres describes 'the living experiment' as a way to explore collective practices of researching social and cultural change, as engaged in by actors who do not necessarily identify themselves as 'social researchers' [44]. Marres explains this to be an explicit attempt by individuals or the sustainability community to modify habits and habitats according to a fixed procedure of changes in everyday routines and living spaces through meticulous recording and reporting of everyday practices in various media (ibid.).

Future thinking is another such approach that has been seen to respond to complex societal challenges by creating the capacity to imagine new futures [17]. Baumann et al. shed light on how long-term envisioning can help the community explore its potential for change by considering future alternatives. The work also emphasises the requirement of infrastructuring to create a commons of vocabulary to support the envisioning process [8]. Multi-generational sustainability [38], spirituality [3], and more-than-human design [31] are other perspectives that draw on conceptualisations of the often confounding or distant future to make sense of issues in the present [47]. Such approaches take a long-term perspective on shaping sustainable futures as opposed to short-term problem-solving interventions that address immediate needs.

Despite the continued work in speculative design [28] and exploration of alternate futures within PD [40], there has been limited work addressing the complexity of ecological sustainability through visioning [17]. Moreover, within this research area, longitudinal visioning studies are even more scarce. Adopting a longitudinal perspective is important as sustainability requires consideration of change across multiple generations, an aspect that is currently

underrepresented in participatory design. Therefore, this study is important in beginning to unpack how intergenerational dynamics shape negotiation of future visions, and how infrastructuring unfolds to support participation and innovation over time.

3 Research Context

3.1 Mother's Vision

Our research is based in Auroville, a town in southern India established by a spiritual visionary in the late 1960s. The town's spiritual leader, referred to as The Mother, articulated "The Mother's Vision for Auroville: A Dream" ¹, which has guided the town's development over the past decades. This poetically articulated vision is supported by documents such as Auroville's charter ² and ideals to be a true Aurovillian ³.

The Mother envisioned a transformative settlement for human unity, a radically different way of collective living prioritising spiritual development and human progress over material accumulation. This universal settlement transcends national boundaries, where individuals commit to human advancement as global citizens, unified in pursuing the higher truth without political or geographical affiliations.

The vision fundamentally reorients social priorities away from the pursuit of pleasure and material comfort toward the attainment of higher consciousness, aligning individual growth with collective progress. Human relationships are envisioned to shift from competition and conflict to collaboration and genuine solidarity, emphasising mutual support over rivalry for resources. Self-transcendence becomes central to expanding collective capacities beyond individual limitations.

The vision proposes a no-money society where personal qualities and contributions supersede financial wealth or social position. Work transforms from economic necessity into self-expression and community contribution, ensuring collective material security. Work is seen to become a meaningful engagement contributing to collective living.

Acknowledging humanity's unreadiness for this radical transformation, the Mother articulated this as a gradually manifesting dream through practical experimentation, requiring spiritual growth and conscious collective will. The vision represents not a static utopia but a progressive journey. The town demonstrates an alternative to existing social structures and points toward a more authentic, harmonious way of life. This paper explores the ongoing interrelation between this vision and everyday life in Auroville, examining how abstract ideals translate into material practices over time.

3.2 Community And Its Interlinkages

Auroville can be described as an eco-village with minimal built infrastructure and resources to sustain a small population, see Figure 2 for reference. The town has a multi-generational population and also attracts tourists, volunteers and new residents from all over the world, which makes for a transitional population.

¹<https://auroville.org/page/a-dream>, accessed on 26 Oct. 2025

²<https://auroville.org/page/auroville-charter>, accessed on 26 Oct 2025

³<https://auroville.org/page/a-true-aurovillian>, accessed on 26 Oct. 2025



(a) Matri Mandir (Temple of the Mother) is the spiritual and architectural center of Auroville built by residents themselves.



(b) Roads made with compacted earth or laterite soil with minimum asphalt coverage and rainwater drainage channels.

Figure 2: Built infrastructure of the town

The town has approximately 2500 permanent residents and a transitory population made up of volunteers, workers and visitors. The town has seen waves of settlers over the decades, with different motivations to live there. The initial settlers came to the town for its spiritual roots, and the later ones for eco-living. These are predominantly international settlers from around the world, making the cultural fabric multi-ethnic and diverse, and a cosmopolitan community. There has been a recent shift in the region, which has encouraged the native local population to see Auroville as an opportunity, as it brings in a transitional population and, along with it, revenue. The locals have recognised the needs of tourists, visitors and volunteers, and have opened cafes, restaurants and living spaces, and so on to shift their socio-economic status. Similarly, the local villagers also want to live in Auroville as new settlers to shift their cultural and social status, and to distance themselves from

village life and its embedded culture. Many Indian urban residents are seeking a quiet life and want to move to Auroville. These new settlers often have different motivations from the early residents of the town, which sometimes leads to tensions, frictions and differences, and also the questioning of the spiritual vision in place. The vision, even if top-down, is an essential element of Aurovillian life and has helped shape the everyday practices of the town. Moreover, the Aurovillian vision is generic and based on universally accepted values, making it imperative for new settlers to acknowledge it, if not agree with it entirely. However, there might be tensions around individual interpretations of the vision that can vary (e.g. across generations) and at times, the fact that it is top-down exacerbates these disagreements and tensions between residents.

Geographically, the town transformed colonial deforested land into an ecological oasis with numerous autonomous organic farms managed by stewards. Surrounded by local villages and agricultural land, with the nearest city 20km away, Auroville has become globally renowned for practical sustainable living knowledge. Stewards run learning sessions with non-profit organisations to disseminate organic farming and sustainable management practices. The farms supply food to the local population, restaurants, and community kitchens through a central distribution system that coordinates between producers and consumers.

The town maintains an administrative block and information center alongside informal communication channels. While a local newspaper (recently digitized as an online forum) provides formal communication, word of mouth remains active. Despite limited infrastructure some farms lack proper accommodation and roads. However, the technology-embracing zeal ensures most farms have electricity and internet. The town's website, operational since the early 1990s, serves as a comprehensive repository providing information about Auroville's vision, processes, journey, establishments, guesthouses, and farms. It also facilitates international e-commerce for products ranging from consumables to crafts and clothing. Individual farms maintain their own YouTube channels and websites, sharing operational details and attracting global volunteers and subscribers.

Politically, the town functions through goodwill and residents' intention to live and work collectively. It operates with a citizen-led governance system without formal law enforcement. An appointed administration facilitates decision-making by presenting proposals for deliberation through town halls and open forums. This bottom-up governance, accessible to any resident through nomination, brings together interested participants for agonistic deliberation. Many residents find the process too open-ended for effective consensus-building and decision-making. The Mother's vision and related spiritual accounts help navigate these decisions, though newer residents often don't align with the spiritual framework, adding complexity to the grassroots governance process. This creates ongoing tensions between the founding spiritual principles and evolving community needs, making governance both deeply democratic and inherently complex.

4 Methodology And Participants

We used ethnographic methods to immerse ourselves in the peri-urban, eco-village setting. The immersive fieldwork, using ethnographic praxis [30], contained semi-structured interviews, field notes and observations as data, which helped appreciate the place's complexity, the residents' diversity and viewpoints.

4.1 Researcher Positionality

The first author (FA) is an Indian citizen and has visited Auroville multiple times as a tourist and volunteer because of its sustainability practices and ecological living. We chose to work with the town of Auroville as a site for research, as the residents of the town are motivated towards living a holistic, sustainable life, and FA was already familiar with the context. The spiritual vision of the town brings in qualities of self-transcendence [35] beyond behaviour change models [14, 22] as a way of approaching sustainability. With the intention of engaging with a mature community's knowledge and lived experience, the town was considered a valuable site to work with. In particular, we were keen to engage with a community that, over the last 50 years, had championed community-led governance and sustainable everyday living and could potentially inform how other communities might develop similar practices and sustain themselves over a long period. FA was in the field for data collection and engaged as a volunteer, but sometimes as an onlooker or a tourist. As an Indian citizen, PhD researcher studying and living in the UK, with North Indian heritage, she identified differently from the native South Indian residents, who knew the local language and were from the same regional South Indian cultural context. Auroville's population is multinational but predominantly Western and white. She also stood apart from this dominant Western white populace in Auroville, regular volunteers and frequent Indian tourists, and was therefore distinctive as a non-resident Indian. This unique position made it easier to engage with people and place in ways that allowed difficult, culturally embedded questions—often taken for granted—to be raised, while remaining attentive to the risks of conducting research through essentialist assumptions based on ethnicity or shared citizenship [29].

Despite this ease, it is also worth noting that residents also experience research fatigue. The town is a site of interest for many tourists, researchers, visitors, journalists, etc. There are many accounts of university and organisational collaborative research being conducted in the town, such as on farms for the use of drip irrigation, solar panels, reviving wider ecology and wildlife. However, the town is predominantly run on volunteers' capacity and the act of giving back to the collective. Therefore, sometimes these acts of academic self-interest stand out as acts of extractionism [37, 58].

In response to these concerns, we took several steps to minimise extractive research practices and to engage reciprocally with the community. Consent was approached as an ongoing and situated process rather than a one-time agreement. Participants were informed about the aims of the research, the forms of data being collected, and how the research might be used, and were given opportunities to ask questions or decline participation at any point. In several cases, consent was renegotiated as relationships developed over time, particularly given the ethnographic nature of the work.

To address research fatigue and concerns about extractionism, we sought to remain attentive to the time, labour, and emotional investment required of participants. Data collection was paced to align with community rhythms, and participation was often embedded within existing practices rather than requiring additional or burdensome activities. FA's engagement as a volunteer allowed for contribution to everyday community work, helping to balance field observations with participation and care.

Reciprocity was approached through sharing time with participants, contributing labour and donating money to community initiatives, and treating the community's vision, practices, and reflections not merely as empirical data but as sources of knowledge in their own right. Rather than aiming to 'extract' findings, the research sought to document, reflect on, and amplify practices that the community itself values, with sensitivity to how these accounts might circulate beyond the town. While the outcomes of this research primarily take academic form, we view the careful, respectful representation of the community's practices and concerns as an important mode of reciprocity, particularly in a context that has been repeatedly studied.

4.2 Recruitment And Data Collection

We conducted initial desk research through digital ethnography [49], drawing out details of the place and various farms to understand their workings. FA contacted the farms through email and conducted initial online meetings. These conversations brought to the surface implicit conflicts between the Indian state and Auroville and internal complexities of the residential population. Later, FA associated herself with a small volunteer-run farm, whose steward took her in as a volunteer and offered accommodation on the farm when she arrived on the field. Additionally, the steward acted as a gatekeeper connecting her to other members of the community, residents and stewards of different farms. These associations helped create a recruitment criterion for the interviews according to categories of organisations and people we wanted to talk to when in the field, these being residents, farm workers, volunteers, farm stewards, etc.

FA spent 3 weeks in the field. Her prior relationship-building through emails and Zoom conversations, knowledge of Auroville, association with a farm as a volunteer, and an interest in the spiritual vision of the Mother helped build short-term trust. Trust is thought to be fragile and context dependent without a fixed end-state; a dynamic process of ongoing negotiation, over long-term collaborations between academics and community organisations [4]. FA's curiosity towards the vision and people's way of integrating spirituality in their everyday life also played a role in trust building and starting conversations with people. Therefore, the trust building on the field evolved and was influenced by the institutional or interpersonal nature of engagement through instances of shared experiences and mutual recognition. However, being on site for a short duration of time, working individually, and on a tight academic schedule, added to the difficulty of building longitudinal trust. There were also a couple of difficult encounters, sometimes with uneasy verbal exchanges around academic extractivism. Nevertheless, there were instances of curiosity and sharing; people wanted to share their life stories, and journeys, and explain how

the town was developed as an urban social experiment and what it means to them. Most residents and volunteers who engaged with the first author were interested in knowing about the research and were open to conversations and making introductions.

The collected data was obtained ethnographically [30] by carrying out observations while recording interactions, conversations and experiences. FA, after making her positionality as a researcher clear in the setting and to the participants, recorded photographs and quick audio or written notes, which were later written down as accounts for the day. These accounts captured everyday life, volunteering, visits to farms, and cultural and social events. Later, she annotated them with field notes and more in-depth semi-structured interviews. The initial recruits for the in-depth semi-structured interviews were hosts, cohabiters and volunteers. The recruitment was largely through snowball sampling during conversations with the participants and being referred to the larger residential community of the town.

Interview protocols were designed according to the initial categories for participant recruitment. The interview protocol included three sections: organisations/residents and their everyday practices, food and sustainability, Aurovillian vision and future thinking. The questions for these sections were tailored with minor changes according to the categories of participants. The participants were pre-informed about the research and the intended output through prior meetings and on the day of the interview using information sheets, which were often read out to participants.

Locations for face-to-face and one-on-one interviews were chosen by the participants and were conducted in participants' homes, different public settings such as cafes and work environments like farms and offices. Most of the interviewees were older adults and had been in the town since its conception, and our key role was to engage with their life stories and capture their intergenerational richness. This led to longer conversations beyond the questions in the interview protocol. We acknowledge that these participants' responses potentially emphasise Auroville's idealistic narrative while downplaying internal conflicts or failures. Some residents may have presented sanitised accounts to an academic outsider, particularly given the community's awareness of its international reputation.

After taking informed consent, 14 audio-recorded face-to-face semi-structured interviews were carried out with 16 participants; 2 interviews were conducted as couples, and participants were aged 20 - 90 years in age. We do acknowledge the limitations in our data collection, the three-week fieldwork period, and interviews of 16 participants from a community of 2,500 residents constrain the ability to capture the full complexity of Auroville's 50-year evolution and its intergenerational dynamics.

However, we were leaning towards documenting ethnographic depth over breadth [23] and emphasising situated knowledge production [30], so that the small sample size yielded rich insights. Through sustained observation and field notes, we gained an understanding of the diversity of practices, and through in-depth interviews, we captured how residents negotiate between vision and action in their daily lives. The limitations of our sample size and duration thus become a methodological choice prioritising depth of the engagement to capture the dynamics of practices and vision, over comprehensive coverage and a survey.

Table 1: Overview of interview participants (details omitted to preserve anonymity).

Participants	Role	Age range
2	Volunteers	30–45
5	Residents	20–80
5	Farm stewards	50–90
3	Administration	25–60
1	Non-profit organisation worker	40–45

4.3 Data Analysis

The recordings were anonymised, with each participant assigned a pseudonym and later transcribed. These interviews were reflexively thematically analysed [13] to give themes which were then reiterated within the research team to answer questions around the interrelation of vision and practice.

In the first phase, we performed a close reading of the interviews to familiarise ourselves with key terms and phrases described by participants. Since the study is exploratory in nature, the data were initially open-coded to come up with an initial codebook. However, the data being too complex and dense to draw workable themes, the preliminary codes were reworked using deductive thematic analysis [12, pg. 19]. In the second phase of data analysis, we looked more closely for particular instances of sustainability practices as described by participants. We used data from participant interviews and chose selected instances based on our familiarity with the corpus of data and how particular aspects of the vision connected to and influenced specific forms of action. In the third phase of analysis, we deductively coded the data, using Social Practice Theory (SPT) [53], focusing on the '*embodied, materially mediated arrays of human activity centrally organised around practical understanding*' [52, pg. 2], by paying attention to particular meanings, competencies and materials associated with sustainability practices. We repeated this process through reflexively drawing from the first author's experiences and field notes [13] to further draw out particular identities and roles associated with Auroville and how this facilitated both individual and collective community interpretation and action. We used these insights to develop and consolidate secondary codes, which brought out practices as complex bundles of activities with crucial leverage points for systemic building and transformation [20]. These secondary codes were then organised into themes using affinity diagramming and further synthesised and checked for consistency. Findings derived from the themes highlighted the interrelation of vision and practice and the significance of long-term negotiation of the vision through everyday practices in the community.

5 Findings: Infrastructuring Sustainable Living

In this section, we describe how the existing vision, community governance, and organisational structures influence the town's food-growing ecosystem. We detail how residents negotiate between the town's vision and their everyday practices in the pursuit of sustainability. We focus on the vision's capacity to facilitate and shape infrastructural, socio-political, and economic practices that generate community-led, real-world impacts across three key areas:

(1) how the vision functions as a boundary object; (2) how constellations of interdependent infrastructures influence sustainability; and (3) how the vision helps materialise the spiritual through on-the-ground action.

5.1 Vision as a boundary object

The town's vision, even if resolute, is abstract and does not provide a definitive approach to realising it tangibly. The vision does not define or predict a year by which it will be reached, or a plan with steps that the residents of the town can take to fulfil it. As Prashanth puts it,

*The mother started the city with the dream, not a plan.
It evolves. Every once in a while, the Auroville evolution
is a dialogue between the dream and the plan.*

As Prashanth explains, the evolution of the city is a negotiation between the dream, the vision and the plans drawn from time to time. The constant single vision represents ideals shared by the community, and the residents work together on how to live by them. Plans can be numerous, such as the 5-year food growing plan for the farms or the construction plans for expanding the city. The vision needs to be continuously interpreted, negotiated and worked upon, making it generative rather than prescriptive as it is open to interpretation. The interpretation is where each resident assigns personal meaning to the vision and the value it holds for them at an individual level. For example, each farm steward can decide for themselves on how they want to run their farms and the practices to be carried out on the farm, (see Figure 3). Therefore, each individual holds a different view of the vision, and while some take the vision to be “set in stone”, others consider it morals and values to live by, and a few think it needs to be reinterpreted and negotiated.

For example, Lolita remarks on the spiritual vision of Auroville, which was created in a different time and context, and maybe how it sometimes needs to be superseded by the collective knowledge and understanding that the community have developed since.

Lolita: (...) somebody - a spiritual visionary person - says something. Now, does that mean that because he or she said that at a particular time in that particular context, is it true for all for the rest of eternity? There's this tension between (...) [what] a spiritual leader said (...) compared to tapping into the kind of knowledge and understanding of everybody, which is much more, that to me is a kind of divine anarchy, you see this tension kind of manifesting again and again, on lots of different levels and in lots of different ways

This diversity of views adds to the challenges of implementing a top-down vision, as described by many residents, and compounds difficulties in working together. For example, a lack of consensus in decision-making often results in slow change, affecting the pace at which material practices in the town can be transformed. However, the vision provides residents with an important scaffold for such negotiations, acting as a tool for agonistic deliberation. It serves as a boundary object because it is flexible enough to be interpreted differently by people with different perspectives, morals, outlooks, ethnic backgrounds, cultures, etc., but is robust enough to maintain a shared community identity across these different perspectives.



(a) Natural farming through minimal intervention using raised beds with drip irrigation on a completely volunteer-run farm.



(b) Steward-run farm which only focuses on small-scale organic seed propagation and community circulation of the seeds.

Figure 3: Small Aurovillian farms focusing on volunteer support

In addition, there are other issues which require planning and execution, such as everyday constraints around food, long-term concerns such as governance, participation, economic constraints, and passing of knowledge and resources intergenerationally. These real-life issues add to the complexity, thereby requiring ongoing negotiation for the execution of plans. In these contexts, the vision provides a safe space, or a shared license for highlighting and maybe challenging hegemonic tacit social norms, thereby informing formal or informal decision-making processes in the town. This surfacing of the installed base is necessary for creating innovative alternatives to live a progressive, sustainable life.

5.2 Constellation of Interdependent Infrastructures Influence Sustainability

The vision applies to all aspects of community life and its industries. It is abstract and nebulous. This nebulousness, on the one hand, might be unproductive because it lacks concrete steps or direction or guidelines. On the other hand, the flexibility and ambiguity it encompasses can be useful. It can leave space for deliberation and co-production where different value systems and perspectives come together, and its generality means that it can be applied to distinct but interdependent systems or industries in the community. This is very valuable for infrastructuring in general, but we also found that the constellations of interrelated systems and practices that it gives rise to can have a galvanising effect for sustainability, where the towns' industries, structures, and practices are meaningful from a plurality of perspectives and beyond the main purposes that they were intended for. Thus, they become somewhat insulated or robust against external factors or experiments that do not always result in success.

Auroville is known throughout the world for its experimental and novel sustainability practices. Many of these practices arise from resource constraints and choosing to live a minimal life. Many residents believe that these self-imposed minimal practices are interrelated to the desire to live a spiritual life. This is because the spiritual nature of the community brings out the practice of consciously growing, consuming food and living out the vision as a way of life. The residents of Auroville create bottom-up community-led institutional systems that are built on diversity and lived experiences, which are tacit in nature. For instance, the interconnected food system in the town is built up of different farms, establishments, organisations and practices like community kitchens. These systems are intricately connected to everyday life, experiences, and practices.

Moreover, practical concerns, daily uncertainties, and human intervention affect sustainability choices in the town, for example, what is grown in the farms and available to the community. However, the community also uses their food practices to set an example within the larger ecosystem as described by Joseph “you should buy Auroville [products] first and you should buy organic, using it politically [as a statement] to be able to make such a demand”.

In addition, the farmers do not think Auroville can be 100% self-sufficient, as consumption influences food production. They struggle with balancing ecological sustainability and economic viability, where financial numbers exclude the cost to the planet. Since Auroville's inception, land and water have continued to be concerns for food production, also affected by mainstream economics and policies of the outside world. For example, rising land prices, annexation, protection and passing ownership to the next generation or the policy of free water to farmers by the State Government, raise concerns about depleting water tables affecting longitudinal water management. However, in some instances, such negotiations with the outside world led to the creation of systems with increased sovereignty and self-sufficiency; an example is the recent dilemma of applying for an internationally recognised organic certification for the Auroville farms, which would allow them to sell their products outside Auroville and at a higher cost. However, the cost is considerable and would require the surrounding local village



(a) Community meal served at the Solar Kitchen offering a fixed vegetarian menu, featuring a mix of Indian and Western dishes.



(b) Solar kitchen has a 15-meter diameter solar concentrator, mounted on its roof, which is used for cooking through steam.

Figure 4: Interrelated food practices

farms to be organic as well to qualify for the certification. In these circumstances, the community decided to create its local organic certification to be able to implement and regulate it and help other local village farmers to be included as well.

Lolita: The thing is that a lot of people took the [IMO] certification (...) But the other, a lot [of] the other farms wouldn't do it and so we ended up just one or two farms doing it and then it just got too expensive (...) And then, [Name] actually came up with this idea ... it's called participatory organic certification (...) you get farms together, and then the farms themselves decide how they [are] going to be [organic]

Similarly, over time, the town has continued to develop an ecosystem of interconnected systems and practices to manage the production, demand and supply of food, like the use of time as an alternate currency, which is earned as a volunteer by working on the farms and can be exchanged for food grown on the farm. This place-based interconnected system is an example of hyper-local production, demand and supply. Another example is the community kitchens, which accommodate the surpluses and gluts and are already the biggest patrons of the food grown in the town. See Figure 4 for the community kitchen's images. These community kitchens also provide the residents with nourishing daily meals catering to both Indian and Western diets and are a site for social connections.

All these practices and systems highlight the interconnectedness of the overall food system itself and the community's attempt to strive to live an alternate lifestyle and negotiate the pressures of the outside world. This would not have been possible without the resident-led bottom-up governance, which creates sovereignty. These multi-scalar negotiations, both within and beyond Auroville, help build institutional support for long-term sustainability and for living a minimal, spiritually oriented life. Through this process, new institutions emerge that enable transformations in the local food system toward a resource-constrained, ecologically conscious mode of community life. Together, these interconnected systems form a constellation of institutional structures that support self-sufficiency, ecological sustainability, and economic viability.

5.3 Materialising the spiritual through on-ground action

The materialisation of the vision involves an ongoing process of interpretation and enactment, forming the basis of the town's efforts to live sustainably (see Figure 5). As such, bringing the vision into practice is a central part of daily life, with residents continually working to realise what they describe as "the dream." For example, Benson, a farm steward, very eloquently explained that the realisation of higher consciousness is part of forming conscious material practices, *"What we tried to do is to take that consciousness [vision] (...) and fix it in the earth physically (...). You can have spiritual attainment, but it has to be done in matter. Otherwise, it remains the same (...). It has to be physical. The ultimate solution has to be physical in our physical life because that's what we have (...). Otherwise, the world will continue [the same]."*

He further explained the idea of a 'third position', which can be interpreted to be its metaphysical nature. Here, the emphasis is on consciousness, and it goes beyond materialisation and conceptual understandings of sustainability. He used a spoon and asked *"how do you know this is a spoon?"* and explained it is the idea and the form. Therefore, the spoon is thought to be a spoon because we assign a name, form and function to an idea.

Using the same analogy, he explained that sustainability is an idea shaped within a neoliberal development agenda, which in turn dictates how sustainability is understood and applied as a concept. He added *"It [sustainability] has to be a totally new thing, initially it may be that, but it has to emerge into something that is at the same time, both [material and conscious] A third position. That we see the spoon in a different way, which is above form and matter and*



(a) Community hut used for public meetings and gatherings to discuss administrative tasks with residents and volunteers.



(b) Food growing practices on farms are carried out by volunteers every morning under the guidance of the Stewards.

Figure 5: Daily activities in Auroville

something else, which we cannot see, maybe unknown, but must exist somewhere".

In this way, sustainable living is framed as a superposition of concept and materiality, defined through consciousness. Spiritual living, then, requires deliberate, reflective practices carried out by the town's residents; this ongoing work constitutes the everyday negotiation of sustainability. The materialisation of the vision through everyday material negotiations constructs the groundwork for the long-term inception of practices and the functioning of infrastructures for the sustainability and mobilisation of the vision. This brings to the fore the interrelation of abstract thought, such as the vision, to on-ground practices where the vision is implemented through action at multiple stages - imagining, reasoning, and doing.

However, in everyday reality, the practice overrules the abstract spiritual vision, as they are based on lived experiences and tacit

knowledge built over a period of time. For example, the practice of food growing in the town is an instance where the theoretical and dialectic structures of the vision and its interpretations are surpassed by the knowledge generated through lived experiences and everyday negotiations. Grant, a farm steward, explains how the farms face everyday negotiations between conscience and practicalities.

Grant: I bought 500 seeds of tomatoes which are pretty costly and we saw that they are each one inch [of growth] and suddenly I have an attack of insect. Now, should I leave this eaten by insect? Or should I put a small molecule of pesticide to kill this insect? Now, this is again a very philosophical and practical thing.

Therefore, residents experiment with the possibilities of developing new ways of doing things in an attempt to live a conscious life for the realisation of the vision. Thus, the vision isn't about an endpoint or a long-term goal; it's about a process, a way of living, and the ongoingness of this gives it longevity and relevance across generations. These considerations foreground longer timescales, inspiring the formation and reproduction of practices and building institutional structures for social and ecological sustainability.

6 Discussion

In this section, we draw on our findings to build conceptual and theoretical contributions for the broader PD community, centring around visions as infrastructures that scaffold collective meaning, mediate negotiation and conflict, and enable the material and institutional realisation of shared ideals. We see infrastructuring as the continual practice of making and maintaining the social and material foundations that support participation in collective action and innovation. Here then, we discuss, firstly, the role of visions themselves within this activity as *generative infrastructures*, sustaining and guiding ongoing processes of participation and change through their (re-)interpretation in everyday life, and, secondly, the need for infrastructures that support communities in creating *institutional constellations of practice* for addressing complex and evolving challenges.

6.1 Visions as Generative Infrastructure

Our findings make visible visioning as an ongoing form of work — comprising interpretation, negotiation, maintenance, and repair — rather than a discrete design activity. In doing so, they reveal how a shared vision can be an infrastructure for longitudinal community development and sustainable living practices. Auroville's vision operates not as a fixed blueprint but as *generative infrastructure*. It provides a foundational element that enables ongoing interpretation, negotiation, and materialisation of sustainable practices across generations. This aligns with the conceptualisation of infrastructure as relational and embedded in social structures, while extending it to include aspirational and interpretive dimensions [59].

The vision's abstract nature, rather than being a limitation, emerges as a strength. Its openness allows for ongoing reflection on and adaptation of everyday practices in the community; this ongoingness aligns with experiments in living [44]. These everyday experiments carried out by residents of Auroville probe and test new ways of life, and explore collective practices for social and

cultural change. These practices, such as practices of sustainable food growing, are documented and circulated within the wider extended communities who *'do not necessarily identify themselves as social researchers'* [44]. They thus create interconnected systems used by everyday residents to build progressive futures in practice.

Auroville, as a case study, illustrates how tensions between individual interpretation and collective practice can serve as fertile ground for social innovation [51], enabling new forms of community-driven social and ecological infrastructure to take root. For example, divergent views on whether to pursue organic certification led residents to design their own participatory certification system. This locally governed institutional infrastructure reflects community values while supporting both ecological and economic sustainability.

More broadly, visions enacted through everyday experimentation function as abstract yet interpretable articulations that generate shared imaginaries, connecting individuals and communities. These experiments in living are sites where residents continually reinterpret and adapt the vision in response to challenges of self-sufficiency, economic viability, sustainability, and contemporary life. This generative quality distinguishes *'visions as infrastructure'* from more conventional forms of infrastructuring praxis in PD because it operates as a lever to open up alternative ways of thinking and doing. Prior PD research on infrastructuring focuses on laying out concrete tools, platforms, or organisational structures to bring together publics [19, 25] or surface tacit knowledge [17, 18], rather than on opening up alternative forms of future practice. For PD practitioners, this suggests a shift from treating visioning as a front-loaded activity toward supporting it as an ongoing participatory practice. Rather than aiming for early convergence or consensus, PD practices might focus on scaffolding collective sense-making over time—creating conditions in which multiple interpretations of a vision can be articulated, revisited, and productively held in tension.

Our work also reveals the importance of temporal considerations in infrastructuring for sustainability. While much PD work operates within project timescales of months or years, Auroville's evolution demonstrates how visions can support multi-generational development. This longitudinal perspective highlights the value of intergenerational practice and design for sustainability. This can be where each generation reinterprets and contributes to the materialisation of shared ideals within the participatory process through legacies and stewardship. Thus, extending beyond the traditional notions of participation, which typically focus on involving current stakeholders, to include consideration of how future generations might engage with [38] and reshape community infrastructures.

Auroville demonstrates how the community's shared vision operates less as a fixed goal and more as an evolving infrastructure of meaning that residents continually negotiate, reinterpret, and enact. This ongoing re-negotiation - visible in debates around spiritual interpretation, sustainability practices, and certification systems, forms the basis for collective organisation within the community. Through these interpretive and material practices, residents collectively build and sustain social and institutional infrastructures that embody their values of participation, ecological consciousness, and spiritual growth. In this way, working with the vision becomes a form of infrastructural work – a continuous process of connecting

shared ideals with the practicalities of everyday life in the community. The vision functions as infrastructure, as it is abstract or flexible enough to be interpreted in a plurality of ways, yet it is robust enough to form a shared orientation for collective action for the community.

We suggest that PD researchers, when working with communities on sustainability challenges, should create space for more abstract, interpretable visions for future thinking as an important first step in opening up alternatives with a view to developing concrete plans or socio-technological solutions. We found in our work that the vision is key to supporting multi-generational community development. It is important in this to balance openness for ongoing interpretation and realisation, with enough specificity through values or ideals, to provide meaningful purchase for taking action. In the case of Auroville, this translates into numerous everyday actions and the constellations of interconnected practices which create the basis of a shared community life.

6.2 Infrastructuring Constellations of Practice

The tension between vision and daily practices drives and mobilises everyday innovation in Auroville. This is not the grand forms of innovation by tech giants, but the tacit forms of tinkering and adaptation in everyday practice, which conceptualises innovation as a chain of interrelated, ambiguous situations [41]. Mahringer, building on Lucy Suchman's work [60] looks at innovation as an ongoing process defining meaning and coherence through practice by focusing on matters of concern and drawing on formal procedures to temporarily reduce ambiguity to advance innovation [41]. Similarly, residents in Auroville confront practical challenges of sustainability, food growing and economic pressures through the development of novel solutions, thus aligning with their interpretation of the spiritual vision through addressing material realities. We argue that the PD processes aimed at sustainability might benefit from explicitly designing for such tensions rather than seeking immediate resolution. Prior work in PD stages political conflict through provocative artefacts for agonism based outcomes [21], and others locate agonism in the ongoing infrastructuring of relations among heterogeneous actors [10]. These approaches shift agonism from designed representations of controversy to situated, long-term collaboration and negotiation [10], and these tensions might be mobilised in the context of sustainability visions leading to social innovation [43]. Therefore, agonism is necessary for building on-ground sustainable ecological and social outcomes when considering resource-constrained communities. From a PD perspective, this points to the importance of participatory infrastructures that can hold disagreement productively over time. Rather than resolving conflict, PD practices may play a role in sustaining spaces for deliberation, experimentation, and slow negotiation, allowing visions to remain generative rather than becoming fixed or dogmatic.

Our research reveals how sustainable living emerges not from a singular intervention but through the constellations of interdependent infrastructures. The interconnected systems of farms, community kitchens, alternative economies, and governance structures in Auroville demonstrate how sustainability requires holistic approaches that span multiple domains of community life. This

has important implications for PD practice when engaging with marginalised [47] or resource-constrained communities [8, 17]. Rather than focusing on discrete design interventions, researchers might consider how to support communities in developing constellations of interconnected systems that reinforce sustainable practices across different areas of life [8]. The participatory organic certification system developed by Auroville farmers exemplifies how communities can create their institutional infrastructures, which are operationalised at different scales [63] when existing systems fail to meet their needs.

PD has always built on collective civic agency [9, 26] and infrastructuring [18, 34] to create ongoingness of research praxis in the field. However, through our work, we highlight the need for mediating individual interpretation and collective action as seen in the case of Auroville's vision. While each resident brings their understanding of the vision, these diverse interpretations contribute to a shared, sometimes contested, direction for community development. This is in line with agonistic deliberation [10, 21] used in PD, but with a particular focus on individual contribution. This brings out a challenge in PD practice for sustainability, which is to honour and create space for individual agency while building collective capacity for change. Conflict here should not be seen as problematic, and the vision provides a 'safe space' for conflicting perspectives to be expressed, scaffolding agonistic deliberation. Thus, conflict forms part of the community's infrastructural capacity to sustain dialogue and reinterpretation of the vision over time. The town's governance frameworks, participatory institutions, and community forums act as infrastructures for negotiation that both enable and constrain how differences are expressed, deliberated, and resolved. Creating conditions under which conflicting interpretations can be surfaced and deliberated, however, the lack of more formal mechanisms for building consensus can also make decision-making and material change a slow, inhibiting process. For practitioners, this foregrounds the importance of designing and sustaining participatory infrastructures that can hold disagreement productively, allowing visions to evolve rather than become dogma and, as a result, lose their generative potential.

Building on this, we interpret the concept of the '*third position*', as articulated by one of our participants, for sustainability work in PD. We argue the third position to be a form of agency that transcends the individual-collective binary. Much in line with more-than-human work in PD [31] which expands participation to include non-human and ecological dimensions, we might ask for the spiritual context of Auroville, what it means to tap into the metaphysical dimension [3]. We suggest that PD researchers might explore how to create spaces for forms of participation that go beyond rational deliberation to include embodied, spiritual, or consciousness-based approaches to sustainability. The vision played a critical role in this for the Auroville community. A valuable direction then for future infrastructuring research could be to explore the co-creation of visions that emphasise these embodied, spiritual, and consciousness aspects of communities.

Taken together, these insights suggest several directions for future PD work, indicating that PD's contribution to sustainability may lie less in designing visions as fixed artefacts, and more in supporting the ongoing, messy work of visioning—even when

visions are co-created—through participatory practices that sustain interpretation, work productively with agonism, and support community-led innovation beyond project timescales.

7 Limitations and Future Directions

We acknowledge Auroville's unique context, its spiritual foundation, international composition, and relative autonomy, which may limit replicability. Additionally, residents may have presented idealised accounts to an academic outsider, potentially downplaying internal conflicts. Also, our data collection was constrained by interviewing only 16 participants from 2,500 residents during a three-week fieldwork, limiting our ability to capture the community's full complexity and build longitudinal trust.

Therefore, there is a need for further research around visions and their role in building and guiding sustainability outcomes. Future research should explore how visions-as-infrastructure translate to different contexts, particularly in resource-constrained communities. Since our study examined an existing vision rather than its creation process, future work should investigate how communities can participatively develop their own generative infrastructures for sustainable futures.

8 Conclusion

This study explores how shared visions function as infrastructure for longitudinal sustainable living. Through ethnographic inquiry of Auroville's spiritual community, we demonstrate that visions operate not as rigid blueprints but as evolving, interpretive infrastructures enabling residents to negotiate meaning and construct sociotechnical systems aligned with sustainability goals.

Through the conceptualisation of visions as infrastructure, we extend participatory design theory beyond tangible outcomes to include abstract, agonistic and aspirational dimensions that anchor long-term sustainability. Participatory future visioning, when open to ongoing reinterpretation, can scaffold community cohesion, experimentation, and transformation.

We encourage PD researchers to embrace longitudinal, approaches that accommodate ambiguity, diversity, and spiritual perspectives. This expands PD's role from facilitating discrete engagements to supporting sustained community-led infrastructuring for resilient, equitable futures.

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