RETHINKING RESILIENCE AGAINST DISASTER: A CASE STUDY OF 1913 FLOOD DISASTER REHABILITATIONS IN RATNAPURA CITY, SRI LANKA

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1. Introduction

This paper details how local people behaved and adapted to floods in flood-prone areas in past flood events. The author examined historical records of the 1913 flood, which exceeded the critical flood level by reaching 24.6 m mean sea level (MSL) in the flood-prone area of Ratnapura City, Sri Lanka. This paper aims to reconstruct the situation of the flood disasters in Ratnapura City based on the socio-economic system of the time, using official documents and memoirs by administrative officials from the British colonial period in Ceylon (the former name of Sri Lanka) from 1815 to 1948. The paper also examines their responses and processes in handling these disasters.

Research on resilience represents a growing field, and the coevolution of human-water systems has progressed rapidly due to climate change. In Sri Lanka, advanced technology such as geographical information systems and probability statistics has revealed disaster risks. While technical solutions have been proposed to mitigate and control them, local measures based on cultural and diverse practices have been rediscovered in recent years. There is a growing emphasis on resilience to address these conflicts, and its societal importance is rising (Tsuchida & Takeda, 2021). However, the increased frequency and intensity of water-related disasters in Sri Lanka, such as floods, cyclones, and landslides, have highlighted the country's vulnerability due to its geographical location, social infrastructure, and rapid urbanization (Asian Disaster Preparedness Center & United Nations Office for Disaster Risk Reduction, 2019; De Silva & Kawasaki, 2018; Japan International Cooperation Agency, 2017). Despite recent research focusing on the impact of disasters on social relationships, cultural resilience, and ecological resilience in Sri Lanka, there remains a critical gap in exploring traditional knowledge for enhancing community resilience and disaster management (Ahangama et al., 2019; Amaraweera et al., 2018). On the other hand, recent research has focused not only on technology and current disaster events but also on evaluating the lessons from historical disasters to improve our resilience (Malak et al., 2020; McEwen et al.,

2017; Mehta et al., 2021; Mendonça et al., 2019; Puzyreva & de Vries, 2021).

However, only some analyses and interpretations of traditional knowledge remain based on historical local lifestyles in Sri Lanka. For instance, a study that can be considered similar is one by Bandara et al. that interprets tactics using the terrain and environment, as seen from the memoirs of combatants and writers, during the freedom struggle in 19th-century British colonial Sri Lanka (C.M. Madduma Bandara et al., 2020). In contrast, only a few academic studies incorporated traditional knowledge into understanding community resilience in Sri Lanka's Disaster Management counterparts. Are there insights from the past that local communities can leverage in addressing future floods? Are there hints to establish the foundation for local resilience, aligning strategies with culture, experience, and wisdom? By answering these questions, we aim to reaffirm the values and processes of the region's natural environment, long-cultivated culture, history, and resilience, thereby understanding the societal outlook from aspects different from direct disaster impacts and reconstruction.

This paper attempts to elucidate the regional history and response to disasters in Sri Lanka, a perspective that no previous study has been largely overlooked in Sri Lankan disaster and historical research. Furthermore, by speculating on the response and recovery aspects intertwining past flood disasters and local societal structures that have yet to be previously highlighted, these findings should make an essential contribution to unearthing a new facet of Sri Lanka's history and disaster events. Therefore, this paper is positioned as a foundational document linking the history of disasters and environmental history in Sri Lanka and South Asia, derived from regional and disaster research.

2. Methods and Materials

This study examined four primary strategy dimensions: evacuation locations, regional relationships, critical actors engaged in response and recovery, and housing reconstruction methodologies. A historical record, "Ratnapura -the District as seen by Government Agents" (Malcolm, n.d.), mainly by the British colonial government, was used in this analysis. Ratnapura city government agent wrote the administrative document in English and it totals 145 pages, spanning 1819 to 1937. For the 1913 flood event, historical records from the British colonial administration were scrutinized, with particular emphasis on the record. The "Floods" segment (pp. 57-68) was of particular interest, as it offered detailed insights into the flood disaster that occurred in April-May 1913, encompassing aspects of the response, the eight-month reconstruction trajectory, and strategies employed by the local community. This paper is based on a position that emphasizes

an objective historical account based on a close examination of documents, mainly official documents of the colonial authorities. In recent years, however, the author has also taken a social-historical approach that actively utilizes anthropological, sociological, and ecological findings, attempting to reconstruct history from the perspective of disasters by broadening the scope of our research beyond the traditional analysis of use.

3. Results and Discussion

It is noteworthy that the peak flood elevation in Ratnapura reached 24.6 mMSL, categorizing it as a significant flood calamity given that it surpassed the established critical threshold of 24.4 mMSL, as per Ratnapura's flood level classification criteria (Table 1, 2).

Table 1: Type of flood and recorded year in ratnapura city, Sri Lanka

Type of Flood	Return Period	Mean Sea Level	Recorded Year
Critical	50 years per	Over 80ft	1913,1947,1989,2003,2017
Major	10 years per	70ft-80ft	1857,1872,1893,1924,1957 1969,1978,1982, 1993, 2016
Minor	1 year per	66ft-70ft	1939,1940,1966,1967,2006

Source: Ministry of Megapolis and Western Development & Urban Development Authority, 2019

Table 2: Rainfall amount observed at Ratnapura rainfall gauge in 1913

Month	4	5	6	7	8	9	10	11
Rainfall observed at Ratnapura rainfall gauge in 1913 (mm)	387	524	175	179	206	271	889	340

Source: Nakagawa et al., 1995

This study extracts vital sections from the translated segments and contextualizes them within the respective period. The author focused on four pivotal components of strategies in the region: evacuation locations, intra-regional relationships, actors engaged in disaster response and recovery, and housing reconstruction methodologies. The author postulated that the prevailing socio-economic system was intricately linked to the inhabitants' strategies.

The records indicate that a fort and a bungalow, designated initially for government agents, functioned as a relief camp. Built during the Portuguese and Dutch colonial eras, this fort, situated atop a hill, offered refuge due to its elevated

position. Contemporary interviews with city officials and documents from the Urban Development Plan reveal that present-day structures on this site include the National Jewelry Museum, a police station, a public library, and a government office (*Kachcheri*). Historically, residents sought refuge in this fort due to its strategic height. The spatial alignment of these buildings and their correlation with the region's topography warrant further field study.

The documentation underscores that food and goods distribution was community-centric, gravitating towards ancestral cultivated lands. Sri Lankan land dynamics rest on the "estate" paradigm, signifying hereditary land and cultivated terrains. The heavy rains and resultant floods disrupted rail connectivity, delaying government rice supplies. Government agents subsequently assessed household food stocks, ensuring rice distribution was executed within the estate confines. This description suggests a certain degree of autonomy of the estate communities, with limited reliance on governmental aid. Furthermore, the records delineate the involvement of various actors in disaster response and reconstruction, including the *Kachcheri Mudaliyar* (governing elite), Ceylon Planter Rifle Corps (CPRC/patrollers), *walawwa* (village chieftains), and coolies (daily laborers), representing the socio-political tapestry of Sinhala society. This hierarchy facilitated proactive measures within this feudal framework during the disaster and recovery phases.

On the housing reconstruction front, indigenous resources were extensively employed. The "wattle and daub building" typifies traditional Sri Lankan homes characterized by mud walls (Dayaratne, 2010). Wall frameworks were constructed using bamboo, secured with coconut fiber strings. Roofs were fashioned from straw or interwoven coconut palm leaves, supported by core materials like coconut palm or bottlebrush. Floors and walls were plastered with a cow dung-soil amalgamation. Today, earthen-walled buildings are rarely seen because they are more susceptible to damage from flooding and because more modern building methods and structures use modern materials. This difference emphasizes that pre-modern Sri Lankan society predominantly leaned on locally sourced construction techniques.

The author critically evaluated the disaster response and subsequent recovery processes using the insights from government agents' documentation. In the face of financial constraints, the reconstruction strategy involved leveraging existing structures as provisional accommodation. Remarkably, stakeholders collaborated despite occupational disparities and evident discrimination, capitalizing on social assets despite a palpable deficiency in material resources critical for emergency mitigation.

A salient observation is the community's inherent propensity for mutual aid,

particularly in resource distribution during crises. This communal ethos is evident in practices such as shared rice distribution on ancestral lands, boutique owners and coolies actively partaking in post-disaster cleanup and the solicitation of charitable contributions. Notably, this mutualistic approach, rooted in clearly demarcated societal roles, evolved across epochs. For instance, in 1913, crisis management was predominantly orchestrated by figures occupying subordinate or authoritative positions, including the Mudaliyar, CPRC, walawwa, and coolies.

In this paper, the author has examined the roles of various actors and structures that appear from four perspectives while translating the processes of the time and how they were involved with the victims and society. For example, shelters, homes, religious facilities, forts, bungalows, and ambalamas can be proposed for diverse use as shelters today. They also function as distribution centers for emergency supplies or warehouses. Regarding housing reconstruction, living in houses made of natural resources might be challenging from a disaster prevention perspective. However, they could be improvised as temporary shelters or camps to shield them from rain and wind or to maintain a specific temperature. Furthermore, in terms of relationships and familial and local ties, there might be potential to establish new orders and safety nets by distributing resources within different communities, as seen in estates, or addressing problems. Also, it is necessary to be aware of the practices and dominant governance of the colonial era when looking back at history.

There are significant challenges to develop further what has been revealed in this paper: understanding and interpreting how the disasters and local history the author has examined have been constructed and given meaning. For instance, uncovering the fragments of the past that have been buried in the residents' memories and examining their significance from the perspective of everyday life might become evident through methods like oral history from seniors or families and other remaining official documents or materials. Reconsidering the history of natural disasters from the perspective of ordinary people while intertwining the history of the rise of colonial elites and bourgeoisie could influence the subsequent development and changes in the region and highlight methods to form their livelihood under new environmental conditions due to disasters.

4. Conclusion

In this study, the author elucidates strategies for disaster mitigation in a flood-prone region of southwestern Sri Lanka, an area that witnessed a catastrophic flood in 1913. Structural adjustments within the natural and socio-cultural spheres have empowered the local populace to enhance their housing, livelihoods, and

collective community endeavors, fortifying the built environment against severe adversities. During the 1913 disaster aftermath, response and reconstruction mechanisms were heavily influenced by colonial edifices, key stakeholders, and distinctive traditional communities termed “estate,” emblematic of Sinhala society.

The insights garnered from this research endeavor are anticipated to augment the strategies of flood disaster risk mitigation and enrich our comprehension of the recovery trajectory in Sri Lanka. It becomes paramount to delve into historical precedents and intrinsic societal practices to equip societies better to confront unforeseeable environmental challenges. The subsequent phase of this research will meticulously examine historical disaster prevention paradigms and chronicle their evolutionary trajectory over time to rethink the plural notions of resilience against disasters.

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