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Community Self-Organisation from a Social-Ecological Perspective: ‘Burlang Yatra’ and Revival of Millets in Odisha (India)

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Abstract: In this paper, I focus on the revival of an Indigenous community seed festival known locally as *Burlang Yatra* (‘Indigenous Biodiversity Festival’) in the district of Kandhamal in Odisha (India). This annual event brings together millet farmers to share knowledge and practices, including exchange of Indigenous heirloom seeds. Such community seed festivals remain largely underappreciated (and underexplored). Investigating *Burlang Yatra* through a social-ecological lens allowed for a greater understanding of its capacity to build and strengthen relationships, adaptation, and responsibility, three key principles that together link the social and the ecological in a dynamic sense. These principles, driven by intergenerational participation and interaction as well as social learning, can be seen as fostering ‘social-ecological memory’ of millet-based biodiverse farming. The festival’s persistence and revival illustrate a form of grassroots self-organising that draws on values of an Indigenous knowledge system. Within a restorative context, it has the capacity to repair and restore cultural and ecological relationships that the community has with their own foods and practices. This paper offers a new understanding of community self-organising from a social-ecological perspective and particularly in a marginalised context as supporting the revitalisation of Indigenous food systems.

Keywords: Indigenous; millets; community seed festivals; social-ecological memory; stewardship; resilience; community self-organisation; revitalisation; traditional knowledge; Indigenous knowledge; Odisha

1. Introduction

Local small scale and Indigenous food systems have been declining in developing countries under changing social-economic-political conditions primarily driven by the imperatives of agricultural industrialisation, commercialisation of crops, food globalisation, and urbanisation [1–5]. Indigenous food systems as distinguished from local small-scale food systems are described as those ‘integral to the cultural food use patterns of Indigenous peoples’ [6] and also include the socio-cultural meanings, practices, techniques, use, composition, and nutritional outcomes for the people using the food [7]. The erosion of such Indigenous food systems across various countries has been associated with increased impoverishment, food insecurity, poor health, and malnutrition among the Indigenous communities [1,3,8–12]. In recent years, however, there has been a resurgence of public interest and policy attention on local small scale and Indigenous food systems for addressing food and nutrition security, poverty alleviation, and sustaining rural livelihoods in addition to wider goals of biodiversity conservation, restoring ecosystem services, and climate adaptation [13–16].

In various parts of India, including in the eastern state of Odisha, there has been a ‘revival’ of millets cultivation in recent years [17–21]. Millets have historically/traditionally been a part of Indigenous and/or local small scale food systems in Odisha as elsewhere in many regions of the world,

where they are used as food crops for humans, feed (for poultry), fodder (for livestock), and as sources for bio-fuel, and in some contexts, its dried stalks are also used in thatching. However, for a variety of reasons, and particularly with the introduction of the Green Revolution food grains such as rice and wheat, millets were ignored and neglected [5,22–24]. Since 2011/2012, the cultivation and the consumption of millets has received particular attention in Odisha from policymakers, agro-scientists, researchers, and community groups. This has been pushed to the foreground by national and state level civil society alliances and networks borne out of specific concerns, and to meet diverse objectives. These range from millets as a survival strategy for small farmers to cope with adverse climatic conditions to millets as a cost-effective strategy in marginal conditions where other crops cannot be grown (e.g., poor soil, low moisture content); millets for restoring rural livelihoods and generating employment along the value chain; millets for their high nutritional content and health benefits for those with chronic diseases (e.g., diabetes) in rural and urban areas; and millets for restoring biodiverse farming systems and local food practices [23,25–28].

The revival of millets in Odisha is mainly happening in those districts of the state where millets were historically and traditionally grown and consumed as part of a diversified Indigenous farming system and where, despite the overall decline through the decades, farmers were continuing to grow millets, albeit in increasingly limited areas. A number of initiatives have thus been launched in recent years, led by the national Indian government and the Odisha state government, by the market actors and by community organisations in the third sector to bring back more of the land for millets cultivation, to incentivise more farmers to grow millets, and to increase the yield of millets and the consumption of millets in both rural and urban areas of Odisha [29,30]. In a significant step, provision of millets through the public distribution system (PDS) was included in India under the National Food Security Act, 2013.

Against this context, the ancient practice of rural community seed festivals, which had declined over the decades in Odisha, has re-emerged through collective local mobilisation of farmers supported by civil society action in the state. *Burlang Yatra* ('Indigenous Biodiversity Festival') is one such festival that has been revived in the district of Kandhamal, one of those districts in the state where the Indigenous communities have traditionally grown and consumed millets. At this festival celebrated on a yearly basis, the Indigenous farmers from various millet growing villages in the district come together to share knowledge and farming practices and to exchange Indigenous heirloom seeds between themselves. There is not much known about such festivals outside of the rural farming communities, although there is a broad and general perception and awareness that such festivals mark the heritage, the identity, and the livelihoods of the Indigenous communities practicing millet farming in the region.

The dominant narrative underpinning the revitalisation of millets in Odisha has focused primarily on developing and/or strengthening millets agri-food value chain by bringing back specific millets into the food chain through increasing acreage and productivity, facilitating processing and distribution, setting up micro-enterprise units and market creation, and increasing consumption by including food made from millets in various state-run nutritional security programmes, and through provision of incentives and support programmes [26,30,31]. This has certainly revived millet farming to be an attractive option, especially from supply and value chain perspectives, but it cannot be overlooked that it is still narrowly framed within productivity and market parameters used for monocrops. However, if the Indigenous farmers have persisted thus far in growing millets outside of market forces and the state, what roles have non-market influences or—more broadly—social-cultural factors played, and are they locally 'embedded' in the ecological landscape they inhabit? What is the significance of the community seed festivals? What meanings do they hold for the farmers?

The aim of this paper is to bring to the fore the role played by rural Indigenous community seed festivals, which remains largely underexplored (and underappreciated). Except for a few reports in media and civil society reflections on the significance of such festivals in the state (and elsewhere in the country) [28,32,33] for the survival of millets seeds/grains—revalorised as a source of food and nutrition for their medicinal or religious/spiritual values, for biodiversity, and for climate resilience—there has

been little sustained reflection. The persistence of these festivals over decades, albeit in a ‘marginalised’ form in recent times, and their current revival, however, suggest deeper connections to food systems than commonly acknowledged and, as such, deserve more attention.

I use *Burlang Yatra* in Odisha as an illustrative example to explore analytically the meaning and the significance of community seed festivals in an Indigenous context. This requires an approach that helps explore possible connections between the festival, the ‘place’, and the “community” practising it. Hence, I situate the festival in a social-ecological landscape that allows for an understanding of the long-standing human–environment interactions that is neither about humans embedded in ecological systems (i.e., the social system) nor ecosystems embedded in human systems (i.e., the ecological system); rather, it is about both together as an ‘interlinked’ system [34,35].

The paper begins with a brief review of the theoretical basis for the research followed by the research design and the methodology. *Burlang Yatra* is introduced next. My interpretation of its revival as a form of grassroots self-organising for ‘reclaiming’ of the festival and its ‘performing’ as deeply embedded with social and ecological meanings sets the context for further analysis. This leads to identifying a rich interplay of three core principles—relationships, adaptation, and responsibility—around which the festival is self-organised and which effectively link the social and the ecological systems. This has the potential to foster ‘social-ecological memory’, which gives rise to social-ecological resilience. I draw on insights effectively from three broad sets of literature—social-ecological systems, community self-organisation, and resilience—within an Indigenous food systems context. As a qualitative exploratory study, the analysis in this paper is an attempt to map out the contribution that this interdisciplinary approach can make to understand self-organising behaviour in a specific context. The key learnings from this paper and issues that warrant discussion and which underscore the need for further research are presented in the final section.

2. Community Self-Organisation from a Social-Ecological Perspective

Recent literature on communities organising themselves to bring about changes in food systems is beginning to address the nature and the significance of self-organising processes. Although there is no generally accepted definition of self-organisation because of the complexity of mechanisms that underpin it and the fact that it has grown out of many different disciplines within the natural sciences, there is an intuitive understanding of what it means from closely studied examples in different contexts, including natural disaster, environmental and development studies, community conservation-development studies, and management/organisation studies [36–38].

Nonetheless, while self-organisation has been analysed most extensively in biological and physical/technological fields, it has not been so well developed in the context of human social systems [39,40]. However, broadly, it is understood as the ability of communities to self-organise “into coordinated purposeful activity without prior planning or when people in informal organizations ignore formal structures and reach out for resources and relationships they need, or when in communities of practice, people organize themselves based on their perceptions of needs and desires to accomplish shared goals” [39] (p. 285), [41,42]. Self-organising, thus, includes processes that lead to the forming of groups, organisations, or networks for a shared purpose and without any external control or direction from outside the community. As Uitermark puts it, community self-organisation is also “colloquially understood as collective action by citizens that is not directed by the government” [40] (p. 2304).

Much of the research on community self-organisation with respect to food systems has focused on understanding the social processes in the emergence of grassroots-led food production and consumption networks [43], community-led alternative food initiatives [44–46], community supported agriculture, energy transition [42], urban planning [47], and social movements [48]. These studies focus on identifying principles of self-organisation in the organisational structure, understanding the motivations behind self-organisation, the features of self-organisation, how self-organisation manifests itself in practice, or the agency of individuals and communities that lead to successful self-organising or, in contrast, that undermine the process [43,49–51].

Shared goals and values are seen as underpinning self-organisation [49,52,53]. However, various studies have also found that the ‘meanings’ attached to ‘food’ are highly dependent on ‘priorities, concerns, and needs of producers and consumers’. A food system can be seen as involving complex assemblages of practices, intentionalities and processes that “stitch together” particular “natures, cultures, spaces, and technologies in the provisioning of food” [50] (p. 5) at various scales and dimensions of interaction [51].

Context is therefore understood as playing an important role in shaping the ‘actual practices, ecologies, and materialities involved in the production, distribution, and consumption of food’ [50]. It has been shown that at the core of self-organising behaviour can lie a ‘self-emerging awareness’ of individuals sharing a specific context [43] and “collective intentionality” [54] (p. 234). The context, most often used in understanding the emergence of self-organising behaviour or action, is in terms of ecological, technological, economic, and institutional factors [43].

However, despite this emphasis on ‘context’ in the self-organisation literature, there is insufficient attention given to the role of culture. Although the meaning of ‘culture’ varies considerably according to the discipline from which it is approached [55,56], culture here is understood as a community’s ‘ways of knowing the world, their values, and their assumptions about how things fit together’, and which creates the perspective from which social rules emerge [55,57]. From an interpretive standpoint, humans’ interactions with their ‘environment’ (i.e., the external worlds) are mediated by the cultural and the historical contexts in which they find themselves. Culture has therefore been described as ‘beliefs, behaviours, objects, and other characteristics common to the members of a particular group or community’, and in this interpretation, ‘community’ is considered the fundamental unit of culture and an important vehicle for the internalization of culture [58].

This aspect of cultural significance is, however, more elaborated upon in the literature on community resilience. The “community resources” that community members draw upon to thrive in an environment characterized by “change, uncertainty, unpredictability, and surprise” [59] (p. 402) exist within and outside the community and include not only economic, social, human, political, natural, and built resources but also cultural resources [59]. Communities are therefore seen as constantly responding to change (includes risk factors, shocks, long term change), and their ability to respond to change determines resilience. Resilience, similarly to self-organisation, however, has also been conceptualised in various ways (as a response, as a process, as an outcome; preventive in nature, facilitating recovery, ability to persevere; to absorb, adapt, or transform) and in different contexts, e.g., disaster risk reduction, conservation, climate change adaptation, and community development [60–64].

In a move away from deficit models, the different “capacities for resilience” [65] that communities draw on include place attachment, leadership, community cohesion and efficacy, community networks, and knowledge and learning [61,65]. Communities are considered as playing an active role in their own well-being through developing material, physical, socio-political, sociocultural, and psychological resources to cope with change [66] and also by linking the different capacities [67,68]. Furthermore, community resilience also means the ability to intentionally develop personal and collective capacity [59,62,66,69] to live with change and uncertainty. However, as resilience emerges from intra-scale and cross-scale interaction, understanding the nature of resilience across scales has been difficult because of dominance of different processes at different scales, non-linearity, and emergent properties, as well as social dynamics [70,71]. Also, there is relatively less understanding of resilience-promoting capacities that enable community resilience to multiple and different risks [61].

Such ‘multiple risks’ faced by communities are most evident in marginalised contexts, where vulnerabilities may arise from socio-economic-cultural, political, and environmental reasons, such as from geographical isolation, social exclusion, forced displacement, and alienation from the mainstream. Indigenous communities across various countries have faced such marginalisation and in some contexts continue to do so [5,72]. One outcome has been the loss of Indigenous/traditional knowledge (IK/TK) among Indigenous peoples and rural communities. TK is defined as a cumulative local body of knowledge, practices, and beliefs held by local people [73,74]. This knowledge is described as generated

and transmitted by communities over time in response to socio-economic-environmental contexts they are embedded in; that is, it is locally rooted and based on a set of experiences [75,76]. It forms the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, biodiversity conservation, and a host of other activities in rural communities, as shown in various geographical contexts [77–79]. In relation to food systems, TK in relation to agriculture and food security is recognised as a way to protect the traditional livelihoods of Indigenous peoples by the United Nations' Permanent Forum on Indigenous Issues [72].

Studies have pointed to loss of IK/TK, whether it be medicinal [80], nutritional [3], or agricultural [81] or in traditional food harvesting, storing, and preparation [3,82], as the communities have become more integrated into the market and the global economy or forced into acculturation through development induced displacement programmes [83–85]. At the same time, there is also the understanding that TK systems are dynamic, and they are capable of adapting both to external changes and internal pressures [86]. This has been particularly considered significant in developing the capacity for resilience and a community's well-being [87–89]. However, there is very little research thus far on the mechanisms that allow communities to generate, regenerate, transmit, and apply knowledge and how that in turn affects the resilience of TK or IK systems and their capacity to evolve and adapt [83].

A particular gap in the understanding of community self-organising and resilience in the specific context of a rural Indigenous food system therefore concerns how 'place-based' and 'marginalised' communities could be effectively leveraging their 'community resources' or their "community capitals" [59] to sustain their TK and capacity to adapt their traditional food and farming practices. What is the role of community self-organisation in this context? In other words, how does the specific context influence the type of self-organising that takes place? How do the communities 'manage' their capacity for collective action or ability for problem solving and consensus building in order to negotiate a coordinated response to the challenges they face in farming? What enables them to connect and how?

In social-ecological literature, the sharing of various sources of information and knowledge through "social networks" [90] and collaborative and social learning [91] has been considered important. Yet, there has thus far been limited academic attention given to how these may be taking place in Indigenous communities. There are a few related studies on autonomous "networks" enabling horizontal learning and action by Indigenous communities (as in Quechua communities of Andes) [92]. Some recent studies on 'Indigenous story-telling' analyse this mechanism as a bridge that acts to close the gap between cultural revitalisation and nature conservation [93]. Indigenous food networks have been found to be important as an appropriate response to food insecurity in Indigenous communities of Saskatchewan, Canada [12]. Studies on Indigenous festivals in general have focused on the benefits to the Indigenous host communities—as in the development of their social capital or social cohesion for economic opportunities or broadly for cultural maintenance and preservation, considered significant from a sustainable community development point of view. In other studies, Indigenous festivals have been discussed as potent sites for cross-cultural negotiations of meaning or to challenge hegemonic notions of sovereignty [94–96].

Festival, in a broader sense, has been described as a 'human ecosystem' that fosters resilience in communities through the sharing of values, interests, and traditions that are central to the host community [97]. Such community cultural festivals are seen as an expression of identity at the local level and the 'internal life of the community' leading to community wellbeing—the latter described in terms of 'conviviality, livability, sustainability, viability and vitality' [98]. Festivals and events in general have thus been broadly studied from cultural, social, political, and economic perspectives, although they are still considered a relatively new research area [99]. There is little, if any, research from a social-ecological perspective and from a community self-organisation aspect with a bearing on TK and Indigenous food systems. Exploring *Burlang Yatra*, which is the focus of this paper, and which is an Indigenous community seed festival in India, is an attempt to address this gap.

Drawing on insights effectively from three broad sets of literature—community self-organisation, resilience, and social-ecological systems—within an Indigenous food systems context, the analysis in

this paper is an attempt to map out the contribution that this interdisciplinary approach can make to understand self-organising behaviour using the persistence and the revival of *Burlang Yatra* as an illustration.

3. Research Design and Methodology

The analysis presented in this paper draws on a wider qualitative exploratory research study conducted in 2016–2017 on the revival of millet farming in Odisha. Research participants included fifteen Indigenous farmers from five millet-growing districts in the state, representatives from two civil society organisations working with the Indigenous communities in Odisha and from the Odisha Millets Mission and Odisha State Food Commission, two public department officials (State Agriculture Department, Panchayati Raj Department), two local academic researchers, and a communication practitioner. During my interactions with the research participants, it emerged that Indigenous community seed festivals were being revived and celebrated in the millet-growing districts. This was also happening in other states in the country. Adopting a rapid review approach [100,101] aimed at synthesising evidence from diverse secondary sources within a short timeframe on what is known about them, it was apparent that such festivals are generally considered part of an ancient heritage and as a marker of an Indigenous farming identity and religious-spiritual values culturally relevant to the farming communities. The diverse sources included published literature (peer-reviewed and grey), media reports, web-site content, blog posts, videos, and personal communication. It also became clear that there is a distinction between the rural Indigenous community seed festivals that are locally rooted and have been historically practiced and those that can be considered as ‘non-Indigenous’ in nature. The latter are planned and organised as a platform or as a networking event, usually by stakeholders in the public or the private sector, to bring together farmers as well as other key stakeholders for market promotion or showcasing of local/traditional seed varieties, food, and farming systems (e.g., Community Seed Fest supported by M S Swaminathan Research Foundation in Wayanad, Kerala) [102]. These are different from the rural type embedded historically and socially within an Indigenous setting as *Burlang Yatra*. Nonetheless, the literature review suggested a broad acknowledgement of the significance of community seed festivals voiced at different forums (local, national, and global), particularly by the civil society sector. However, there was a lack of in-depth systematic attention given to the ‘meaning-making’ of the festival by the Indigenous farmers themselves and the particular ways in which it was influencing the food system and the outcomes. Rural Indigenous community seed festivals, whether in Odisha’s context or elsewhere in the country, turned out to be largely an unexplored research area.

Choosing to study *Burlang Yatra* was influenced by the fact that, at the time of the field work for the wider study on millets revival in the state, the festival was celebrated a few months earlier, and the farmers in my study drew my attention to it. At a focus group workshop that included the fifteen farmers from five millet-growing districts as well as the civil society organisations working with the Indigenous communities, the participants shared their experiences, opinions, and perceptions of the festival through retrospective reflection. Retrospective reflection, much used in educational research, involves asking participants to recall a past experience related to a practice, and then themes are extracted from the description [103]. In-depth semi-structured interviews were also held with a selective sample of the research participants—three farmers from Kandhamal district (site of the festival), a civil society organisation (NIRMAN) engaged with millet cultivation in that district, and the communications practitioner who had worked with the Indigenous communities in Kandhamal.

The exploratory nature of unpacking the ‘meaning-making’ of the festival from the perspective of the farmers and interpreting their experiences and perceptions suggested the need for an interpretivist approach [104,105]. This approach allowed me to focus on the embedded meanings of the festival in the local context—the social and the ecological—and how those meanings make sense from an Indigenous perspective. The analysis is therefore contextually-bound. Also, taking into account my positionality as a non-Indigenous researcher, the interpretive approach is culturally and ethically appropriate in

that it allowed me to keep the “interests, experiences and knowledge” of the Indigenous communities at the centre of research methodology, as emphasized by Indigenous scholars in other such research contexts [106] (p. 119).

Following the logic of interpretive inquiry [105], secondary data collected (from documents, reports, blogs, websites, and audio-video material) and primary data co-generated (through interviews, focus group, and the reflective journal kept by me), which together formed the data set, were subjected to thematic analysis [107]. An abductive process of reasoning [105] (p. 27), [108] led to the identification of three key themes. This involved an iterative–recursive process of going back and forth between the data set, my “theoretically-positioned knowledge” [108] (p. 177), and the analysis. The interpretation of the themes as the ‘self-organising principles’ around which the festival is organised and which act as socially producing and reproducing the meanings are described in Section 5. This interpretation is situated within the well-established framework of a social-ecological perspective while drawing on literature on community self-organisation and resilience within an Indigenous food systems context. A much more integrated and nuanced analysis drawing more fully on the dynamics of complex, adaptive, social-ecological systems thinking [109] would have required a phenomenological or an ethnographical approach, which was beyond the scope of the study. Nonetheless, the original insights into ‘making-sense’ of an Indigenous community festival from a social-ecological perspective and linking to community self-organising in a specific context as developed in this paper can be utilized to inform further research, as discussed in the last section.

4. Burlang Yatra

“It is a festival of our hope, revival of our lost seeds, and sharing our knowledge with others.”

(farmer, female, Biodiversity Festival in Kandhamal, 30 March 2018) [110]

Locally known as ‘*Burlang Yatra*’, the closest translation of ‘*Burlang*’ in the local dialect Kui into English is ‘related to seed’, and ‘*Yatra*’ means a local ‘fair’ or ‘festival’. Thus, together, *Burlang Yatra* is commonly described and understood as a ‘seed festival’ or a ‘biodiversity festival’.

Burlang Yatra is celebrated by the Indigenous community of Kutia Kondhs in the district of Kandhamal in Odisha (Figure 1). Kutia Kondhs are a sub-group of Kondhs (also referred as Kondhas or Kandhas or Kui loku) who comprise the largest Indigenous community in the state. Among the 62 tribes that inhabit Odisha, Kondhs comprise 17% of the total Indigenous population; nearly 1.6 million and nearly a third of Kondhs described themselves as ‘cultivators’, which is the highest proportion in relation to the other Indigenous communities in the state [111]. Their agriculture is subsistence-oriented, and they are predominantly marginal and small farmers [112] (p. 45). They depend also on forest produce and in certain parts practice slash-and-burn agriculture. An equally high proportion of them are also engaged as wage labourers. Other minor sources of livelihood include micro forest-based enterprises such as sal leaf plate making and basket and broom making. Although their economy has changed gradually from a barter system to become monetised, the sharing economy is still widely prevalent [113]. In the wider context of Odisha’s economic growth in the past few decades, the social and the economic structures in Kandhamal have remained relatively unchanged.

While conducting a study in the district of Kandhamal in 2011, NIRMAN found that the area under millets and other indigenous crops in the district was steadily declining, and out of 40–50 varieties of crops that were grown earlier, only 12–13 varieties were being grown in the region [18]. Food insecurity had already become a major issue in the district, and the Kondh community was reporting negative impacts of the shift away from millets on their household food and nutrition security. NIRMAN's study also found that farmers who switched to other 'new' crops, mainly cotton, induced by incentives provided by the state government, were left devastated from a loss of crops due to climatic vulnerabilities and pest/disease attacks, and the farmers were keen on reviving their traditional millets-based farming. In response to this need, and by adopting a community-led approach, NIRMAN started facilitating village level institutions for the affected communities to affirm their control over their own food production system and improve livelihoods [33]. This involved helping the villages set up and manage community seedbanks in the first instance to overcome the problem of local seed and grain shortages and thus to restore community's access to healthy and culturally sought-after food.

NIRMAN also responded to the need expressed by the Kondh communities for reviving *Burlang Yatra*. Drawing on the rich local and contextual knowledge that it has of its project area, which included 24 villages in the Tumudibandha Block of Kandhamal district, NIRMAN facilitated the celebration of the festival by bringing 448 farmers together in 2015. As described by NIRMAN, it did this because:

“... the festival is unique in many ways—it is revival of seed and crop diversity, revival of knowledge system and revival of hope in the current agricultural crises.”

[personal communication]

Since 2015, the festival has grown over the years, as evidenced by anecdotal growing numbers of villages and farmers participating in it. It was organised as a two-day event in 2016, and it was estimated that more than 700 farmers participated in it [33]. In 2018, it was held as a week-long event, drawing as many as 800 farmers to the event [110]. In a bottom-up approach, every year, a different village self-selects itself to host the festival and invites farmers from surrounding villages to participate, and this is on a voluntary basis. The growth of the festival has been facilitated by NIRMAN. Importantly, though, the festival remains under the control of the Kutia Kondhs. It is the Indigenous community leaders who decide the time of the festival, which, in this case, is the post-harvest season. The place and the timing of the festival thus have clear social and cultural meanings for the Kutia Kondhs. The community then plans and manages the different activities at the festival following their own socio-cultural norms and inclusion of sacred elements. This aligns with “culture controlled” [118] festivals or events, as described in literature, where such control has provided Indigenous communities with a means to reclaim heritage, increase economic independence, and preserve culture [119].

Thus, as a coordinated and purposeful community-driven and bottom-up event, the festival illustrates self-organising behaviour, which is also intentional and decentralized. In the current revival mode, it has been facilitated by civil society actors, with some of them from outside of the Indigenous community; nevertheless, the process is still bottom-up and culturally embedded, driven by norms and values of spiritual and ceremonial significance to the Indigenous farming community. Older farmers from the community noted how little the festival has changed over time in terms of how the festival is celebrated. The primary motivation for celebration, as described by one of the farmers in the focus group workshop, has remained the same—“to come together to offer gratitude to mother earth and seeds which sustain life on earth”.

The need for revival of the festival was described by the farmers in the study as not simply a response to the overall decline and neglect of millets and the loss of genetic diversity of crops but also to the increasing disconnection to millets-based farming that many of the farmers, especially the younger ones, were experiencing and the loss of traditional knowledge about production, processing, and use of millets. The persistence and the revival of the festival seen against this rests on the notion of (place-based) cultural sustainability, where food and nutrition interlock with biodiversity, seeds, lands, and knowledge of an Indigenous food system. This can be linked to a 'sense of community'

defined as “process in which the members interact, draw identity, social support, and make their own contributions to the common good” [120] (p. 6). This has been shown to act as a strong influencing factor in other community action contexts [121]. This also resonates with findings in community resource management literature, which show that when a local community cares about each other and the ‘place’ they inhabit, community agency emerges, and the capacity for them to act collectively is increased [38,89,122,123]. Thus, the sense of community is integrated with a sense of place and belonging [124,125].

The developing alliances between the Indigenous communities from Kandhamal, neighbouring districts, local CSOs such as NIRMAN, and other regional and national CSOs suggest the emergence of ‘bridging capital’ (ties between groups) and ‘linking capital’ (vertical relationships) in addition to ‘bonding capital’ (group cohesion) [59,63,70]. By allowing for Indigenous farmers from different villages to connect despite the geographically sparse distribution of the settlements, the festival creates bridging ties. The relationship between the communities and the CSOs (including networks) at different levels—regional and national—suggest linking ties. Importantly, in contrast to observations made in literature [66] about ‘disadvantaged’ communities in ‘resource poor’ contexts (i.e., high-risk semi-rural and urban environments) relying on ‘linking capital’ to have access to sources of power and wealth and greater access to resources and opportunities, the experience in the context of Kandhamal appears to be different. The CSOs, in this case, have taken the initiative in developing alliances based on trust, a shared vision, and the values of those of the communities they are working with to facilitate a purposeful coordinated action.

In the context of *Burlang Yatra*, NIRMAN’s role has therefore been in providing essential support in mobilising collective community action and a focus for renewed optimism to halt the erosion of biodiversity, livelihoods, Indigenous knowledge systems, local food grains, and food security. NIRMAN, using its relationships with other local/national organisations and with local government agencies to draw support for a number of other activities, programmes, and events that they are engaged in, and which are often organised by the local communities themselves, is consistent with ‘multi-faceted networks’ observed in Asia, which are seen as critical to the success of community-based conservation projects [126]. CSOs such as NIRMAN could be thus considered as ‘bridging organizations’ playing a facilitating role in mobilising resources towards what the Indigenous communities value. This is consistent with newer understandings in literature where self-organising behaviour in social-ecological systems can be intentional as opposed to autonomous and could include processes actively driven by multiple stakeholders [127].

As we see in the next section, the collective sense-making and the shared meanings that underpin the festival are embedded in the key elements of the festival—in its performing.

4.2. Performing *Burlang Yatra*

Burlang Yatra starts with women farmers carrying seeds kept inside specially painted pots on their heads arriving at the host village in a procession that is then followed by the worship of seeds with the traditional lighting of diyas (i.e., tiny cup-shaped oil lamps made of baked clay). This is followed by a collective exhibition of seeds, and then the exchange of seeds takes place between the farmers. Celebratory traditional music and dancing by men and women farmers from both the host and the visiting communities accompany the event. Beneath this simplistic and commonplace description of the festival, however, a closer look reveals the elements that are key to the celebration.

4.2.1. Display and Exchange of Seeds

Central to the festival’s identity is the display and the exchange of local seeds—not just of millets but also pulses, oilseeds, and vegetables intercropped with millets, as well as paddy of different varieties, which are not only successfully grown by the farmers but also have desirable qualities such as resistance to pests and diseases, good taste, nutritional quality, and high yields. These seeds placed in colourfully painted clay pots are kept in an open space in the centre of the host village throughout

the festival. At the 2017 festival, it was reported that more than 90 types of seeds of millets, pulses, and oilseeds were exhibited by the farmers [128].

The 'sharing' through exchange of seeds takes place between the women farmers, reflecting what has long been observed in many Indigenous contexts that women play a pivotal role in the conservation of biodiversity [41,74,129]. Among the Kondhs as well, women play a key role as 'primary caretakers' of millet farming, whether it is to do with seed collection, selection, preservation, or storage of the local resilient varieties [17]. The entire seed exchange ceremony is presided over by the village priest (also a woman) who affirms the spiritual 'value' of seeds as a 'gift' from Earth-Goddess (Dharni Penu) to be safeguarded and handed down through multiple generations of families. The Kondhs also have 'seed-mothers' (bihana maa in the local dialect) in their community whose main responsibilities include identifying, collecting, multiplying, and conserving traditional seed varieties and motivating farming families to use them [130].

4.2.2. Sharing of Food and Recipes for Cooking

The millets grown by farmers are primarily consumed by their own households, which makes the preparation of millets-based food a part of their everyday lives. Millets are taken at breakfast, lunch, and dinner with different types of millets cooked as both light dishes such as porridge, gruel, and pancakes and as main meals, the latter often mixed with vegetables and legumes grown along with the millets. Millets were described as highly nutritious and as "tasting much better in comparison to rice and wheat" by the participants in the study.

While the women gather together at the festival, they discuss amongst themselves millets-based food recipes, the different methods of processing and cooking to make palatable dishes from the different varieties of millets, and the specific health benefits from consumption of particular millets at different life stages (i.e., those suitable for young children, for women during pregnancy and lactation, and for the old and the infirm). Along with millets, information and recipes for a variety of native fungi, plants, and animals that are used for food or medicine and which have been used by the community for countless generations are also shared. NIRMAN observed that, whereas millet-based food was earlier limited to preparing a few traditional meals, in recent years, this has been expanding through exchange of recipes from other millet-growing regions in the state and outside of it, facilitated by the local CSOs. In the 2018 festival, the CSOs even set up millets-based food stalls to display 'new' millets-based foods that could be prepared. This was described as a useful way to reintroduce an interest in traditional foods among the Indigenous communities themselves through the sharing of newer and innovative recipes from different millet-growing regions. One participant also described it as a useful way of stimulating the demand for millets in non-Indigenous/urban areas, as the festival also attracted visitors from nearby semi-rural/peri-urban areas. The sale of millets-based foods produced by Indigenous households was described as creating 'newer' opportunities for supplementary sources of income. The purchasing of millets for consumption (as opposed to growing themselves) or growing millets for the market economy was, however, not considered central to their Indigenous food or agricultural practices, although if surpluses are left, it is not an unusual practice for the farmers to sell the surplus in the local village markets.

4.2.3. Sharing of Knowledge, Experiences, and Practices of Farming

Since Kandhamal is characterised by undulating topography, different soil types, and large areas of land held as commons, the practices of growing different varieties of millets (and other crops) by the farmers along with the livestock and the poultry that they keep are highly location specific. At the same time, the farmers confront many of the same production risks and uncertainties from unfavourable weather conditions, outbreak of pests, and lack of irrigation, among others. At the festival, the farmers—old and young, men and women—gather together informally and share their experience, knowledge, and practices of farming. They give and receive advice and suggestions from

each other, for instance, on preparing land, sowing seeds, water and soil conservation, protection of seeds and plants, weed management, choosing cropping systems, and harvesting, among others.

4.2.4. Dancing and Music

Social bonding is an important component of the festival. The event starts with the visiting farmers holding a procession in the host village, which is accompanied by traditional music and dancing. In the evenings, they form groups and perform traditional dances and folk singing. The festival also ends in a similar spirit. As in the case of other community festivals (such as those at the time of sowing and harvesting), Kondh communities consider festivals as occasions for the farmers “to meet up, sing, dance and celebrate their ecology and their oneness” [131] (unpaged). Communal feasting provides the other avenue for social bonding among the community. Food is cooked onsite and shared among all those present.

4.2.5. Exhibition and Sale of Non-Food Products

Some non-food products made by the Indigenous communities, such as grass brooms, sleeping mats (made from reeds), leaf plates and leaf bowls (made from leaves of siali tree), and organic manure, are often exhibited and sold to visitors from nearby regions. This was described, however, as a minor aspect of the festival peripheral to the main event.

4.2.6. Felicitation of Farmers

A new addition in recent years introduced by the local CSOs is a felicitation ceremony for acknowledging farmers for their success in growing and restoring diverse types of millets crops. This has also been observed in other states [132]. Local government officials often are invited to award certificates to the farmers. This can be seen as a useful tactical device used by the local CSOs for validating Indigenous heritage and as a means of legitimizing it, although it potentially also raises issues around risks of changing established relationships and identities within the communities. This ‘external’ recognition, however, was generally welcomed by the farmers in the study as a recognition of their rich heritage.

“Millets based mixed farming is the heritage of Kutia Kondh community, we are proud of it.”

[farmer, female, focus-group workshop]

Clearly, in contrast to many other types of socio-cultural festivals, the focus of *Burlang Yatra* is neither on income generation nor it is about attracting tourists or business opportunities. Rather, it is about celebrating the ‘self-sufficient way of life’ of the rural Kutia Kondh communities built around an Indigenous millet-based food system. Much of the mainstream development discourse is focused on the persistent economic deprivation and the ‘backwardness’ of such Indigenous communities in Kandhamal and the neighbouring region in terms of socio-economic and human development indicators. The cultural image held of the Indigenous communities in the mainstream discourse is that of them being primitive and being “no changers” (i.e., following traditional rituals, beliefs, and customs), having an ‘unorganised economy’, communal living, and “distrust of outsiders”, which keeps them locked into vulnerability and deprivation. As in Indigenous contexts elsewhere, they are considered as socially and politically isolated and economically marginalised, subject to discrimination, exploitation, and dispossession. At the same time, regions inhabited by Indigenous communities are acknowledged as repositories of high levels of “biocultural diversity” [133] and provide refuge to diverse plant and animal species, reflecting the traditional conservation and management practices of the local Indigenous communities. Yet, such social-ecological connections in Kandhamal (and broadly in Odisha’s context) remain widely underappreciated.

To the extent that similar Indigenous community seed festivals are also being revived in neighbouring millets growing districts, it can be seen as affirmative action towards reclaiming ‘shared meanings’ [39] through a form of community self-organisation that is ‘place-based’, relying

on the “attachment to territory and culture” and unique in its grassroots nature for engaging in the “production of locality by enacting a politics of scale from below” [134] (p. 161). I look at the shared meanings next.

5. Self-Organising Principles

The large body of literature that exists on the significance of collectively shared ‘commons’ (as in the case of forests, wetlands, freshwater bodies, range lands, and fisheries) to rural lives and livelihoods [36,135,136] identifies the existence of “rules-in-use” for decision-making that are internal to the system and that promote sustainable resource management [36,136]. Borrowing from this analytical approach and extending a similar understanding to millets-based farming in Kandhamal, a closer analysis of *Burlang Yatra* reveals key principles around which I show that the festival is self-organised and which I suggest, in this paper, as playing an enabling role in sustaining the ‘vitality’ of the social-ecological landscape in which it is embedded. The key principles include relationships, adaptation, and responsibility, which focus on the interactions between the two systems—social and ecological [34]—instead of one or the other.

5.1. Relationships

“Our community has its own way of resolving problems ... When any farmer falls ill ... or his wife falls ill and they face a problem on their land—whether ploughing, to plant seeds, weeding or harvesting—they ask for help and other farmers in our community will come forward and work in his field and get the work done. We call it ‘badala pratha’ (exchange of labour). This helps to cope ... we exchange labour and not money.”

[farmer 1, male, semi-structured interview]

The most significant aspect of the festival is bringing together Indigenous millet farmers and their engagement in meaningful interaction through activities such as the exchange of seeds and the sharing of knowledge and practices. As shown in other contexts, it is through the personal experiences of participation [137] and social interaction among people who share a common history that relationships are forged—in this case, both interpersonal as well as in relation to ecosystems [34,138]. These together over long periods shape close relationships between people and nature, giving rise to an “eco-cultural” or “biocultural” landscape [139] (p. 3410) where relationships to the land/ecology go beyond production and consumption to symbiotic relationships with all life forms and a nurture of such relationships that sustain life [131]. Clearly, the values of the farmers, how they work, and how they live also influence these relationships. Relationships, as is well-known in the literature, are mediated by norms that develop from knowledge and understanding generated over years. Norms in turn shape the nature of cooperation and decision-making, which, in this case, are manifested in what is described informally by the farmers as the “Kondh way of farming” [131]. As the farmers observe, participate, and interact with each other over time at the festival celebrated every year, the norms of agroecological farming practised by the Kondhs can be argued as getting consolidated and influencing practices in turn. The norms of exchanging of seeds for free between the farmers, for instance, which is central to the festival and which attaches spiritual value to seeds as the source of life, can thus be argued as supporting a ‘relational’ model instead of a transactional model of relationships. This ensures that shortage of seeds faced by a farmer household for any reason or by the community as a whole during a time of climatic crisis is met through the practice of collective preservation, storage, and sharing of seeds. By regarding seeds (or food more broadly) as a ‘gift’ from mother Earth, seeds have thus become the locus of ethical relationships and community building processes. Similarly, the practices of excluding chemical pesticides and synthetic manure in cultivation or selecting specific crops for intercropping with millets are underpinned by norms that prohibit or minimise the harming of other forms of life (e.g., soil microorganisms, bees, small birds, and small animals), which in turn mediate a ‘sacred’ relationship between the community and the ecosystem. This ‘sacred’ aspect conforms to the

understanding of ‘spiritual ecology’ in the literature on conservation, environmentalism, and earth stewardship [62,140,141].

“We will continue to grow millet crops . . . it requires less water and it is the staple food of our people. We eat mandia (millets) along with rice provided by government. Our community will never be ready to quit millet crops -it is linked with our food habit and culture.”

[farmers, focus group workshop]

At the festival, the participation and the interaction of the farmers also facilitate the process of “social learning” [76]. Social learning is said to take place through changes in understanding that happen not only at an individual level but are also situated within a wider social unit and more importantly occur through social interactions [142]. It is underpinned by a process of iterative reflection that occurs when experiences and ideas are shared with others [143], also described as “self-organized learning” [144]. Each farmer at the festival not only individually brings something to the interactions but also collectively contributes to the interactions. This is derived from the shared experience of confronting the same possibilities and risks linked to millet farming in a rainfed landscape. Further, the social learning here is linked to ecological learning such that the practices that are propagated have an ecological basis. When such learning happens over a period of time over different generations of farmers, it generates collective tacit knowledge. This emerges from a systematic process of observing local conditions, experimenting with solutions, and readapting previously identified solutions to modified environmental, socio-economic, and technological situations [145]. This gets mediated through cultivating informal shared use of behavioural norms and implicit ways of working and learning together [146]. In this way, relationships nurtured at the festival may be also seen as shaping the process of knowledge creation and transfer [147].

Since it is held regularly on an annual basis, the festival offers the space for re-(shaping) and re-(expressing) norms as well as consolidating them at the same time. In this sense, it also facilitates the communication of norms (and values) over time between successive generations of farmers, and it is well-established in social-ecological literature that communication is key to re-producing “collective memory and meaning” [148] (p. 258). Further, the passing on of shared meanings and norms over generations can be seen as providing the communities their particular Indigenous Kutia Kondh identity, which, following Rotherman’s work [139], can be seen as imprinted into the landscape as patterns of land-use (resource utilisation), farming, and food practices specific to the community.

5.2. Adaptation

“Our lands are dry. Traditional farming and traditional crops helps us live . . . Even if there is little rain, we can grow gurji, rakshi, kudo, mandia (varieties of millets) In times of drought also, they survive. There are no pests and diseases. They suit our land and water. . . . When we put chemical fertilisers, the leaves become very tender, makes it very easy for insects to eat them. But when we use natural manures, the colour of plants come gradually and the stalks and leaves remain firm . . . insects find it difficult to eat . . . they come to taste and then go away. I use pesticides made from a mixture from neem leaves, benguna, karaza . . . We use broadcasting method for seeds . . . six-to-seven crops at one time which we harvest at different times throughout the year . . . in this way we have food . . . ”

[farmer 2, male, semi-structured interview]

Going beyond simple participation, farmers at the festival engage in discussing the problems they are confronted with, whether it is to do with preparing the land, improving fertility, preventing soil erosion, ensuring water drainage, preserving soil moisture, avoiding weed removal during scanty rainfall, or protecting seeds from diseases. They share solutions by giving and receiving advice from each other. In this sense, the sharing of knowledge and practices among the farmers links to the capacity to innovate or to adapt to changing socio-economic-ecological conditions. Especially since millets are grown in rainfed and marginal areas subject to much uncertainty and unpredictability,

the sharing of knowledge of risks, recovery, or adaptation is understandably critical to coping and overcoming the challenges. When the knowledge shared is put into practice, it is more often than not further deepened and broadened or fine-tuned to meet location-specific needs. This resonates with the idea of farmer-led experimentation driven by local knowledge and experience that aims at not only mitigating production risks but also enhancing yields from lands of variable quality by choosing specific varieties of millets, choosing specific crops for intercropping, and even keeping new livestock or finding new ways of storing seeds.

“We save our seeds . . . ourselves. We don’t buy. We store them in small small jute sacks . . . We don’t put any chemical fertilisers or insecticides . . . insects come but they go away on their own... We use natural manures on our lands. We keep cows, goats, chickens . . . In crops, we are growing ragi, kueri (different types of millets), along with katinga, kandul (pulses) and some other crops such as judanga (chick pea), maize, jatropha, on the dangar (hilly lands) for many many many years as long as I remember, since the time of our grandfathers . . . and their grandfathers. We use stripped mixed cropping method . . . crops growing side by side with other crops. No crop can be grown near kandul (a pulse variety) field.”

[farmer 3, female, semi-structured interview]

Another instance of adaptation can be seen during the exchange of seeds at the festival. Those seeds are exchanged, which the farmers have identified and selected for desirable qualities (such as taste, resistance to pests and diseases, and good yields). Every farmer saves a small percentage of seeds at the time of harvest every year. These seeds are carefully selected and stored for the next planting, which allows for locally adapted varieties of crops to “coevolve” with farming practices as well as changing agro-climatic conditions [149]. Also, the farmers reported that, prior to the exchange of seeds at the festival, they engage in participatory exercises such as seed mapping in their respective villages to ensure a broad selection of seeds.

In the Kutia Kondh community, therefore, coping and adapting to the collective risks they confront in the risk-prone rainfed landscape is achieved through collective problem-solving (or conflict resolution). This ability to act collectively leading to ‘adaptive resource management’, as observed in the literature on community-based resource management [76,144,150,151], is also bound to the capacity to adapt. It could be argued that, by providing an essential space for flows of information (i.e., problems and solutions) to take place between individuals and to collectively shape decision-making [150], the festival supports the farmers’ capacity for mobilising individual and collective action for adaptation.

5.3. Responsibility

“You need to grow traditional crops . . . birds get food, insects get food, and people get food. In my land, there is a small bird, black in colour, warns me of harmful animals, it chirps when it sees snakes . . . I don’t kill them . . . I’m sharing my knowledge with my son, my wife . . . Almost every evening, 10–15 of us farmers, men, we discuss about our crops, about pests and diseases, how to make traditional insecticides, what works and what is not working. . . yes, sometimes women join us . . . We meet up in a common verandah (informal community space) for half an hour to one hour, discuss about all topics – not just farming, but also other community matters. If somebody is not well, we decide to help him on his land – weeding, ploughing, whatever it may be.”

[farmer 2, male, semi-structured interview]

The Kutia Kondhs subscribe to an ideology/philosophy that rests on respect and collective responsibility to protect nature. In their worldview, people and nature are not separate entities; instead, they are co-dependent, and the underlying ethical principle that shapes their customary rules is that the well-being of human society is dependent on the well-being of natural ecosystems. For the farmers, the agricultural landscape is not simply about producing food and livelihoods, but it is also central to their belief systems, ceremonial traditions, and cultural activities. This corresponds to both an

“extrinsic physical dependency” and also an “intrinsic dependency” that Pilgrim et al. describe in their study of Indigenous communities, which results in individual and cultural identity being intertwined with the landscape and nature as a whole [152]. Studies on Indigenous communities in Australia have revealed an ethics of ‘caring’ reflected in their philosophy and livelihood, including strong spiritual affiliations to land [153].

At the festival, the shared understanding of a Kondh identity of ‘how things are done’ in the Kondh way of millet farming is expressed and ‘performed’ through the worshipping and the exchanging of seeds and by communicating problems and sharing local solutions. By sharing carefully selected seeds at the festival, the farmers are also taking on collective responsibility such that farmers who did not manage to save a diverse or a good amount of seeds from their harvest or who experienced a complete loss of harvest are not left to fend for themselves without any recourse to seeds.

Thus, as farmers, seed savers, and seed storers, the Kutia Kondhs can be seen as enacting their roles and responsibilities at the festival—(re)affirming their responsibility towards each other as well as towards nature in the form of offering gratitude to mother earth and seeds, which sustain life on Earth. In their practices, reciprocity extends also to other life forms, including wildlife and natural features of landscape such as forests, mountains, and water bodies. Indigenous botanist Kimmerer speaks of “cultures of reciprocity” where humans and non-humans are bound to each other “in a reciprocal relationship” that creates duties and responsibilities for both, and where humans do not control nature but live in harmony with it [154] (p. 115). Nayak’s study on the protection of sacred plants, sacred groves, sacred mountains, and sacred rivers by the Indigenous communities in Odisha point to this reciprocity valued by the communities as the “connecting link between past and present biodiversity” [130]. The role of sacred groves and ponds, acting as “refugia” in the conservation of biodiversity, has been found to be widely prevalent in Indigenous resource management systems across the country [89,155,156]. This understanding that humans and the ‘environment’ are bound in relationships of reciprocity, respect, and obligation—and not coercion, domination, or control—is fundamental to an Indigenous worldview [154].

To sum up, these three self-organising principles—relationships, adaptation, and responsibility—working in tandem resonate with the understanding of “biosphere stewardship” [109] in social-ecological literature. It is essentially about human behaviours and actions ‘connected’ to the capacity of the biosphere to sustain the human dimension as well as the stewardship of that capacity. Also, in stewardship, there is the particular understanding that people are intrinsically motivated to work for accomplishing the tasks and the responsibilities with which they have been entrusted; it is more about convergence of collective goals than individual self-interest [157,158]. From the community perspective, this aligns with the “community-based stewardship” concept [159]. The Kondhs could be thus seen as having been the custodians of that part of the biosphere for thousands of years, if not more. Although not explored in this study, it is known from other contexts that Indigenous kinship systems often relate groups of people to tracts of “country”, and Indigenous groups expressly state their responsibility to care for that “country” as well as for one another [153]. From this viewpoint, *Burlang Yatra* creates the enabling conditions for stewardship of social-ecological landscapes to emerge. Going beyond stewardship of biodiversity, it is also about stewardship of dietary and nutritional diversity which are central to agroecological practices [160].

Considering the salient nature of *Burlang Yatra* around the worship of seeds in particular and the farming community’s intent to ‘please’ mother earth, it is also possible to identify an element of reification [137,148]. As Wenger puts it, reification, along with participation over time, generates a ‘living library’ [137] that retains and creates ecological practices and knowledge, which is potentially happening in this case. Also, as the festival is not bound to one specific location but rather rotates between different villages in the millet farming landscape, it can be argued that the festival nurtures a ‘living library’ of ecological practices and knowledge, not just across time but also across space, within the particular social-ecological landscape. This resonates well with the understanding of

“social-ecological memory” [148] (p. 262) and the implications for resilience, as discussed in the following section.

6. Social-Ecological Memory—a Shared Source of Social-Ecological Resilience

As discussed above, the festival has the capacity to forge and strengthen relationships, support adaptation, and consolidate responsibility. These are driven by processes of intergenerational and inter-regional participation and interaction by millet farmers, and social learning. It can then be suggested that this fosters ‘social-ecological memory’ [148] of the Kondh way of millet farming. Social-ecological memory is understood as the combined means by which knowledge, experience, and practice of ecosystem management are captured, stored, revived, and transmitted through time in a society [148]. This could be through both biophysical and social features including genotypes, artefacts, and written accounts as well as embodied rituals, art, oral traditions, and self-organized systems of rules [161]. Essentially, it captures relations between humans and living ecosystems that influence the ability of people to respond to disturbance. It has also been described as “cultural memory” [162]. In the context of this study on millet farming in Kandhamal, it would appear that the festival becomes the medium to foster or catalyse social-ecological memory, especially in the absence of other means (such as written accounts) to record farming knowledge, skills, or practices by the Indigenous communities. It has been found in many other Indigenous contexts that it is only through oral traditions or through imitation and demonstration that traditional knowledge gets passed on from generation to generation, such as the traditional names for the local foods, learning about the places where the foods were harvested, or the tools used during harvesting of traditional foods [3].

As *Burlang Yatra* (along with other rural Indigenous festivals) is held on an annual basis corresponding to the agricultural cycle, it can be argued that the festival allows the ‘newer’ or the ‘younger’ farmers to engage with millet farming without having to know everything before they start. Instead, they do so by ‘linking into retained practices, reviving and reinventing them’ [137,138,163] through their interaction with the older/experienced farmers at the festival. Whether it is the genetic selection of varieties of millets that would thrive with other crops, the knowledge of nutritive and medicinal properties of millets (and other crops), their processing, storing, cooking, or conserving seeds, or the raising of particular livestock that can thrive in the particular social-ecological landscape, it can be reasoned that such knowledge and practices having emerged through co-evolutionary processes between people and nature are carried by social-ecological memory. Further, by allowing for the collective (re)defining of knowledge, skills, and practices over time while responding to changes at the local scale, the social-ecological memory of millet farming can also be construed as a ‘shared source for resilience’ [148].

This form of resilience resonates strongly with ‘social-ecological resilience’ defined as the capacity of social-ecological systems to adapt or transform in the face of change, particularly unexpected change, in ways that continue to support human well-being and the ecology [109,164]. This intertwined social and ecological resilience has been particularly observed where communities are directly dependent on ecosystems and environmental resources for their livelihoods [165]. In the context of Indigenous communities, this resilience can be understood as emerging as an outcome (i.e., the adaptations undertaken by communities) as well as a process (i.e., collective learning), which is facilitated by the gathering of farmers and their ‘performing’ of the festival. The festival offers the space to nurture social-ecological resilience in the form of sustaining a belief in the community’s ability to protect their own well-being and that of the ecology around them, sustaining their ability to survive and thrive through change, and sustaining belief in their ability to develop the necessary capacity to be resilient—these cultural aspects found in other contexts to be significant for community resilience [59,97]. However, the extent to which this social-ecological resilience extends to coping with significantly large threats and risks from outside the community’s ‘sphere of influence’ [166] (e.g., external stresses such as social or political upheavals, policy interventions, or natural disasters) as well as to internal

vulnerabilities (such as power asymmetries, changing or conflicting values, or demographic changes) are issues not addressed in this study.

7. Discussion and Conclusions

In this paper, I focused on an Indigenous rural community seed festival traditionally and historically celebrated by the Indigenous millet farmers in the district of Kandhamal in Odisha, which declined but has been revived in the last decade with the support of civil society action. At this event, millet farmers from different villages, women and men, old and young, come together to share knowledge, values, and practices, including the exchange of Indigenous heirloom seeds between themselves. However, in the dominant revitalisation of Indigenous food system narratives, such community seed festivals remain largely underappreciated (and underexplored). The analysis presented in this paper is an attempt to address this gap.

Investigating *Burlang Yatra* through a social-ecological lens that looks at linked social and ecological systems allowed for a greater understanding of the festival's meaning and significance. Relationships, adaptation, and responsibility emerged as the key principles around which the festival is self-organised and which together link the social and the ecological in a dynamic sense. These principles, driven by processes of intergenerational participation and interaction, social learning, and communication, can be seen as being linked to the process of fostering or catalysing 'social-ecological memory', which carries and transmits knowledge, experiences, and values of millet-based biodiverse farming. This in turn has the capacity to help the communities enact stewardship of their social-ecological landscape and be resilient to changing conditions at the local scale. The festival is thus deeply embedded with social-ecological meanings. The festival's revival from within the community and facilitated by local civil society action in a bottom up approach outside of the state and the market forces illustrates it as a form of grassroots self-organising for resilience in the specific context and which draws on values of an Indigenous knowledge system.

The self-organising of the festival's revival in recent years can also be interpreted as an attempt by Indigenous communities to restore the cultural and the ecological relationships they have with their own foods and practices and reconnect with their traditional ecological knowledge and landscape. Following the work by Indigenous scholar Waziyatawin, it can be seen as "a feedback loop" that asserts that "the more we learn to restore local food practices, the more likely we are to defend those practices, and the stronger our cultural ties to our homeland become" [167]. Within Indigenous cosmologies, both landscapes and foodscapes have been described as occupying "a simultaneously physical, spiritual, and social geography" [168] (p. 436–437). In this sense, community self-organisation in the context of *Burlang Yatra* can be positioned within "a restorative context that works to nurture individual and community health by repairing and fostering healthy relationships" [169] (p. 10) weakened by marginalisation and 'disconnection' from the environment.

The focus of this study was on one festival in one district of Odisha, and it yielded original and significant insights into its meaning and significance. Insofar as similar Indigenous community seed festivals are celebrated in neighbouring districts within the state and in other parts of the country by Indigenous communities, it would be fair to suggest that they hold meanings and significance that remain unexplored. Further research, more thorough and empirically grounded, could examine such festivals in different social-ecological landscapes, and the analytical approach of identifying and understanding organising principles around the performing of the festivals used in this paper could offer a starting point to conduct such research.

Two key learnings emerge from this paper. First, there is the need to go beyond a simplistic celebratory and promotional discourse around such festivals as rural, historical, socio-cultural traditions to recognise their deeper significance in 'reconnecting' [170] and sustaining biodiverse farming at individual and community levels. It is a form of self-organising grounded on values of an Indigenous knowledge system focusing on relationships, adaptation, and reciprocity as key to social-ecological resilience. Second, the paper contributes to offering a new understanding of using a social-ecological

framework at the community scale as a useful approach to support revitalisation of Indigenous food systems for food and nutrition security, biodiversity conservation, and biocultural diversity. This would mean extending the primary focus from the millets supply chain to the social-ecological co-dependence rather than improving certain varieties/species of millets for sole purposes of productivity, profitability, and/or consumption leading to monocultures as promoted in mainstream policy discourse [13]. The adoption of value chain development as the sole response/strategy to millets revival can compromise the capacity of the Indigenous communities to be stewards of agro-biodiversity and diet/nutrition-diversity. Research is beginning to show that food insecurity and susceptibility to serious health issues experienced by the Indigenous communities are not from “inherited traits in their flawed cultures”; rather, they are from the erosion of Indigenous food systems [169] (p. 4).

While this paper suggests that community seed festivals potentially play a vital role in revitalising Indigenous food systems, it acknowledges that this does not automatically demonstrate significant or positive outcomes. In their review of Indigenous Australian festivals, for example, Whitford and Ruhanen [94] stated the limited research on identifying the extent to which Indigenous festivals promote positive sociocultural benefits and facilitate Indigenous community development. Very little (if any) work has been undertaken since then, although it is well accepted that these festivals provide a forum for community cohesion and celebration, for strengthening and enhancing of cultural knowledge, and for development of social capital. Going beyond this, this paper suggests that there is a need to consider how the social-ecological ‘values’ of such festivals might usefully be assessed. Except for a few localised reports of success in terms of restoring lost varieties/species and increasing food/nutritional diversity, there has been no systematic documentation and assessment of such festivals on health and well-being, biodiversity, agency, empowerment, or other such indicators of social or ecological resilience at individual or community levels. Further research particularly drawing on Indigenous methodologies [171,172] on appraisal of impacts to account for the social-ecological value could be relevant. This would also help in interrogating the risk factors from external and internal challenges to such festivals, for example: to what extent these festivals risk not being ‘owned’ by the Indigenous communities and instead run the risk of being appropriated/co-opted by non-Indigenous or mainstream actors; or to what extent the ‘commodification’ of such festivals could conflict with renewal of traditions and the values associated with ‘community vs. competition, harmony with nature vs. domination of nature, diversity vs. specialization, and restraint vs. exploitation’ [173]. In the case of internal challenges, questions around how the festival accommodates conflicting interests and how divisions within the community itself (such as demographic changes in age structure and gender balance, as from out-migration) are dealt with, especially when relevant to self-organising ability, warrant attention. These are some of the areas that could inform further research.

Far from romanticising Indigenous community festivals experiencing a resurgence in some pockets in India as a celebration of resilience, there is also the uncomfortable reality of a history of social exclusion, economic deprivation, geographical isolation, and political marginalisation faced by such Indigenous communities. The increasing ‘cultural alienation’ under globalization and neo-liberal food regimes and the gross violation of land rights, intellectual property rights, and customary laws of Indigenous communities call for much-needed discussion on the contradictions posed by mainstream development policy discourses. Current discourses around food and farming sovereignty [168,174], the ‘Right to Food of Indigenous Peoples’ [175], and the emerging understanding about food not as a commodity but as ‘commons’ [176] engage with some of these concerns. Within resilience thinking and the social-ecological perspective itself, which has often been critiqued for being apolitical [64], issues of power, agency, conflict, and inequality are increasingly being addressed [177–179]. There is also attention being given to diverse forms of social-ecological memories as critical to adaptability and resilience [180]. Both these developments offer the potential for greater understanding of self-organising for ensuring the vitality of Indigenous food systems and suggest directions for further research.

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