



Research

Resilient utopias

Alex P. Baumber¹ , Bem Le Hunte¹, Betty O'Neill¹ and Claudia Pilon-Summons¹

ABSTRACT. Utopian thinking has intersected with the practicalities of community-building for thousands of years, with today's ecovillages being one recent expression of this nexus. Many utopian or "intentional" communities founded in the aftermath of World War 2 are now over 50 years old and have demonstrated a capacity to survive numerous disturbances in that time whilst retaining their essential function, identity, and sense of common purpose. Such communities provide an opportunity to better understand which factors impact on community resilience from a social-ecological perspective, as well as illuminating the relationships between utopian thinking and resilience building in complex adaptive systems. In this paper we present a case study of Auroville, India, and aim to identify the factors that have enabled the community's resilience over the past five decades. Results are presented from a series of semi-structured interviews with key stakeholders involved in management roles at Auroville and used to propose a model for community resilience at Auroville. The interview results confirm the broad applicability of the general resilience factors identified by previous researchers, especially the roles played by diversity, reserves, openness, modularity, nestedness, self-organization, and communication. The results also suggest other, more specific, factors have played a role in the social-ecological resilience of Auroville over time, including unity of purpose, creative mindset, and spiritual capital.

Key Words: *Auroville; ecovillage; intentional community; resilience; utopia*

INTRODUCTION

Utopias, ecovillages, and other intentional communities where people choose to live together to pursue a common purpose or lifestyle have a history dating back thousands of years (Clarence-Smith 2019). Some of the communities that were founded amidst the spiritual and ecological awakenings of the 1960s now exceed 50 years of age, including the "spiritual-social experiment" that is Auroville, a community of around 3000 residents in Tamil Nadu, India (Kapoor 2007). Over more than five decades, Auroville has managed to survive and flourish despite various system shocks, including leadership changes, resource constraints, social divisions, and natural disasters (Namakkal 2012). In this paper, we seek to identify what makes a utopia resilient. Why do some intentional communities succumb to external or internal disturbances after a relatively short period of time, while others demonstrate longevity in the presence of a range of threats? What are the factors that can enable intentional communities such as Auroville to respond to disturbances, reorganize, and adapt in ways that allow them to retain their essential function and identity?

Utopian thinking may seem at first to be at odds with the principles of social-ecological resilience. Although utopias are commonly perceived of as a "fixed ideal of perfection" (Clarence-Smith 2019), resilience theorists emphasize the importance of reorganization and adaptation to avoid collapse (Holling 1973, Folke 2006, Meadows 2008, Walker 2019). Indeed, in his 2019 book, *Finding Resilience*, Brian Walker cautions readers, "Don't aim for some utopia," advising them instead to celebrate change and adaptation (Walker 2019:148). However, many researchers of utopian thinking have challenged the idea that utopias should be "fixed" or "perfect" and instead recognize that the "intentional communities" where utopian thinking plays out in the real world are sites of ongoing experimentation, adaptation, evolution, and aspiration (Bloch 1986, Kapoor 2007, Sargent 2010, Clarence-Smith 2019). Auroville presents a useful case study of how these

tensions have played out in a real-world intentional community over a half-century of existence.

BACKGROUND

Intentional communities and utopias

Intentional communities have a long history as part of the uniquely human capacity to imagine better ways to live. Buddhist and Christian monastic traditions date back at least 2000 years, with more recent examples including the "first-wave" utopian societies of the 19th century, the second-wave "hippie communes" of the 1960s, and a third wave of sustainability-related communities or "ecovillages" over recent decades (Clarence-Smith 2019). The Global Ecovillage Network, founded in 1995, now incorporates approximately 10,000 communities in 144 countries (Global Ecovillage Network 2018).

Although the terms "utopia" and "intentional community" may sometimes be used interchangeably, utopia is in fact a much broader term. Utopias may take many forms, from Plato's philosophical imagining of an ideal state in *The Republic* to utopias that are purely literary, such as Aldous Huxley's *Island*, right through to lived communities such as Auroville. Where the terms "utopia" and "intentional community" overlap are in real-world communities in which groups of people collectively organize their lives around a shared purpose with a degree of separation from mainstream society (Sargent 1994, Kozeny 1995, Sargisson and Sargent 2004, Cnaan and Breyman 2007, Sager 2018). In such communities, utopian ideals interact with real-world challenges to produce a dynamic "utopian function" that is characterized by experimentation (Kapoor 2007, Sargent 2010, Clarence-Smith 2019). Fazey et al. (2018:207) argue that, far from representing "unfeasible and implausible daydreaming," the utopian impulse can be harnessed to challenge taken-for-granted visions of the future and enable radical societal change.

Some of the utopian communities founded in the 1960s, including Auroville, are now over 50 years old. In contrast, Forster and

Erratum: In the original publication of this paper Figures 7 and 8 were missing from the pdf version. The figures were added on 8 June 2022.

¹University of Technology Sydney

Wilhelmus (2005) estimate that 80% of intentional communities fail in their first two years. Christian (2003), drawing on interviews with multiple community founders, contends that only 1 in 10 intentional communities will ultimately succeed. Reinhalter (2014) argues that these statistics alone make Auroville's five decades of history a significant indicator of resilience.

One well-known 19th century example of a failed utopia is Brook Farm in Massachusetts (1841–1847), which failed because of combination of acute disturbances (disease and fire) and chronic problems with debt, poor planning, a lack of critical skills, and interpersonal conflict (Van Keuren 2004). Examples of failed utopias contemporaneous with Auroville include the Drop City artists' commune in Colorado (1965–1973) and the Soul City multiracial community in North Carolina (1969–present). Drop City suffered from a lack of self-sufficiency in key resources, difficulties controlling the influx of people attracted by national media attention, and the disillusionment of its founders with the community's original artistic vision (Sadler 2006). Soul City was instigated in 1969 by civil rights leader Floyd McKissack with federal government support, but ultimately dwindled to a few dozen residents because of a combination of white hostility to black empowerment, accusations of financial mismanagement, and the withdrawal of government funding (Strain 2004).

Christian (2003) argues that “structural conflict” is the leading cause of failure for intentional communities, stemming from a lack of clear decision-making processes. They argue that the risk of structural conflict can be reduced by creating a shared vision document, implementing fair, participatory governance processes, ensuring that key legal and financial decisions are written down, learning good group communication skills (including conflict resolution), selecting new members based on emotional maturity and shared vision, and taking the time to learn the skills necessary for running a community (Christian 2003). Some of these factors have also been cited by other researchers, including conflict resolution mechanisms (Sargisson and Sargent 2004) and recruitment strategies (Sager 2018). Other researchers have highlighted the importance of adaptation over time, including a philosophy of experimentation (Clarence-Smith 2019), adaptability of critical theory (Alexander 2001), and leadership that is open to changes in governance (Forster and Wilhelmus 2005).

Although previous researchers have generated a range of insights into intentional community survival and failure, a systematic analysis is yet to be undertaken that draws explicitly on the principles of social-ecological resilience in complex adaptive systems.

Enablers of social-ecological resilience in complex adaptive systems

In this article, we follow Brian Walker and David Salt's framing of resilience as “the capacity of a system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks” (Walker and Salt 2012:3). This builds on earlier work by Holling (1973) on ecological systems, Folke (2006) on social systems, and many other scholars including Levin et al. (1998), Doubleday (2007), and Meadows (2008). Under this approach, resilience is about more than simply resisting disturbance or “bouncing back,” but rather involves responding to disturbances by reorganizing and adapting in a manner that

maintains the system's identity and keeps it functioning in “much the same kind of way” (Walker and Salt 2012:3).

Enabling adaptation while maintaining a core system identity can be a difficult balancing act, especially for social systems in which stakeholders must determine which functions, structures, and feedbacks are essential to the system's identity. In ecological systems this may be a question for scientists or other outside observers to answer, but in social systems it is inevitably a subjective process that requires consideration of the cultural values, historical context, and power dynamics of those within the system. Cote and Nightingale (2012) contend that such factors have often been overlooked in resilience research, with Meerow and Newell (2019) arguing that they are critical to answering questions of “resilience for whom, what, when, where and why.” This normative aspect of resilience is also apparent in arguments that resilience is not necessarily a good thing in all circumstances. System states that are undesirable to many actors, such as degraded farmland, dictatorships, and entrenched poverty, may prove to be highly resilient in the face of repeated disturbances (Walker 2019).

Various resilience theorists have sought to identify factors that can enhance or reduce resilience in complex systems. Where good information exists about the type and scale of likely disturbances, specified resilience strategies may be employed, such as taking out insurance policies against fire or flood, training key stakeholders to prepare for known threats, and stockpiling food or other key resources. However, in cases where potential disturbances are unknown, unexpected, or unprecedented, it may be important to enhance general resilience, such as through the enabling factors identified by Carpenter et al. (2012) and shown in Table 1.

The general resilience factors shown in Table 1 have been explored in diverse contexts, including community development (Cafer et al. 2019), cities (Iwaniec et al. 2020, Suárez et al. 2020), enterprises (Erol et al. 2010), farming (Meuwissen et al. 2019), trade (Kharrazi et al. 2020), and climate change mitigation (Baumber et al. 2020). It is not simply a matter of enhancing each factor endlessly, as some factors need to be balanced against others. For example, Walker and Salt (2012) argue that enhancing reserves and feedbacks will generally enhance resilience, but for diversity it is a matter of finding the right level, and trade-offs may sometimes be required between factors such as openness and modularity.

Social aspects of resilience are particularly relevant to a community such as Auroville, but have also been a contentious area of scholarship (Cote and Nightingale 2012). Walker and Salt (2012) combine leadership and trust from Table 1 with social networks within a broader category of social capital. Other researchers have added governance structures (Cafer et al. 2019), social learning (Berkes 2009), equity (Suárez et al. 2020), and linking social capital that helps to bridge strangers across power gradients (Vårheim 2016). Cote and Nightingale (2012) argue that it is important to treat each community as a unique complex adaptive system to understand its situated resilience. As such, this study seeks to understand the factors that may have enhanced or threatened the social-ecological resilience of Auroville over time, including the roles played by the general resilience factors identified in prior research.

Table 1. Enabling factors for general resilience. Adapted from Carpenter et al. (2012).

Diversity	Reserves	Monitoring/ Information flow
Includes cultural diversity, biological diversity, and response diversity (i.e., having a range of possible options available when a disturbance arises).	Extra capacity or buffers that are held in reserve and can be mobilized after a disturbance (e.g., labor, capital, food, seedbanks, social memory, goodwill).	Capacity to gather information in a shared, transparent, and regular fashion.
Modularity	Feedbacks	Nestedness
Independent or autonomous units within the whole. These allow for self-organization at the local level and prevent threats from spreading across the system. There may need to be a trade-off between modularity and openness.	Balancing feedbacks that push back against a disturbance (e.g., people who defend an entity when shocks arise). Reinforcing feedbacks that keep the system moving in the desired direction (e.g., incentives that reward desired behavior).	Strong connections to higher system levels (e.g., a local entity that is linked to national and global scale support systems).
Openness	Leadership	Trust
Strong connections between your system and neighboring systems. These may enable trade or act as buffers against external shocks. There may need to be a trade-off between openness and modularity.	Leaders who recognize: Barriers to resilience and seek to overcome them Enablers of resilience and seek to enhance them	Trust enables people to collaborate effectively in the presence of uncertainty.

Auroville as a case study in utopian resilience

Auroville was founded in Tamil Nadu in South India in 1968, based on the utopian vision of Mira Alfassa (also known as “The Mother”) and the Integral Yoga philosophy of Sri Aurobindo, with support from UNESCO and the Indian Government (Kapoor 2007). Early residents included a mix of Indians and foreigners from the Sri Aurobindo Ashram in nearby Pondicherry, young Westerners seeking alternative lifestyles, and local Tamil families attracted by work opportunities (Clarence-Smith 2019). Over the years, new residents have arrived from overseas and from surrounding villages and many children have grown up and remained in the community, swelling the population to around 3000 people of at least 58 different nationalities (Clarence-Smith 2019).

Auroville was founded on a plateau of barren uncultivated land purchased from local Tamil families, “a large stretch of red desert, surrounded by desiccated farms and small villages” (Namakkal 2012:75). Considerable effort has been put into greening the community over the past 50 years, including tree-planting, cultivation, and the creation of a green belt surrounding the township (Kapoor 2007). Outreach programs have also been implemented to connect Auroville to surrounding villages, including in relation to health, education, environmental regeneration, and women’s development. Although the education programs in particular have been cited as examples of successful outreach (Kapoor 2007), relations between Auroville and surrounding Tamil villages have also been criticized as hierarchical and neocolonial (Namakkal 2012).

The shared vision to which Aurovilians subscribe is described in the Auroville Charter (Fig. 1) as an “omnipresent referent that silently guides the people who choose to live and work for Auroville” (Auroville.org 2020a). Amongst the principles for social organization contained in the charter are the notion that Auroville belongs to humanity as a whole rather than anybody in particular, that Auroville is a site of material and spiritual research toward a living embodiment of human unity, and that it is a place for “unending education” that draws on diverse sources of knowledge to “spring towards future realisations.” As such, the

charter neatly illustrates the principles of shared purpose and experimentation that underpin modern conceptualizations of utopias (Kapoor 2007, Sargent 2010, Clarence-Smith 2019).

Fig. 1. The Auroville Charter. Source: (Auroville.org 2020a).

The Auroville Charter

1. Auroville belongs to nobody in particular. Auroville belongs to humanity as a whole. But, to live in Auroville, one must be a willing servitor of the Divine Consciousness.
2. Auroville will be the place of an unending education, of constant progress, and a youth that never ages.
3. Auroville wants to be the bridge between the past and the future. Taking advantage of all discoveries from without and from within, Auroville will boldly spring towards future realisations.
4. Auroville will be a site of material and spiritual researches for a living embodiment of an actual human unity.

Several authors have grappled with the question of whether intentional communities such as Auroville should be defined as utopian. Clarence-Smith (2019) acknowledges that Auroville does not fulfil the “fixed ideal of perfection” that is commonly associated with utopias, but argues that the problem lies in the mistaken view that utopias should indeed be perfect. Following the work of Bloch (1986), Clarence-Smith defines Auroville’s utopianism as “prefigurative,” whereby the founding ideals of the community inform a process of applied experimentation that leads to ever-evolving outcomes. Kapoor (2007) and Sargent (2010) also support this framing of utopias as sites of ongoing experimentation and adaptation. According to this view, the utopian practice of Aurovilians is evidenced not by the attainment of perfection but by their ongoing attempts to adapt to the various pressures they face as a community in a manner that is informed by their shared beliefs.

Although no systematic study has been undertaken into the resilience of Auroville over time, previous researchers have identified a range of disturbances that the community has encountered and various factors that have aided its survival and adaptation at those critical times. Indeed, in 1998 Auroville was praised specifically for its resilience by Federico Mayor, a former UNESCO Director-General:

Auroville's ability to survive and evolve ... bears witness to the strength of the founding principles and the resolve and perseverance of its citizens. (Auroville.org 2020b)

The notion that nobody “owns” Auroville led to arguably the biggest disturbance that the community has encountered. The death of The Mother in 1973 precipitated a protracted conflict over control of Auroville (Namakkal 2012). This was driven in part by the fact that The Mother had not provided a clear blueprint for how the community should be governed, advocating “divine anarchy” instead (Clarence-Smith 2019). Christian (2003) argues that the lack of clearly defined governance structures is a leading cause of the structural conflict that results in the failure of many intentional communities.

In the case of Auroville, control was initially exerted after The Mother's death by the Sri Aurobindo Society, before the intervention of the High Court of India resulted in the Auroville Foundation being granted control of the community's assets in 1991 (Namakkal 2012). The Foundation exercises managerial control over Auroville through the Governing Board, which is responsible for promoting the ideals of Auroville, approving policies and programs, administering a master plan, and coordinating fund-raising (Kapoor 2007). The Governing Board is advised by a Residents' Assembly, which is primarily an advisory body, but also has the power to decide on the admission of new residents and the termination of residency rights. Clarence-Smith (2019) argues that this combination of high-level government support and self-governance at the local level has been critical to Auroville's growth and survival since The Mother's death.

The death of The Mother is Auroville's clearest example of an acute disturbance or large-scale one-off system shock (Walker et al. 2012). The 2004 tsunami is another example, which did not impact Auroville directly but led to a sustained recovery and rehabilitation effort directed at surrounding villages (ACDC 2006). Other disturbances could be regarded as chronic in that they involve long-term issues that ebb and flow, affecting “slow variables” that change gradually over time (Walker et al. 2012). These include financial challenges and resource constraints stemming from the economic weakness of many of the community's production units (Kapoor 2007) and social divisions between the different nationalities present in the community and between Aurovilians and surrounding Tamil villages (Namakkal 2012).

The disturbances that have been documented by previous researchers of Auroville highlight the complex interplay between the resilience factors shown in Table 1. Leadership from The Mother was crucial to overcoming early challenges for the community (Kapoor 2007), and the leadership void that followed her death very nearly led to the community's collapse. However, Clarence-Smith (2019:61) also argues that part of Auroville's success has been due to avoiding the “pitfalls of charismatic

leadership” that have befallen some other communities. This is in turn due to The Mother's preference for self-organization (or modularity in Table 1), which may have been a crucial factor in managing the diversity that is both the community's great strength (Kapoor 2007) and the source of many of its social divisions (Namakkal 2012).

As with the tensions between leadership, self-organization, and diversity, there also appear to be tensions between nestedness, openness, and modularity. Auroville's independence from surrounding state and municipal governance structures has allowed it to develop its own unique identity, but external support from the Indian Government (i.e., nestedness in Table 1) was perhaps the most critical factor in its survival following The Mother's death. Through this case study research, we aim to better understand how the complex interplay between resilience factors such as modularity, nestedness, openness, diversity, and leadership has enabled Auroville to survive and adapt over the past five decades.

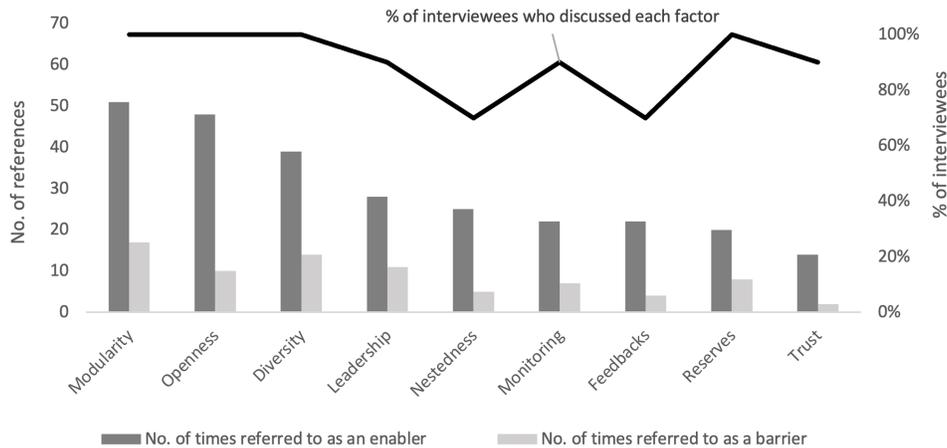
METHODS

Ten interviews were undertaken in person at Auroville in January 2020, with the key criterion for recruitment being that the interviewees hold (or have held) a management role within the community. A snowballing strategy was employed, starting with initial referrals by key informants known to the research team through previous visits to Auroville. Each participant was then asked to suggest other people we could speak with who could offer a different perspective. This approach and sample size is consistent with a phenomenological research approach, whereby participants are selected based on having common lived experience, but differing in terms of their individual characteristics and perspectives (Moser and Korstjens 2018). The selected participants had diverse management experience, including in relation to construction, education, art projects, youth activities, management of archives, outreach to neighboring villages, and the establishment of new sub-communities at Auroville. The interviews were conducted in line with human research ethics approval from the University of Technology Sydney, including the signing of consent forms and de-identification (by assigning each participant with a code letter from A to J).

The interviews were semi-structured and conducted in English, with each participant asked an opening question about their own personal history at Auroville. They were told that the study was looking at resilience, using Walker and Salt's (2012) definition, and asked to discuss any disturbances that the community had encountered and the factors they felt had influenced resilience at those times. Participants were then shown cards (spread out in a random manner) with descriptions of the nine enablers of general resilience from Table 1 (Carpenter et al. 2012). Participants were asked to comment on any cards they felt were relevant to the resilience of the Auroville community.

Interview data was analyzed using NVivo 12 software through a combination of in vitro coding, whereby codes are selected from literature or other sources prior to analysis, and in vivo coding, whereby codes emerge from the data (King 2008). The nine general resilience enablers from Table 1 were used as starting codes (in vitro coding), with additional codes created for other enabling factors that did not fit into the nine categories (in vivo coding).

Fig. 2. Most-commonly cited general resilience factors in interviews.



Additional codes were created for sub-factors under each of the broader enabling factors, to record whether a factor had been cited with or without prompting, i.e., before or after being shown the cards, and to record the types of disturbances cited by participants (subdivided into “acute” and “chronic” disturbances).

RESULTS

General resilience factors

Each general resilience factor from Table 1 was discussed by a majority of interviewees and was more commonly discussed as an enabler than a barrier (Fig. 2). Sub-factors were also identified for each factor (Fig. 3), with sample quotes provided in Table A1.1 (Appendix 1).

Modularity, Openness, and Diversity were the general resilience factors most commonly discussed by participants overall, both before and after prompting (Fig. 4). Modularity related both to the boundaries between Auroville and the outside world (i.e., entry policy), as well as self-organization, decentralization, and the existence of multiple sub-communities within Auroville. This was reflected in statements that “we are very decentralized ... people do what they want” (Participant A), “everybody just organizes themselves” (Participant C), and “there’s the farm group, the forest group... I’m hoping to do something similar around higher education ...” (Participant F).

Aside from the ability for people to join and leave Auroville, references to Openness also covered exchanges of ideas and knowledge and relationships with neighboring villages, e.g., movement of workers and outreach services such as education. Although most participants cited Openness as a strength (e.g., “people keep coming and new energy is coming ... it’s not stagnant,” Participant E), many also affirmed Carpenter et al.’s (2012) contention that Openness and Modularity must be balanced against one another. For example, statements relating to the movement of people into Auroville included the following:

- “There’s a one-year probation period ... But you know, it’s just little hurdles. If you want to be, you’ll be. If you don’t, you know ...” (Participant A)

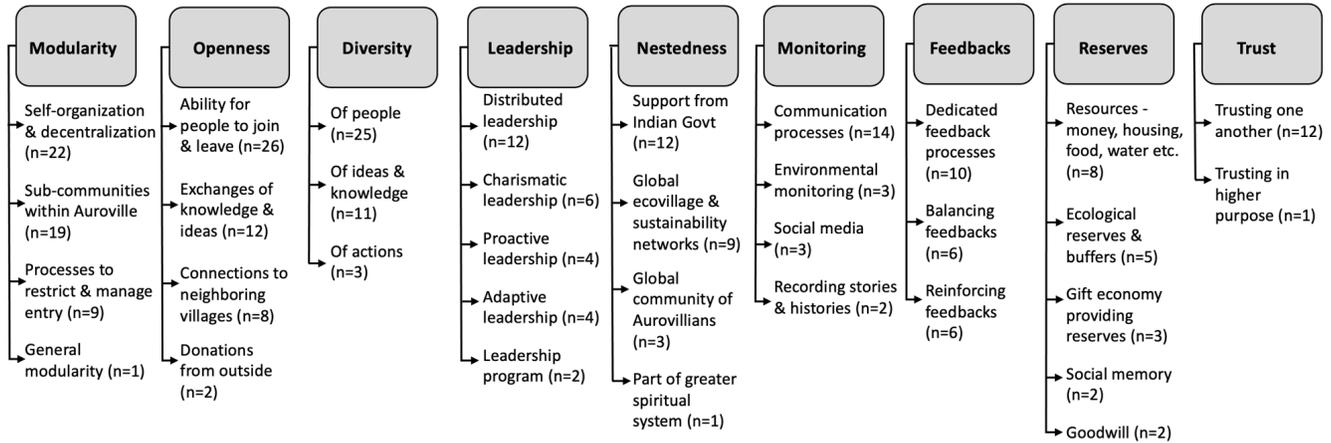
- “And in the openness, there are difficulties that come as well ... we’ve now got security in Auroville and we’ve got barriers at the entrance and stuff, you know?” (Participant I)
- “You have other people judging who should be in Auroville and who should not be in Auroville. The dynamic of that is never very ... It has to be really, really carefully looked at. And we keep vacillating on getting too strict and not ...” (Participant B)

References to Diversity focused mostly on the value of having so many different people from around the world at Auroville, e.g., “you have also the multi-culturalism here that’s a very richness, a great richness, which is to be appreciated” (Participant B), “I find Auroville as one of the few places on the planet that is explicitly about that, explicitly about how do we do this together as individuals, this unity in diversity” (Participant F), and “this is the intention of Auroville ... the intention is human unity ... to be united in diversity. Yes. But a long way to go” (Participant H). As indicated in the latter comment, diversity can pose challenges around social conflict, which were mentioned in around a quarter of the references to diversity.

References to Leadership included both the distributed nature of leadership at Auroville and the role played by charismatic leaders such as The Mother and Sri Aurobindo, the founders of Auroville and its philosophy. Nestedness was linked mostly to support from the Indian Government and links to global ecovillage or sustainability communities. Monitoring and Feedbacks showed a high degree of overlap, particularly around communication processes such as restorative circles, which were employed to prevent conflicts from escalating (i.e., a balancing feedback), for example, “So we have restorative circles, we have of course, arbitration, mediation, we have a conflict resolution group, we have another group called Koodam, you know, which tends to resolve all these things” (Participant B).

The general resilience factors mentioned least by participants were Reserves and Trust. Reserves were most commonly discussed in relation to resources such as money, food, housing, and water, as well as in relation to ecological reserves and buffers such as trees and soils. Where trust was mentioned explicitly, it was largely

Fig. 3. Sub-factors for enablers of general resilience (n = number of times each sub-factor was discussed).



in relation to trusting other people, with one participant mentioning trust in a higher purpose.

Emergent factors

The emergent factors (Fig. 5) represent potential enablers of resilience that do not fit neatly within Carpenter et al.'s (2012) nine enabling factors for general resilience. These mostly relate to shared elements that Aurovillians have in common, such as values, worldview, experiences, processes, and ways of viewing one another. Two participants also discussed scale, noting that the size of Auroville allowed for sufficient resources and opportunities to be resilient.

Although worldview and values are related, they are distinguished on the basis that a shared worldview, i.e., beliefs, teachings, and vision, may enhance resilience by bonding people together irrespective of the specific values that feature in that worldview. In contrast, a shared value may or may not enhance resilience, depending on what the value is, e.g., a creative mindset may enhance adaptive capacity more than a strict adherence to tradition. The interview participants were able to articulate that Aurovillians not only held a shared worldview based on common beliefs and teachings, but also that the specific values related to that worldview helped the community to be more resilient.

The shared worldview expressed by participants was related to the teachings of Sri Aurobindo and The Mother, a belief in the divine, i.e., potential to reach a higher consciousness, and the shared vision of building a community based on these principles. Many of the values expressed by participants placed an emphasis on change, growth, and adaptation and were thus grouped together as “creative mindset,” including sub-categories of experimentation (n = 14), aesthetics and art (n = 13), personal growth (n = 9), pioneering spirit (n = 8), and a plasticity of approach (n = 8). In some cases, these values were explicitly linked to teachings and beliefs (e.g., “Mother was the most plastic person I know of” - Participant A), while in other cases they were linked to the culture established by Auroville’s pioneers (e.g., “The people who were drawn to Auroville were rugged” - Participant F) or the participant’s own life experiences (“Changing directions in life. A parting from family to another country. It’s everything that makes you very strong” - Participant E).

Aside from a creative mindset, other values linked to resilience included inclusivity (n = 17), acceptance/humility (n = 12), individual agency (n = 12), and rejection of ownership, money, and status (n = 8). Although some of these values have clear links to one or more of Carpenter et al.’s (2012) general resilience factors, e.g., inclusivity to Diversity and individual agency to Modularity, they were classed as separate emergent factors on the basis that they represent social values rather than simply characteristics of the system. For example, it is possible for a community to have a high level of diversity without valuing inclusivity, e.g., highly segregated societies.

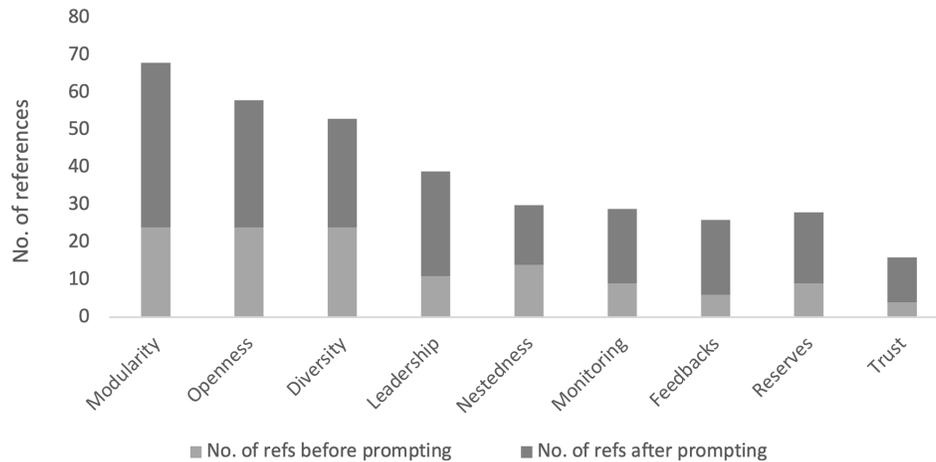
Disturbances

When asked about disturbances at Auroville, participants most commonly cited chronic challenges such as governance issues, community divisions, and resource shortages (Fig. 6). Many references to governance issues (especially entry policy) were cross-coded with Modularity (n = 10) and Openness (n = 8) and most references to community divisions were cross-coded to Diversity (n = 7), such as “60 different nationalities in one small place that don’t speak a single language commonly, also is this big epitome of misunderstandings” (Participant C; Fig. 7).

The most commonly discussed acute disturbance was the death of The Mother in 1973. Other acute disturbances included natural disasters (cyclone and tsunami) and development proposals (a proposed new highway). When discussing the factors that helped Auroville cope with these disturbances, it was notable that some of the general resilience factors that were less prominent overall were mentioned specifically in relation to these acute disturbances, including the following:

- Nestedness following the death of The Mother: “the Government of India, the Parliament of India passed a law called the Auroville Foundation Act and took it out of their hands [the Sri Aurobindo Society].” (Participant A)
- Leadership in relation to the Death of the Mother: “She had passed away in '73, in November of '73 ... six months later, everything was still, you know, very much on track because The Mother had put a huge force here and energy. And even for the next year, things were going quite well, but then things started to go badly.” (Participant B)

Fig. 4. General resilience factors discussed by participants before and after prompting.



- Reserves and natural disasters: “within two or three days of expressing our need, we got donations to rebuild the place” (Participant E)

DISCUSSION

Connecting resilience to the history and philosophy of Auroville

Some of the general resilience factors that were most commonly cited by participants are explicitly expressed in the Auroville Charter, particularly diversity, openness, modularity, and monitoring/information flows. Progress toward the guiding philosophy of “unity in diversity” (Sri Aurobindo 2005) was seen by many participants as Auroville’s greatest achievement. However, this same diversity was also central to some of the social conflict and inequality identified by participants, which has also been discussed in previous research by Namakkal (2012) and Litfin (2014).

Walker and Salt (2012) argue that there is no optimal degree of diversity in a complex system and that simply increasing diversity may not be sufficient to ensure resilience. They highlight “response diversity” as particularly important for resilience because it enables the system to adapt quickly in response to unpredictable disturbances and external pressures. In the case of Auroville, response diversity is enhanced by having people with a range of different skills and ideas, as well as a culture that encourages people to carve out their own niche within the system, e.g., in education, health, architecture, and sustainability. However, having so many different nationalities and interests at Auroville also creates the potential for conflict. Other resilience factors appear to play important roles in managing the challenges that diversity can create, including the need to balance openness and modularity in terms of entry policy and decentralization, the need for information flows and feedbacks to resolve conflicts, and the need for shared values to create a sense of unity amongst diverse community members.

An openness to new people and ideas is evident in both the participant responses and the Auroville Charter’s references to education, research, and discovery. However, the charter also emphasizes that openness should not be without conditions,

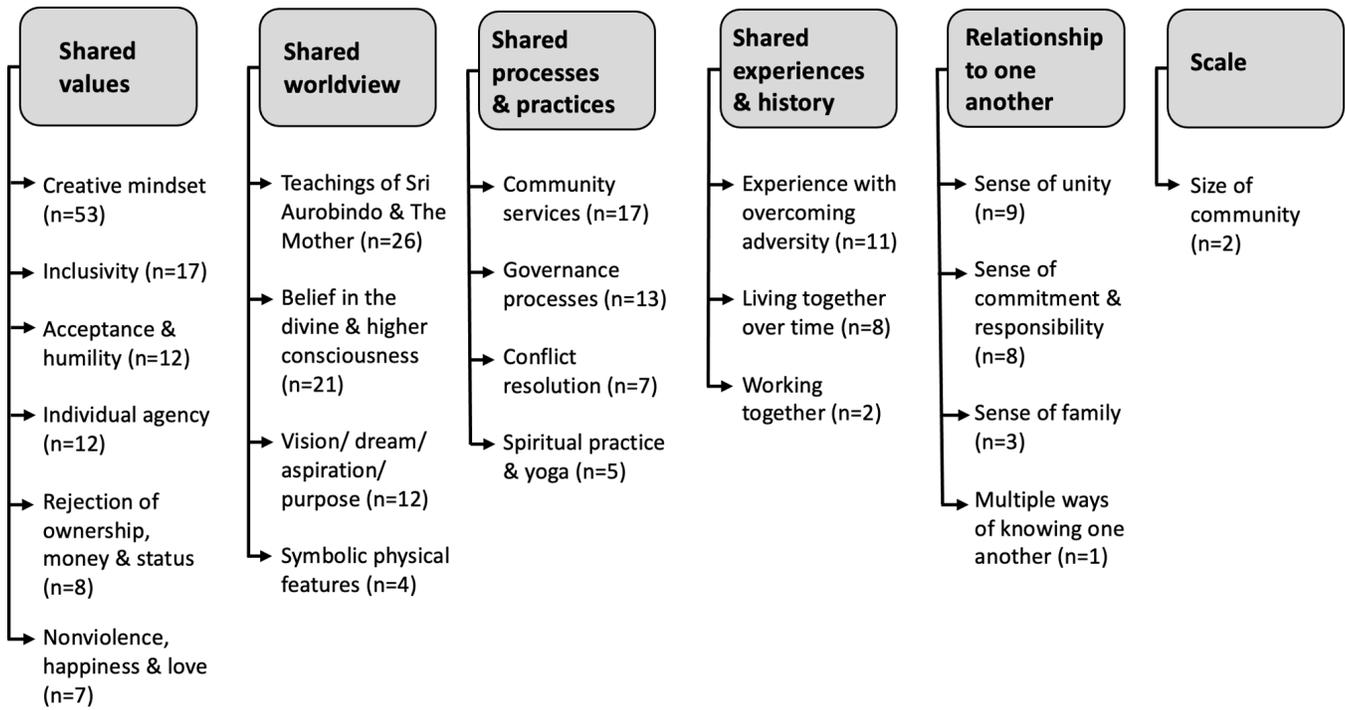
requiring that entry be limited to “willing servitors” of the Divine Consciousness. This boundary-setting is a clear example of employing modularity to prevent or dampen shocks that could be introduced from outside and spread through the system. Sadler (2006) cites a failure to control an influx of new residents as a key factor in the failure of the Drop City artists’ commune in Colorado in the 1970s.

Namakkal (2012) highlights how conditions of entry were seen as essential to the effective growth and survival of Auroville from its earliest days. As shown by the participants’ responses, striking the right balance between openness and boundary-setting remains a controversial topic at Auroville today. However, the presence of ongoing low-level conflict over factors such as entry policy may in fact have enhanced the system’s resilience over time by stimulating the development of conflict resolution mechanisms, which are essential for preventing the collapse of intentional communities (Christian 2003, Sargisson and Sargent 2004).

Nestedness and leadership are not explicitly mentioned in the Auroville Charter, but their relevance at times of disturbance was noted by both interview participants and previous scholars. This is particularly notable in relation to the death of The Mother. Although The Mother’s aversion to defining a system of governance may have weakened the community’s resilience at this time and exacerbated the structural conflict that can lead to community collapse (Christian 2003), other resilience factors may have compensated for these shortcomings. Leadership at the local scale and nestedness, i.e., support from the Indian Government, were critical to the survival of the community at that dangerous time and led to significant governance reforms that increased participatory decision making (Kapoor 2007, Clarence-Smith 2019). A deeper conceptualization of nestedness could also take account of the broader spiritual system from which Aurovilians draw strength and a sense of purpose, which is somewhat different to the more utilitarian notion of nestedness employed by Carpenter et al. (2012).

Reserves require careful consideration as an enabling factor for resilience, especially in light of the original vision of Auroville as

Fig. 5. Emergent enabling factors for resilience at Auroville.



a “money-less” society (Namakkal 2012). Donations contributed by networks of supporters around the world have been a significant source of Auroville’s financial reserves over time (Kapoor 2007) and interviewees cited their importance for recovering from natural disasters. The withholding of these reserves during the conflict that followed The Mother’s death threatened the resilience of the community and the deprivations of that time ultimately led to the present maintenance system in which those working for Auroville receive a monthly stipend (Clarence-Smith 2019). However, this has not eliminated wealth disparities between Western and Tamil residents (Namakkal 2012, Litfin 2014) and between residents running commercial services and those dependent on the maintenance stipend (Kapoor 2007). As such, the role of financial reserves cannot be fully understood at Auroville without also considering questions of equity.

Looking beyond the nine general resilience factors from Carpenter et al. (2012), some of the emergent factors identified through the interviews are also evident in the Auroville Charter. The “creative mindset” values of experimentation, creativity, and personal growth are clearly promoted through the charter’s references to “unending education,” “constant progress,” and “future realisations.” Similarly, the charter’s reference to “Divine Consciousness” was echoed by many participants as part of their shared belief system. Furthermore, the very existence of a charter that outlines a shared vision and worldview is an enabling factor for resilience, with Christian (2003) arguing that many intentional communities fail because they do not document their shared values. The charter plays an important role in generating trust and unity and in defining the “identity” of the system state that Aurovilians seek to maintain (Walker and Salt 2012). Indeed, one

of the reasons that trust was rarely mentioned explicitly by participants may be because it is implicit in the notions of unity and sharing that participants discussed instead.

Implications for resilience theory and intentional communities

Overall, the interview results indicate that the nine general resilience factors from Carpenter et al. (2012) are relevant to intentional communities, but the results also suggest the importance of other factors, such as the shared worldview arising from common teachings and beliefs, a creative mindset, and a sense of unity. Furthermore, the results highlighted important nuances, such as the tension between modularity and openness, the overlap between monitoring and feedbacks and the idea that self-organization may involve more than simply having a modular system structure.

Taking account of these results, Figure 8 presents a model for how resilience has been enabled at Auroville based on the interviews and previous studies (e.g., Kapoor 2007, Namakkal 2012, Clarence-Smith 2019). The model incorporates most of the factors from Carpenter et al.’s (2012) general resilience framework along with the following adaptations:

1. Ten enabling factors divided into three categories: structure (holding), individual and social capital (being), and ideology (guiding).
2. The creation of a “Semi-permeability” category that combines openness with the boundary-maintaining aspect of modularity, reflecting the fact that resilience is enabled by striking the right balance between these factors (Carpenter et al. 2012).

Fig. 6. Acute and chronic disturbances cited by participants.

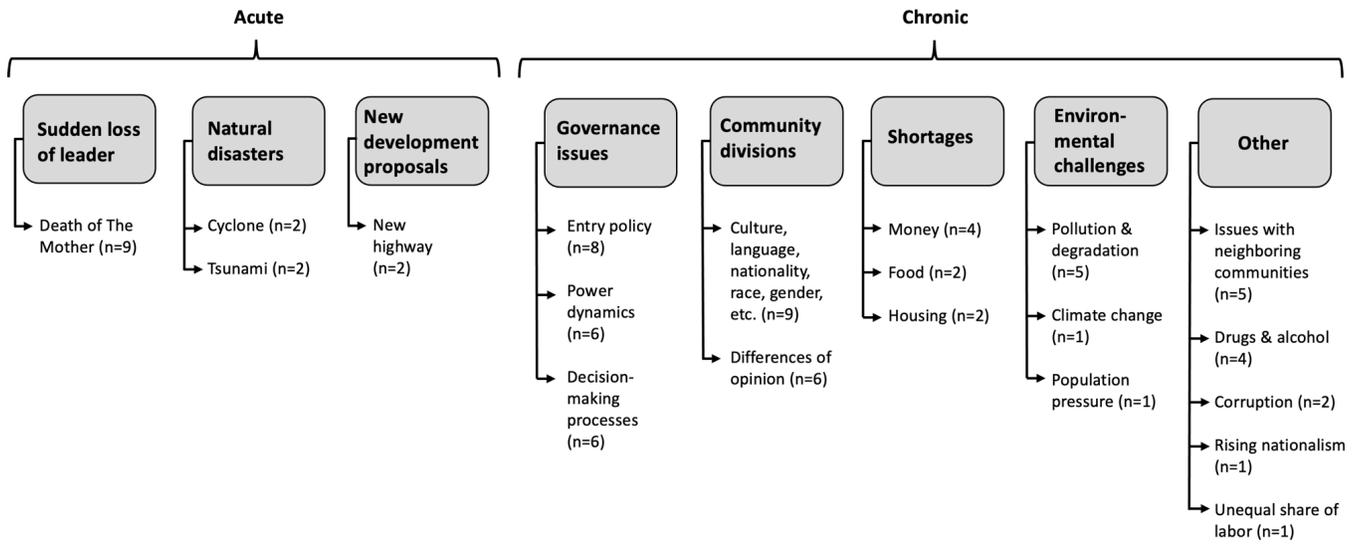


Fig. 7. Cross-references between acute disturbances and general resilience factors.

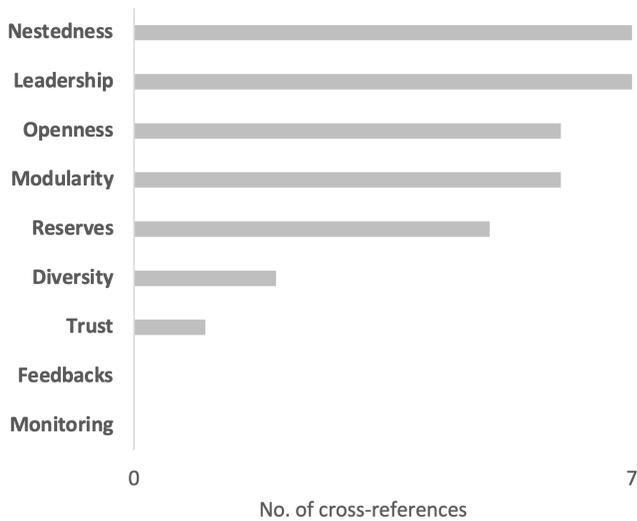
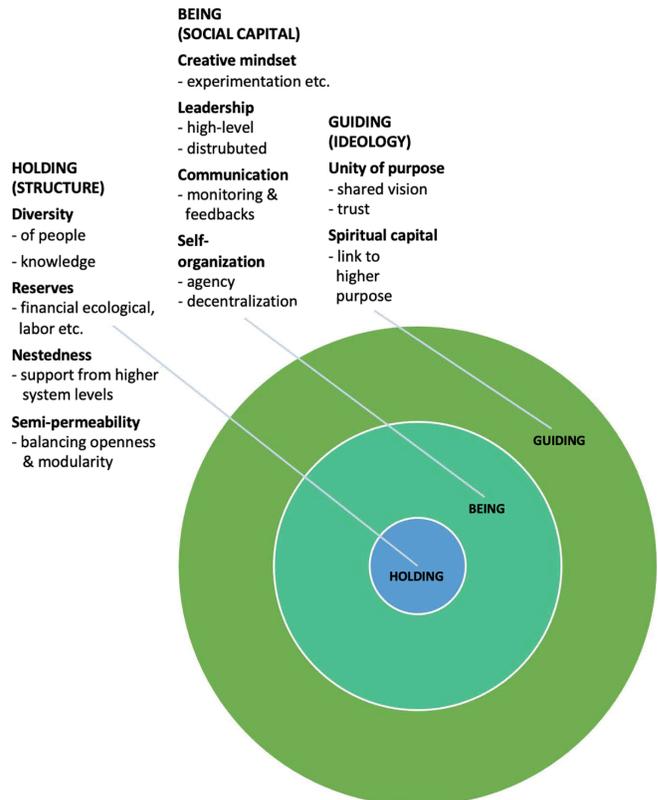


Fig. 8. Model of the interplay between resilience factors at Auroville.



- The creation of a “Communication” category that incorporates both monitoring and feedbacks (given that these factors are strongly interrelated in social systems). Conflict resolution and participatory decision making are key elements of this category.
- The creation of a separate category for “Self-organization” rather than simply treating it as a component of modularity. This reflects the large number of references to self-organization and decentralization at Auroville and the emphasis placed on self-organization by systems thinkers such as Armitage (2007) and Meadows (2008).

5. The addition of a “Creative Mindset” category that reflects the importance that interview participants placed on social values such as experimentation, creativity, personal growth, and adaptability. This is not present in Carpenter et al.’s (2012) framework, but is analogous to notions of social learning and innovation cited by other resilience researchers (Berkes 2009, Suárez et al. 2020).
6. The creation of a “Unity of Purpose” category that combines trust (Carpenter et al. 2012) with equity (Cafer et al. 2019, Suárez et al. 2020) and the principles of shared vision, shared values, commitment, and responsibility that characterize intentional communities (Kozeny 1995, Cnaan and Breyman 2007, Sager 2018).
7. The addition of “Spiritual Capital” to reflect the idea of Divine Consciousness that is described in the Auroville Charter and was discussed by several participants.

The inner circle of the model (holding) refers to the organizational structures that help to maintain resilience, including governance structures that maintain diversity, reserves, and support from higher system levels, while balancing openness and boundary-setting (i.e., semi-permeability). Christian (2003) argues that clearly defining these governance processes can help to avoid the “structural conflict” that threatens many intentional communities. The outer circle represents Auroville’s guiding philosophy, the specific intention of this intentional community that enables unity of purpose, trust in one another, and spiritual capital. Clarence-Smith (2019) highlights the role that Auroville’s spiritual worldview plays in resilience by helping people to “weather” the challenges that arise periodically. The inner and outer circles provide the structure for the middle circle, within which Auroville’s individual and social capital can flourish. This includes the characteristics of self-organization, creativity, and communication that were highlighted in the interviews as being particularly important for resilience because of their role in enabling reorganization and adaptation.

Although the model shown in Figure 8 is based on the specific circumstances of Auroville, the potential exists to apply it to other intentional communities around the world to create a more comprehensive resilience framework. The specific ideology occupying the outer layer of the model may differ in other communities. Although Auroville’s ideology has been defined in strongly spiritual terms, for other communities their higher purpose may stem from belief systems built around sustainability, connection to nature, sexuality, or other ideologies (Litfin 2014). Although the specific ideology may vary, the fact that there is a shared value-system generates what Vårheim (2016) refers to as “linking social capital.” The relative importance of different resilience factors may also differ between communities, along with the strategies required to strengthen the different factors. This may in turn help to fulfil the stated objectives of the Global Ecovillage Network for its member communities to act as hubs for enhancing global resilience more broadly in relation to climate, ecology, and agriculture (Global Ecovillage Network 2018).

A key limitation of this study is that it is based on the perspectives of a select set of system actors who may not be aware of all relevant factors. Certain factors, such as nestedness and reserves, were

more likely to be observed by participants at times of crisis, raising questions around which other factors may only become apparent at particular times. Similarly, stakeholders who were not interviewed, such as people in non-management roles, people who have left Auroville, and residents of neighboring Tamil villages, may hold differing views to those interviewed. As such, it may be necessary to apply the framework with a broader range of stakeholders and at different points in time to fully understand the factors that influence the overall resilience of the system.

CONCLUSION

The word utopia, first coined by Sir Thomas More in 1516, comes from the Greek word for “no place” (ou-topos) but is also similar to the Greek word for “good place” (eu-topos). As such, it is a liminal concept, neither here nor there, “betwixt and between” (Turner 1967). The liminality inherent in its name raises questions around whether a utopia can ever truly be achieved, to which the answer is inevitably “no” (Clarence-Smith 2019). Although this may disappoint those who look to utopias to fulfill a desire for an ideal state that is fixed and unchanging, it can be an empowering notion for those who wish their utopian communities to be resilient in the face of inevitable future disturbances.

Through the case study of Auroville presented in this article, we have been able to confirm that many of the enabling factors for general resilience identified in previous research are relevant to intentional communities. We have also identified other factors that have not been widely discussed in the resilience literature before. These include the overarching role of ideology and spiritual capital in creating links to something greater than oneself, the unity of purpose that stems from foundational teachings such as the Auroville Charter, and the role played by a creative mindset that enables experimentation and personal growth.

The experience of Auroville also shows that there is no single path to resilience. When it encountered its greatest single disturbance, the death of The Mother, Auroville rated poorly on key factors such as governance and financial reserves that have proved critical for other communities (Christian 2003). Instead, it relied on nestedness, leadership, and guiding ideology to help it survive. The adaptation and reorganization created through that dangerous period has also helped Auroville enhance other resilience factors around modularity, communication, and reserves that may serve it well when the next major disturbance arises.

As one of the longer lasting members of the Global Ecovillage Network, Auroville is well placed to assist other communities to fulfil their goals of becoming hubs for global resilience (Global Ecovillage Network 2018). However, in order to fulfil this mission, notions of intentional communities and ecovillages as fixed and unchanging utopias must give way to an experimental, adaptive, and creative mindset that recognizes them as “laboratories of social change” (Clarence-Smith 2019:62).

Responses to this article can be read online at:
<https://www.ecologyandsociety.org/issues/responses.php/13166>

Author Contributions:

Alex Baumber analyzed the interview data and related it to literature on resilience and intentional communities. Bem Le Hunte introduced the Auroville case study and contributed insights on the role of spiritual capital in resilience. Betty O'Neill undertook the Auroville interviews and identified key themes and factors arising from them. Claudia Pilon-Summons assisted with the analysis of interview data and editing of the article.

Acknowledgments:

We would like to thank all the interview participants and other members of the Auroville community for their openness and desire to contribute to new knowledge. We would particularly like to thank Suryamayi Clarence-Smith for her support in enabling this research and providing feedback on draft material to ensure that we were not missing crucial details or misrepresenting the community.

Data Availability:

The data/code that support the findings of this study are available on request from the corresponding author, Alex Baumber. None of the data/code are publicly available because they contain information that could compromise the privacy of research participants. Ethical approval for this research study was granted by the University of Technology Sydney (ETH19-4251) on the basis that no participant could be identified through any published material. The raw data contains full transcripts that could allow for participants to be identified. De-identified quotes have been provided in Appendix 1 for each factor and sub-factor coded through the analysis.

LITERATURE CITED

Alexander, J. 2001. Robust utopias and civil repairs. *International Sociology* 16:579-591. <https://doi.org/10.1177/0268580901016004004>

Armitage, D. 2007. Building resilient livelihoods through adaptive co-management: the role of adaptive capacity. Pages 62-82 in D. Armitage, F. Berkes, and N. Doubleday, editors. *Adaptive co-management*. UBC Press, Vancouver, British Columbia, Canada.

Auroville Coastal-area Development Centre (ACDC). 2006. Auroville's efforts in the tsunami recovery process. ACDC, Auroville, India.

Auroville.org. 2020a. The Auroville Charter: a new vision of power and promise for people choosing another way of life. Auroville.org, Auroville, India. <https://auroville.org/contents/1>

Auroville.org. 2020b. Statements of support - UNESCO. Auroville.org, Auroville, India. <https://auroville.org/contents/538>

Baumber, A., C. Waters, R. Cross, G. Metternicht, and M. Simpson. 2020. Carbon farming for resilient rangelands: people, paddocks and policy. *Rangeland Journal* 42(5):293-307. <https://doi.org/10.1071/RJ20034>

Berkes, F. 2009. Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *Journal*

of Environmental Management 90:1692-1702. <https://doi.org/10.1016/j.jenvman.2008.12.001>

Bloch, E. 1986. *The principle of hope* (Translated from the German by Neville Plaice, Stephen Plaice, and Paul Knight). Basil Blackwell, Oxford, UK.

Cafer, A., J. Green, and G. Goreham. 2019. A community resilience framework for community development practitioners building equity and adaptive capacity. *Community Development* 50:201-216. <https://doi.org/10.1080/15575330.2019.1575442>

Carpenter, S. R., K. Arrow, S. Barrett, R. Biggs, W. Brock, A.-S. Crépin, G. Engström, C. Folke, T. P. Hughes, N. Kautsky, C.-Z. Li, G. McCarney, K. Meng, K.-G. Mäler, S. Polasky, M. Scheffer, J. Shogren, T. Sterner, J. Vincent, B. Walker, A. Xepapadeas, and A. de Zeeuw. 2012. General resilience to cope with extreme events. *Sustainability* 4:3248-3259. <https://doi.org/10.3390/su4123248>

Christian, D. L. 2003. *Creating a life together: practical tools to grow ecovillages and intentional communities*. New Society, Gabriola Island, British Columbia, Canada.

Clarence-Smith, S. 2019. *Towards a spiritualised society: Auroville, an experiment in prefigurative utopianism*. Dissertation. University of Sussex, Sussex, UK.

Cnaan, A., and S. Breyman. 2007. Alternative or intentional? Towards a definition of "unusual" communities. Pages 243-256 in R. A. Cnaan and C. Milofsky, editors. *Handbook of community movements and local organizations*. Springer, New York, New York, USA. https://doi.org/10.1007/978-0-387-32933-8_16

Cote, M., and A. J. Nightingale. 2012. Resilience thinking meets social theory: situating social change in socio-ecological systems (SES) research. *Progress in Human Geography* 36:475-489. <https://doi.org/10.1177/0309132511425708>

Doubleday, N. 2007. Culturing adaptive co-management: finding "keys" to resilience in asymmetries of power. Pages 228-246 in D. Armitage, F. Berkes, and N. Doubleday, editors. *Adaptive co-management*. UBC Press, Vancouver, British Columbia, Canada.

Erol, O., B. J. Sauser, and M. Mansouri. 2010. A framework for investigation into extended enterprise resilience. *Enterprise Information Systems* 4:111-136. <https://doi.org/10.1080/175175-70903474304>

Fazey, I., P. Moug, S. Allen, K. Beckmann, D. Blackwood, M. Bonaventura, K. Burnett, M. Danson, R. Falconer, A. S. Gagnon, R. Harkness, A. Hodgson, L. Holm, K. N. Irvine, R. Low, C. Lyon, A. Moss, C. Moran, L. Naylor, K. O'Brien, S. Russell, S. Skerratt, J. Rao-Williams, and R. Wolstenholme. 2018. Transformation in a changing climate: a research agenda. *Climate and Development* 10:197-217. <https://doi.org/10.1080/17565529-2017.1301864>

Folke, C. 2006. Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change* 16:253-267. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>

Forster, P. M., and M. Wilhelmus. 2005. The role of individuals in community change within the Findhorn Intentional Community. *Contemporary Justice Review* 8:367-379. <https://doi.org/10.1080/10282580500334221>

- Global Ecovillage Network. 2018. 2018 Annual Report. Global Ecovillage Network, UK.
- Holling, C. S. 1973. Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics* 4:1-23. <https://doi.org/10.1146/annurev.es.04.110173.000245>
- Iwaniec, D. M., E. M. Cook, M. J. Davidson, M. Berbés-Blázquez, M. Georgescu, E. S. Krayenhoff, A. Middel, D. A. Sampson, and N. B. Grimm. 2020. The co-production of sustainable future scenarios. *Landscape and Urban Planning* 197:103744. <https://doi.org/10.1016/j.landurbplan.2020.103744>
- Kapoor, R. 2007. Auroville: a spiritual-social experiment in human unity and evolution. *Futures* 39:632-643. <https://doi.org/10.1016/j.futures.2006.10.009>
- Kharrazi, A., Y. Yu, A. Jacob, N. Vora, and B. D. Fath. 2020. Redundancy, diversity, and modularity in network resilience: applications for international trade and implications for public policy. *Current Research in Environmental Sustainability* 2:100006. <https://doi.org/10.1016/j.crsust.2020.06.001>
- King, A. 2008. In Vivo Coding Pages 445-446 in L. Given, editor. *The SAGE encyclopedia of qualitative research methods*. SAGE, Thousand Oaks, California, USA.
- Kozeny, G. 1995. *Intentional communities: lifestyles based on ideals*. Foundation for Intentional Communities, Rutledge, Missouri, USA. <http://articles-and-essays.s3.amazonaws.com/Intentional+community+/G-Kozeny-lifestyles-based-on-ideals.pdf>
- Levin, S. A., S. Barrett, S. Aniyar, W. Baumol, C. Bliss, B. Bolin, P. Dasgupta, P. Ehrlich, C. Folke, I.-M. Gren, C. S. Holling, A. Jansson, B.-O. Jansson, K.-G. Maler, D. Martin, C. Perrings, and E. Sheshinski. 1998. Resilience in natural and socioeconomic systems. *Environment and Development Economics* 3:221-262. <https://doi.org/10.1017/S1355770X98240125>
- Litfin, K. 2014. *Ecovillages: lessons for sustainable community*. Polity, Cambridge, UK.
- Meadows, D. H. 2008. *Thinking in systems: a primer*. Chelsea Green, White River Junction, Vermont, USA.
- Meerow, S., and J. P. Newell. 2019. Urban resilience for whom, what, when, where, and why? *Urban Geography* 40:309-329. <https://doi.org/10.1080/02723638.2016.1206395>
- Meuwissen, M. P. M., P. H. Feindt, A. Spiegel, C. J. A. M. Termeer, E. Mathijs, Y. d. Mey, R. Finger, A. Balmann, E. Wauters, J. Urquhart, M. Vigani, K. Zawalińska, H. Herrera, P. Nicholas-Davies, H. Hansson, W. Paas, T. Slijper, I. Coopmans, W. Vroege, A. Ciechomska, F. Accatino, B. Kopainsky, P. M. Poortvliet, J. J. L. Candel, D. Maye, S. Severini, S. Senni, B. Soriano, C.-J. Lagerkvist, M. Peneva, C. Gavrilescu, and P. Reidsma. 2019. A framework to assess the resilience of farming systems. *Agricultural Systems* 176:102656. <https://doi.org/10.1016/j.agsy.2019.102656>
- Moser, A., and I. Korstjens. 2018. Practical guidance to qualitative research. Part 3: sampling, data collection and analysis. *European Journal of General Practice* 24:9-18. <https://doi.org/10.1080/13814788.2017.1375091>
- Namakkal, J. 2012. European dreams, Tamil land: Auroville and the paradox of a postcolonial utopia. *Journal for the Study of Radicalism* 6:59-88. <https://doi.org/10.1353/jsr.2012.0006>
- Reinhalter, J. P. 2014. *Intentional communities: place-based articulations of social critique*. Thesis. University of Hawai'i Manoa, Hawai'i, USA.
- Sadler, S. 2006. Drop City revisited. *Journal of Architectural Education* 59:5-14. <https://doi.org/10.1111/j.1531-314X.2006.00029.x>
- Sager, T. 2018. Planning by intentional communities: an understudied form of activist planning. *Planning Theory* 17:449-471. <https://doi.org/10.1177/1473095217723381>
- Sargent, L. T. 1994. The three faces of utopianism revisited. *Utopian Studies* 5:1-37.
- Sargent, L. T. 2010. *Utopianism: a very short introduction*. Oxford University Press, Oxford, UK. <https://doi.org/10.1093/actrade/9780199573400.001.0001>
- Sargisson, L., and L. T. Sargent. 2004. *Living in utopia: New Zealand's intentional communities*. Routledge, London, UK.
- Sri Aurobindo. 2005. *The life divine*. Published by Sri Aurobindo Ashram Publication Department, Sri Aurobindo Ashram Trust, Pondicherry, India.
- Strain, C. 2004. Soul City, North Carolina: black power, utopia, and the African American dream. *Journal of African American History* 89:57-74. <https://doi.org/10.2307/4134046>
- Suárez, M., E. Gómez-Baggethun, and M. Onaindia. 2020. Assessing socio-ecological resilience in cities. Pages 197-216 in M. A. Burayidi, A. Allen, J. Twigg, and C. Wamsler, editors. *The Routledge handbook of urban resilience*. Routledge, London, UK.
- Turner, V. 1967. *In the forest of symbols: aspects of Ndembu ritual*. Cornell University Press, Ithaca, New York, USA.
- Van Keuren, L. 2004. The dark side of utopia. *Utopian Studies* 15:211-213.
- Vårheim, A. 2016. Public libraries, community resilience, and social capital. In *Proceedings of the Ninth International Conference on Conceptions of Library and Information Science*, Uppsala, Sweden, June 27-29, 2016. <http://informationr.net/ir/22-1/colis/colis1642.html>
- Walker, B. 2019. *Finding resilience: change and uncertainty in nature and society*. CSIRO Publishing, Clayton South, Victoria, Australia. <https://doi.org/10.1071/9781486310784>
- Walker, B. H., S. R. Carpenter, J. Rockstrom, A.-S. Crépin, and G. D. Peterson. 2012. Drivers, "slow" variables, "fast" variables, shocks, and resilience. *Ecology and Society* 17(3):30. <https://doi.org/10.5751/ES-05063-170330>
- Walker, B., and D. Salt. 2012. *Resilience practice: building capacity to absorb disturbance and maintain function*. Island, Washington, D.C., USA. <https://doi.org/10.5822/978-1-61091-231-0>

Appendix 1. Interview results and sample quotes

Table A1.1: General resilience factors cited by participants

Level 1	Level 2	No. of references	Sample quotes (with participant codename)
Modularity	Self-organisation and decentralisation	22	“You know, we are very decentralized, very decentralised. People do what they want.” (A)
	Subcommunities within Auroville	19	“There's the farm group, the forest group. Some of them work better than others. And so I'm hoping to do something similar around higher education...” (F)
	Processes to restrict and manage entry	9	“There's one year probation period...But you know, it's just little hurdles. If you want to be, you'll be. If you don't, you know.” (A)
	General	1	“modularity is really important because that's happening” (B)
	Challenges	17	“some people said we shouldn't let old people in, you know, because they become a burden. I say absolutely not.” (B)
Openness	Ability for people to join and leave	26	“I think the main factor is that it's a growing community. It's not that it's growing in a great pace. But the fact that people are keep coming and new energy is coming.” (E)
	Exchanges of knowledge and ideas	12	“And a lot of the things that were learned in the early days like reforestation, water conservation, food production, people here now are going out to many different parts of India, Ladakh and many different places bringing the learning that happened here out as well. So yeah. There is this relationship that has been build with the bi-region, but also wider in India as well.” (I)

	Connections to neighbouring villages	8	“I think 40% or in the range of 40% of the population of Auroville of the Aurovilians are local people, people who come from the neighboring villages. You know, you see... You don't see barbed wire... So if they didn't want us they would have kicked us out long time ago.” (A)
	Donations from outside	2	“within two or three days of expressing our need, we got donations to rebuild the place.” (E)
	Challenges	10	“Because on this master plan, this vision that The Mother had of a city, that saw this two circle. The inner circle the resident, the floor zones, and then around the greenbelt. But there is four villages on this master plan. So, we're not going to push villages away. So this 50,000 include the villages, which for some of us is obvious, but most of them it's not. I don't know how we're going to deal with that.” (J)
Diversity	Of people	25	<p>“being such a mixed community. We come from very different social conditioning, life experiences, all of that kind of thing. So it's the life in Auroville in itself is a field for growth.” (I)</p> <p>“I find Auroville as one of the few places on the planet that is explicitly about that, explicitly about how do we do this together as individuals, this unity in diversity.” (F)</p>
	Of ideas and knowledge	11	“Auroville is a kind of microcosm, all the latest, say management technologies and, and psychotherapies, art trends. They're all here. Because see people are coming here constantly from all over the world, and the kind of people that come to Auroville are people that can travel and who have all this stuff and know all this stuff.” (B)

	Of actions	3	“And I'm so grateful that some people will do things that I never never be able to do and don't want to do. You know they are doing it in they're own way.” (A)
	Challenges	14	“the teachers needs to think in develop materials, develop a system, develop a structure, develop different activities, where kids with a very different culture, with a very different background, and with the fact that many of them are not teachers. So it's quite challenging.” (G)
Leadership	Distributed leadership	12	“But each one at his own, in his own way. And I'm so grateful that some people will do things that I never never be able to do and don't want to do. You know they are doing it in they're own way. They are planting a beautiful forest here, educating the kids and all kinds of things, you know.” (A)
	Charismatic leaders	6	“And for every single person who I know of who met The Mother, something very special happened when they were in front of her, even from a distance... they had something special kind of energy and it transformed their lives.” (J)
	Proactive leadership	4	“It's like when somebody is wanting to take up a responsibility or wanting to take a task or wanting to be the leader, everybody just comes down, gives it to them, but they're on their back so that they're performing nicely. You see what I mean?” (C)
	Adaptive leadership	4	“There are these two books, The Mother on Auroville, two volumes. It's amazing because you see how she adapted.” (D)
	Leadership program	2	“And also recently we are doing Master Daniel's leadership program in Auroville.” (I)
	Challenges	11	“When do you ask somebody not to do something or when do you say no to somebody? When do you take that authority to stop another action?” (C)

Nestedness	Support from Indian Government	12	“So it's in '88 that the final solution, the permanent solution was found. Now we are an autonomous body operating under the Government of India under the Minister of Human Resource Development” (A)
	Global ecovillage & sustainability networks	9	“Findhorn has had a massive influence in Auroville. I mean, it's not an influence. We work together because Findhorn, and Tamera, and Damanhur are one of the oldest communities that exist in the world.” (C)
	Global community of Aurovillians	3	“A lot of money came in through Auroville's network around the world. We had a lot of friends even ringing, saying, "How are people working?" And stuff. And Auroville has offices, or sometimes it's somebody's front room in different countries, but there is quite a network of people connected.” (I)
	Part of greater spiritual system	1	“Nestedness, strong connection to higher system level. Thinking national and global scale support system. For me, the connections to the ideal of the integral yoga” (J)
	Challenges	5	“And that is my biggest fear right now, that somebody has to give those people an answer. And Indian government is mean, they're very mean. They're not fluffy Aurovillians that just are optimists and saying that, "Okay, we believe in impermanence and we can let things happen and make mistakes and it's okay." (C)
Monitoring or information flow	Communication processes	14	“A focus on what is with more awareness, of not being violent and finding ways to communicate.” (E)
	Environmental monitoring	3	“I was saddened and alarmed to hear that water is going to be as big an issue in Auroville as people think it is, but I'm really thankful that we have people here that are monitoring that, and are also feeding them back to the community and looking at how we can actually resolve this if possible.” (F)

	Social media	3	“Yeah, networking you see is a key concept that now with WhatsApp and Facebook and all that social media, we have it and people should utilize it more than just taking a picture of their dessert that they had.” (B)
	Recording stories and histories	2	“Even I'm going now outreach schools, in many schools, to schools I'm going. So then I will ask what is the name of your village, most of the school doesn't know. So then we are bringing the stories of where the names came, so the children know and they're learning.” (I)
	Challenges	7	“And 60 different nationalities in one small place that don't speak a single language commonly, also is this big epitome of misunderstandings.” (C)
Reserves	Resources (money, housing food, water etc.)	8	“And always somehow money came strangely enough or not strangely, but significantly.” (D)
	Ecological reserves & buffers	5	“We have a reserve of wood, we have the forest, so all that is there, we have a reserve of water. So all of that is there, the essentials are there.” (C)
	Gift economy providing reserves	3	“So the reserves, they are in the action and not in the material. So in gifting, in giving, we have reserves.” (E)
	Goodwill	2	“Reserves and goodwill. No, that we have. Otherwise we would go.” (D)
	Social memory	2	“Everybody's got a story at the Youth Center. There's so many couples and so many families that have been started right now in Auroville that they met for the first time in Youth Center. You see what I mean? So, it is a cauldron of memory and a cauldron of history, and of pure knowledge of the young people.” (C)
	Challenges	8	“Auroville is running in scarcity all the time.” (C)

Feedbacks	Dedicated feedback processes	10	“So we have restorative circles, we have of course, arbitration, mediation, we have a conflict resolution group, we have another group called Koodam, you know, which tends to resolve all these things.” (B)
	Balancing feedbacks	6	“Just go and stand there firm and strong, and you know you're going to break the person because all he's looking for is trouble, and you have no trouble to give, you've just got compassion instead.” (C)
	Reinforcing feedbacks	6	“I feel more and more that the arts which are not on the market, that means true arts because they're also selling this partly and I'm seeing it a little bit one sided. Of course there are big exceptions, but it's everywhere out of everything, people are tending to make money out of it. And that becomes a self-runner.” (D)
	Challenges	4	“But feedbacks happen all the time. Either front or back. They're going to backstab or tell it to you on the face, but it happens constantly... And that would also bring in the rumors, that would bring in the gossips. That's how it goes on.” (C)
Trust	Trusting one another	12	“Those who too long cannot trust the whole happening here, they go because it's not ... then you can do better work somewhere else, even for yourself. It's not worth the trouble. One has to trust.” (D)
	Trust in higher purpose	1	I mean, for me this kind of trust or faith or whatever has developed over time, that things always happened for a reason. And that the more you accept and let go, the more you see something positive and positive change coming out of it, but we have no idea what it will be when it's happened.” (J)
	Challenges	3	“Not collaborating and not trusting one another also is a big challenge.” (C)

Table A1.2: Emergent enabling factors for resilience

Level 1	Level 2	Level 3	No. of references	Sample quotes (with participant codename)
Shared worldview	Belief in the divine & higher consciousness		26	“it is that new energy we had to allow to enter. This can do it, nobody else. And some people call it divine and some people call it this and that, it doesn't matter, but it is a supramental.” (D)
	Teachings of Sri Aurobindo and The Mother		21	“See Sri Aurobindo explained that his his teachings start from that of the action sages of India, who had realized that, behind the appearance of the entire universe, there is only one reality one self of all things one consciousness” (A)
	Vision/ dream/ aspiration/ purpose		12	“The reality is harsh. But I see beautiful people, intensely beautiful peoples trying to work towards the dream.” (H)
	Symbolic physical features		4	“And this is symbolized by the Matrimandir. Aspiration to higher consciousness is symbolized by Matrimandir.” (A)
Shared values	Creative mindset	Experimentation	14	“It's just this incredible playground where we're just experimenting. I think at this point in human evolution, we really need to experiment and think outside the box.” (E)

		Aesthetics & art	13	“The Mother comes from the west. You see, The Mother comes out of the occult traditions in the West and brings the art and culture of that” (B)
		Personal growth	9	“That we're here to consciously evolve. And this is an experiment that can help us do that, in whatever we work here. For me coming here, that was the thing for me. I think the part of me that was ready to grow recognized something here that I could, in my own development, wherever I was, that I could grow here and be challenged here.” (I)
		Pioneering spirit	9	“The people who were drawn to Auroville were rugged. You got to remember what it looked like back then. If you're saying like, "I'm going to do this," you meant it like, "I'm going to live in the desert, plant trees." And I think there was this can-do mentality from the beginning of Auroville, which has persisted.” (F)
		Plasticity of approach to achieving vision	8	“resilience means plasticity also. To be open to changes and not to stick to your rigid thing, which is cracking in the next storm, no?” (D)
	Inclusivity		17	“we represent the world basically, humanity, which is the aim actually, one of the aims.” (A)
	Acceptance and humility		12	“There is something else at work here and just accept it” (A)

	Individual agency		12	“And people tend to be highly individualized. So they take care of themselves, no matter what happens, you know, they don't - they're not dependent.” (B)
	Rejection of ownership, money & status		8	“You don't need all this nonsense, the big car, and all this big, big anything because you know you know you're you're expressing beauty” (A)
	Nonviolence, happiness & love		7	“The no violence communication development in a very strong basis” (G)
Shared processes and practices	Community services	Education	11	“So when I joined YouthLink, that brought in and I was working there for two years, and then we were doing EDEs, which is Ecovillage Design Education courses. We were running them, designing them, building them and all that.” (C)
		Health	3	“Usually it's individual and then they will use other sequence of support, like in homeopaths, in psychologies, all kinds. Whatever is available around us and that we know, and we use the support.” (E)
		Emergency relief	2	“The solar kitchen team made sure that they got a vehicle to Pondicherry to get food for people, and solar kitchen opened. There was a fantastic teamwork and people looking after each other at that time.” (I)

	Governance processes		13	“The governing board is the third element in our legal framework of the foundation act of the foundation, which is actually governing board is in legal terms, the upper one, because technically it can dissolve Auroville.” (D)
	Conflict resolution		7	“So we have restorative circles, we have of course, arbitration, mediation, we have a conflict resolution group, we have another group called Koodam, you know, which tends to resolve all these things. So we, we have that stuff. And people use it, and it works, sometimes. Sometimes it doesn't.” (B)
	Spiritual practice and yoga		5	“Yeah, again we do the spiritual practice more as karma Yoga, we call the work here Seva, which means a selfless service. So we do a emphasized service as a spiritual practice.” (E)
Shared experience and history	Experience with overcoming struggles		11	“The other beauty of Auroville that I find is because everybody has gone through a certain amount of struggle. They just understand what it is to be in Auroville.” (C)
	Living together over time		8	“I think there's also a longevity. There are dynasties in Auroville of people with kids and kids' kids. They got more staying power, I think, than a lot of other places.” (F)

	Working together		2	“...just got friends to work with us and each one doing different things... And everyone did his thing we did it together and done, fantastic. I didn't pay any of the them, they did it, I didn't have the money so. So that's that's what you are looking for doing something together.” (A)
Relationship to one another	Sense of unity		9	“I think are very, very strong values and spiritual values as well. For example, a strong one is the unity. That even in the middle of these conflicts, we come to a conclusion. Well, I mean, even if it's still like words, the blah, blah, blah, blah, unity. But I feel that that is something that all of us will look for.” (G)
	Sense of responsibility & commitment		8	“They're going to take up responsibility, they're going to acknowledge it, but at the same time they're going to pass it down to the next generation saying that, "Ha ha, there's something waiting for you already before you're even born." You see what I mean? And that's how it goes on.” (C)
	Sense of family		3	“Principal I think one of the things I think which helps us, it's the fact that we are a family. So it's the seed community support. A family we are there for each other.” (E)

	Multiple ways of knowing one another		1	<p>“In mainstream society, we tend to be in very modular or relegated roles, like I know my bank teller. I know my teacher. I know my neighbor. But in community, we may be having a meeting, we may be planting a tree together, in a process. We know each other in many, many different ways, and I think that also builds a sense of community and resilience, the more ways that we know each other.” (F)</p>
Scale	Size of the community		2	<p>“I think one of the things that Auroville has going for it is when it started going through a certain size. It was always big geographically that, I think, kids growing up felt like they could stay in the community and, actually, they could rebel within the community.” (F)</p>

Table A1.3: Disturbances reported by participants

Level 1	Level 2	Level 3	No. of references	Sample quotes (with participant codename)
Acute	Sudden loss of leader	Death of The Mother	9	“So The Mother was a major, major, major personality in here. And so once she passed away, of course, there was a conflict of power, power conflict.” (A)
	Natural disasters	Cyclone	2	“We had a cyclone here, Cyclone Thane, where we lost 40,000 Euro in hours. Half of the structures that we just put for the long-term volunteer, we got a donation from the German government, and was collapsed and lots of damage. And then within two or three days of expressing our need, we got donations to rebuild the place.” (E)
		Tsunami	2	“then a few years later there was a tsunami here...and there are you see Auroville at its best, you know, we keep on fighting about all kinds of stupidities here. But when there's something serious, amazing, amazing, amazing, you know, tens, I mean thousands of people from the village along the course came up the plateau. They were frightened that the sea will swallow them. So we fed them, we housed them, everything.” (A)
	New development proposals	New highway	2	“and the Tamil Nadu State want to put a highway through part of the green belt. So, we have all these pressures from outside and we have to adapt, we have to find ways...” (J)
Chronic	Governance issues	Entry policy	8	“So entry policy in Auroville has never been up to the mark. It's always been a disaster and it keeps getting revised.” (B)
		Power dynamics	6	“I found out this kind of thing happens a lot in Auroville actually because there is no true hierarchy. There is no one that can tell you not to do this, not to do that. And some people are between this power trip.” (J)

	Decision-making processes	6	“Okay, we see the bureaucracy, we see the current governance systems. Okay. It won't work. So we explore our alternative governance systems, where we have 14 members and we try to have a collective participatory decision making processes, but it's tough.” (H)
Community divisions	Culture, nationality, race, gender etc.	9	“And 60 different nationalities in one small place that don't speak a single language commonly, also is this big epitome of misunderstandings.” (C)
	Differences of opinion	6	“Because it's not that these problems of what we know from every other place doesn't exist. Everything exists here. That great fights. Great conflicts. People don't speak with each other for years. Many communities made fence dividing lands. You cannot... The fact that you choose to live in the future city doesn't make you superhuman so fast” (E)
Environmental challenges	Pollution & degradation	5	“But now all the local herbs, everything is disappearing because of more pollution and these kind of things” (I)
	Climate change	1	“Climate change is obviously the elephant in the room, and it's driving a lot of other changes that we've only begun to see. Certainly in Auroville, it used to be that the monsoons would come like clockwork. Now, year-by-year, it's almost random. I mean, not random but it's like it's really, really hard to predict.” (F)
	Population pressure	1	“I can't imagine 50,000. It's really not going to be a very green city...” (J)
Shortages	Money	4	“The city couldn't be built and we had no money. So in one way it diversified us, which was very bad actually, but who knows what are other reasons?” (D)
	Food	2	“Most of the people are really struggling to just earn three-course meals a day.” (C)
	Housing	2	“Other problem is there is not enough housing.” (J)

Issues with neighbouring communities	-	5	<p>“There are two groups fighting each other. They will sometimes, yeah, murder. It will happen. So sometimes it will affect Auroville. So they will close all the community works.” (I)</p> <p>“We face constant challenge with the neighbours, the mafia in the neighbourhood...not the local people, because the local people are adorable, but the mafia among the locality...we've had people just coming down and chopping down acres of land” (C)</p>
Drugs and alcohol	-	4	<p>“they don't understand what are the repercussions of the things that they are taking. So sometimes they would be completely out of control, and they had no intention to be like this.” (C)</p>
Corruption	-	2	<p>“And we had the Tamil heritage site that was, you know, there was corruption happen there. So that that guy is now you know, under indictment for corruption.” (B)</p>
Rising nationalism	-	1	<p>“I know tourism has been down this year. Part of that is the nationalism. It's all interconnected.” (F)</p>
Unequal share of labour	-	1	<p>“Previously, no matter who came or no matter who was there, everybody would wake up and go to the Matrimandir to work and build the Matrimandir. There was no difference between you're a tourist or you're a guest or you're something. And here right now there's this difference between like, "Okay, I'm a guest so I'm going to do my yoga classes, I'm going to go for a sound bath and sound healing and Watsu and massage and cycle around in the forest and just be on a holiday in this community while other people that live in this community for 365 days are providing all of that for me." (C)</p>