

TRADITIONAL STONE SPOUTS IN NEWAR COMMUNITY: INTERPRETIVE
INQUIRY

Alisha Maharjan

A Dissertation

Submitted to

School of Education

in Partial Fulfilment of the Requirement for the Degree of
Master in Sustainable Development

Kathmandu University

Dhulikhel, Nepal

November, 2022

This dissertation entitled, 'Traditional Stone Spouts in Newar Community: Interpretive Inquiry' was presented by Alisha Maharjan on 8 November 2022.

APPROVED

8 November 2022

Asst. Prof. Indra Mani Rai, PhD

Dissertation Supervisor

8 November 2022

Asst. Prof. Suresh Gautam, PhD

Head of Department

8 November 2022

Yadav Prasad Kandel, PhD

External Examiner

8 November 2022

Prof. Bal Chandra Luitel, PhD

Dean/Chair of Research Committee

I comprehend that my dissertation will be a part of the collection of Kathmandu University Library and my approval signature below authorizes the release of my dissertation to the readers upon request.

8 November 2022

Alisha Maharjan

Degree Candidate

© Copyright by Alisha Maharjan

2022

All rights reserved.

DECLARATION

I hereby declare that this dissertation is my original work, and it has not been submitted for the candidature for any other degree at any other university.

Alisha Maharjan

Degree Candidate

8 November 2022

DEDICATION

The dissertation is dedicated to all who have been the source of inspiration to me and who have always given strength to me in bringing this research to this stage.

I am thankful to my Professors, Parents, Relatives and Classmates for their support and encouragement to finish this study.

ABSTRACT

Of the dissertation of *Alisha Maharjan* for the degree of Master of Sustainable Development presented at Kathmandu University School of Education on 8 November 2022.

Title: *Traditional stone spouts in Newar Community: Interpretive Inquiry*

Abstract Approved: _____

Asst. Prof. Indra Mani Rai, PhD

Dissertation Supervisor

Traditional stone spouts are the cultural identity of the Newar Community. These spouts symbolize the beauty it holds and the cultural identity they carries for Newar Community. Besides its cultural value, it carries environmental and ecological value. Looking back to the past, when there was a high-volume flow of water from these spouts, the environment was calm, peaceful and healthy. But stone spouts today are in vulnerable states, so the environment is affected.

The main objective of this study is to investigate the lived experiences of Newari people with traditional stone spouts and to find out how and why their connections with these stone spouts have changed over time.

The study was conducted using Interpretive Inquiry for understanding the cultural and ecological background. I gathered the required data or information through interviews and field observation. Participants for the interview were selected using the following criteria: Newari citizens and Local Newar of the Banglamukhi temple area. Different traditional stone spouts sites were visited in the study area for

physical observations. These include Misa Hiti, Konti Hiti and Konti Pokhari of the Banglamuki temple area.

Results of this study show that the traditional stone spouts today are in critical condition. Among the reasons behind its critical state, a few things include haphazard urbanization, overpopulation, excessive groundwater extractions, lack of conservation institutions, and strong stone-spout management policies.

Traditional knowledge and practices of the people regarding the construction, use , and management of stone spouts were environmentally friendly and sustainable. The cultures they followed were like rules for conserving the stone spouts during ancient times in which they were happily habituated.

Traditional knowledge and practices of the local community, especially Newar communities of Kathmandu Valley, on managing stone spouts should be acknowledged, recognized and respected. Similarly, all stone spouts should be protected and revitalised to preserve our ancient cultural heritage and solve the present water scarcity in the Kathmandu Valley.

8 November 2022

Alisha Maharjan

Degree Candidate

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my supervisor, **Dr. Indra Mani Rai**. His guidance and advice carried me through all the stages of writing my thesis. Thank you for your brilliant comments and suggestions.

The completion of this study could not have been possible without the expertise of **Dr. Suresh Gautam**. I would also like to thank him for his continuous support and guidance throughout this research journey.

I would also like to give special thanks to the entire research committee and faculty members of Kathmandu University School of Education for their support during my Research.

Last but not least, I would like to thank my parents. Without them, my thesis would not indeed be possible.

Alisha Maharjan, Degree Candidate

ABBREVIATIONS

AMPA	Ancient Monument Preservation Act
GWP	Global Water Partnership
KUKL	Kathmandu Upatyaka Khanepani Limited
LSMC	Lalitpur Sub Metropolitan City
NGO	Non-Governmental Organisation
NWSC	Nepali Water Supply Corporation
SES	Social Ecological System
UN	United Nations
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organisation

TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGEMENTS.....	iii
ABBREVIATIONS	iv
TABLE OF CONTENTS.....	v
CHAPTER I.....	1
INTRODUCTION	1
My Grandmother: Experiences with Traditional Stone Spouts	2
My Childhood: Experiences with Traditional Stone Spouts.....	3
Statement of Problem.....	4
Objectives of the Study	5
Research Questions.....	5
Significance of the Study	5
CHAPTER II.....	7
LITERATURE REVIEW	7
Stone Spouts and Their structures.....	7
Stone Spouts in Kathmandu Valley	7
History of Stone Spouts	9
Historical Background of Traditional Water System in Kathmandu Valley	14
Policy Review	16
Theoretical Lenses	16

CHAPTER III	19
RESEARCH METHODOLOGY.....	19
Philosophical Considerations	19
Epistemology	19
Ontology	19
Axiology	20
Description of the Study Site	20
Research Methodology	22
Interpretive Paradigm.....	23
Selection Process of Participants	23
Data Collection Methods	24
Interview	24
Observation	25
Data Analysis and Interpretation	25
Quality Standards.....	26
Ethical Considerations	26
CHAPTER IV	27
CONNECTION OF NEWARS WITH STONE SPOUTS	27
Traditional Stone Spouts and Sustainability	28
Traditional Stone Spouts and Connected Ceremonies.....	30
Sithi Nakha.....	32

Naag Panchami	33
Traditional Stone Spouts Management	33
Dilapidated Traditional Stone Spouts and Ecological Disturbance	36
Discussion and Conclusion	36
Chapter Summary	38
CHAPTER V	39
IMPACTS OF RAPID URBANIZATION ON TRADITIONAL STONE SPOUTS .	39
Traditional Water System	39
Disappearance of Traditional Stone Spouts	40
Short Descriptions about These Three Stone Spouts	41
Misa Hiti	41
Konti Hiti	41
Observation of These Three Stone Spouts	42
Misa Hiti	45
Konti Hiti	47
Konti Pokhari	47
Haphazard Urbanization	48
Over Population	49
Excessive Ground Water Extraction	50
Discussion and Conclusion	50
Chapter Summary	51

CHAPTER VI	53
DISCUSSION AND CONCLUSION.....	53
Modern Water System Betrayed Traditional Water System.....	53
Impact of Urbanization on Stone Spouts	54
Conclusion	56
Implication	57
ANNEX/Questionnaire	59
REFERENCES	61

CHAPTER I

INTRODUCTION

This chapter begins with a brief introduction to the Newar community, where I discuss Newari identities associated with the stone spouts. I have collected my father's and grandmother's experiences with traditional stone spouts to bring the experience from the past. The deteriorating condition of the stone taps is vulnerable but is closely related to the everyday life interaction of the Newari community. However, reflecting on my childhood, I could not experience such things from my childhood studies. It is then followed by a statement of the problem, the purpose of the study, and the research questions. The chapter concludes with the significance of the study

My Community and I

I grew up in the Newar community of Pulchowk, located in Lalitpur district, in the Kathmandu Valley. Newars are one of the 59 indigenous peoples recognized by the government of Nepal (Rai, 2012). They are the original inhabitants of Kathmandu Valley and have their own customs and traditions (Manandhar, 2011). As a member of the Newar Community, I, too, have taken part in different traditions, cultures, and rituals. We, Newars, have our unique dishes like Samay Baji, Bara, Choila, Kachila, Chattamari, Kwati and many more. We have our traditional dress and our beautiful and astonishing places.

Traditional stone spouts, too, are part of our unique identities and mesmerizing assets that make us proud. Traditional stone spouts are the first hydraulic device created to gather and distribute water. These stone fountains are primarily found in the Kathmandu Valley (Tripathi et al., 2018). The responsibility for maintaining stone

spouts was the duties of residents of Kathmandu Valley, known as Newar. With the formation of a social group known as *guthi*, Newari people conduct different activities to maintain traditional spouts. They also celebrate different cultural festivals in traditional stone spouts intending to preserve and protect those water resources (UN-HABITAT, 2008).

My Grandmother: Experiences with Traditional Stone Spouts

During those young periods of my grandparents, traditional stone spouts were a basic need as they were the water sources for drinking, washing clothes, having baths, and other rituals. My grandmother shared her experience of how people during those days were connected to traditional stone spouts for everyday life. She remembers quenching her thirst from those traditional taps. She still remembers collecting water in ¹*Gagri* from those traditional water spouts, washing clothes, and having baths on those resources, and following many rituals on those traditional stone spouts.

My Grandmother also shared her experience with using those traditional stone spouts for ritual purposes. During those days, the priest fully depended on traditional stone spouts of water to perform daily rituals in the temple. Also, for the festivals like *Kartik Nach*², *Machhindranath Jatra*³ etc., water from those traditional stone taps was a compulsion. During those days, the water was clean and considered “pure” for ritual purposes. Also, there was a high flow of water from those traditional stone spouts, which was all day, 24 hours. The dryness today has not only made our pot empty but has also brought emptiness to our cultures.

¹ *Gagri* is a water pot

² *Kartik Nach* is a dance musical play that is performed every month in *Kartik*.

³ *Machhindranath Jatra* is a festival celebrated in dedication to the lord of the Rain in the Kathmandu Valley.

My father, too, had a joyful experience with traditional stone spouts. He remembers his connections with traditional stone taps for day-to-day activities. He told me that there used to be a crowd of people in traditional stone spouts during his childhood. People gathered in stone spouts for drinking water, bathing, washing clothes and washing utensils because there was no other source of water except stone spouts.

My Childhood: Experiences with Traditional Stone Spouts

As a child, I used to love strolling around places with water resources. I remember requesting my parents to visit water places. Beauty that lies in natural water was very fascinating to me. I would visit temples in the early morning with my grandmother (mother of my father as well as my mother). And every temple was surrounded by traditional stone spouts. I was very interested in looking and drinking water from traditional stone spouts. And my grandmother used to collect water from those traditional stone spouts into small brass pots known as Karwa⁴ to offer as *jal* for the family members and the house's Pray room (Puja Kotha).

One morning, on June 8, on a day of Sithi Nakh⁵, when stone spouts are cleaned and delicious Newari food items are served. I was wondering about the mechanism of stone taps and how it was possible to flow water from stone taps without technical equipment during that time, my grandmother told me that the rivers and ponds are linked with the stone taps. She told me that everything was natural during those days. The water canals, termed " Kulo" in the Nepali language, were made from rivers that joined the stone taps. My grandmother, who had experienced drinking water from traditional stone taps during her childhood, is very sad to see

⁴ Karwa is a small iron pot.

⁵ Sithi Nakha is a festival when Stone Spouts are cleaned.

drying stone taps today. Adding to it, my mother praises the brilliant minds of our ancestors. According to her, using modern equipment (like plastic pipes, cement, iron rod, etc.) to make drinking pipes has made us suffer from dryness. The originality and sustainability of those traditional stone taps got extinct.

Statement of Problem

Nepal, home to 125 caste/ethnic groups, 123 languages, 10 religious groupings, and other varied regional features, is a multiethnic, multilingual, multi-religious, multi-cultural country (LAHURNIP, 2018). The indigenous nationalities (Adivasi Janajati) of Nepal make up 36% of the country's 26.5 million people (2011 census). The modernization of the water supply system had an impact on traditional stone spouts (UN-HABITAT, 2008). UN-Habitat claims that the traditional water sources in the Valley were destroyed because of the installation of a piped water delivery system after 1950 A.D.

My father remembers establishing the pipe water system in the individual houses. At the age of around 20 years, he was also involved in fitting pipe water systems in the houses. The fee charged for water during those times was only Rs 5 or 6 for month. He also shares that Government also built public taps in many places for the convenience of people during those days.

Traditional stone spouts are our identities. But with time, many of them are disappearing slowly. The scenario of traditional stone spouts is vulnerable today. When I roam around the stone spouts of Kathmandu Valley, most of the stone taps are slowly drying. Some are neglected, and most of them are no more in use.

The haphazard urbanization and unmanaged modern lifestyle have also affected valuing of stone spouts. Our changing lifestyle and adaptation to a new lifestyle have highly affected our traditional and valuable lifestyles, identities, and

historical relics. Stone spouts are also affected by the changing lifestyle of people. The cutting down of trees, making personal wells in houses etc., has highly affected our traditional stone spouts.

The Stone taps were made for people's convenience so that people didn't need to go a long way in the rivers and ponds to fetch water. Most of our stone taps were decorated with the symbol of God to maintain cleanliness during those days. Also, the forest area or scared grove (a group of trees having religious value) was protected so that water sources were not affected (Sharma et al., 2009). However, the new generation is showing less interest in the protection of traditional stone spouts. People are ignorant about indigenous knowledge. Skills slowly disappear when there is no passing on of skills from one generation to another. With it, indigenous properties and identities slowly get disappeared, and they will no longer be our identities.

Objectives of the Study

The goal of this research was to investigate the lived experiences of Newari people with traditional stone spouts and to find out how and why their connections with traditional stone spouts changed over time.

Research Questions

1. How did Newars of Banglamukhi temple area experience their connection with the traditional stone spouts over time?
2. In what ways do they explain the continuous disappearance of traditional stone spouts due to rapid Urbanization?

Significance of the Study

Stone spouts are beautiful creations constructed in different shapes like crocodiles, snakes and other animals made by Newar ancestors (Tripathi et al., 2018). Stone spouts are being lost from the Kathmandu Valley, including the Banglamukhi

temple area of Lalitpur Municipality. In the past, there were many functioning stone spouts; however, with time, there has been a decrease in functioning stone spouts (NGO Forum, 2009). The case study will help identify answers to two research questions: how do Newars of the Banglamukhi temple area experience their connection with the traditional stone spouts over time? And in what ways do they explain the continuous disappearance of traditional stone spouts in their locality due to rapid urbanization?

This study will support documenting information from Newars in relation to traditional stone spouts. By documenting the information, this research will support preserving the information on stone spouts for the future generation. Also, this study has explored views on the continuous disappearance of traditional stone spouts in the locality. If we can identify the issue of stone spouts due to rapid urbanization, this can help us come up with solutions for it.

Carrying on someone's legacy is a big responsibility. I believe that my research will help to aware the citizens of our nation to protect our indigenous cultural heritage.

CHAPTER II

LITERATURE REVIEW

The first section of this chapter describes stone spouts and their structure. Further, it explains the number of stone spouts in Kathmandu Valley. It is further followed by the history of stone spouts and the historical background of the traditional water system in the Kathmandu Valley. Finally, the theoretical lens then follows it.

Stone Spouts and Their structures

Stone spouts are a traditional water supply that has been serving to the Kathmandu, Lalitpur and Bhaktapur districts of Kathmandu Valley for hundreds of years. They are locally called “Dhungedhara” (Shrestha et al., 2022).

Stone spouts are found in different sizes and shapes. The stone spouts in Kathmandu, Bhaktapur, and Lalitpur are gold-plated; in other places, the stone spouts are mostly made of stone. Wooden spouts are also uncommon to find. Most of the places have one to five water conduits in the stone spouts areas. However, there are few places with more than five water conduits, nine in Godhabari Naudhara, 22 in Balaju Bayisi Dhara, and 108 in Muktinath Dhara (Pradhan, 1990 as cited in Tripathi, et al., 2018).

Stone Spouts in Kathmandu Valley

Table 1

Number of Stone Spouts in Kathmandu Valley

S.N.	Place of Stone spouts	No. of Stone spouts
1.	Kathmandu	165
2.	Lalitpur	61

3.	Bhaktapur	87
4.	Madhyapur Thimi	65
5.	Kirtipur	11
	Total	389

(NGO Forum, 2010, p. 12)

Table 2

Number of Stone Spouts in Municipality of Kathmandu Valley

S.N.	Municipality	Natural (Working)	KUKL Pipeline (Working)	Not Working	Not Exist	Total
1.	Bhaktapur	33	35	18	1	87
2.	Madhyapur	47	6	9	3	65
3.	Kirtipur	10	0	0	1	11
4.	Lalitpur	47	0	7	7	61
5.	Kathmandu	96	2	34	33	165
	Total	233	43	68	45	389

(NGO Forum, 2010, p. 13)

Hiti is the commonly used term for stone spouts that originated from Kirats⁶.

Hi stands for moving, and *ti* stands for the degeneration of tila or conduit (Tiwari, 2002). The ancient Newars used two types of water sources: hiti, which were water spouts, and tun, which were dug wells. Groundwater was the source for both of them. The Newars use two terminologies: ⁷Lohn hiti and ⁸gaa hiti. Lohn hiti means stone spouts while gaa hiti means spout at depression. Adding the beauty of the Kathmandu

⁶ Kirats were the earliest inhabitants of the Kathmandu Valley.

⁷ Lohn hiti means Stone Spouts

⁸ Gaa hiti means Spouts at depression

Valley, these traditional stone spouts were naturally charging through local aquifers during those days.

Additionally, back then, humans were quite adept at replenishing the nearby aquifers with canals called rajkulo. Water was provided to the urban population in both quality and quantity by traditional stone spouts and the wonderful skill of Newars during those days. Water was provided by canals, ponds and water conduits (UN-Habitat, 2007).

History of Stone Spouts

During ancient times, many kings had built varieties of traditional stone spouts inside Kathmandu valley. Kathmandu had 176 stone spouts, Lalitpur had 61 stone spouts, and Bhaktapur had 152 stone spouts (A total 389) (Lukinbeal 2014; NGO Forum 2005, 2010). Stone spout maintenance was delegated to the Newar people who live in the Kathmandu Valley. So, Guthi, a social group, was formed for different social initiatives, including the maintenance of traditional spouts (UN-Habitat, 2008). Also, most of the stone taps were decorated with the symbol of God to maintain cleanliness during those days. The forest area or sacred grooves (a group of trees having religious value) were protected so that water sources were not affected (Sharma et al., 2009).

Following the passage of the Land Reform Act in 1964, all guthi lands were privatized and modernised to impact the gradual disappearance of the guthi. Today, there are major management challenges with stone spouts because of a variety of factors, such as the breakdown of Guthi responsibilities, which caused uncertainty in ownership and a subsequent shortage of funding. Furthermore, with the introduction of modern pipeline water supply systems, it appears that traditional social institutions

associated with water delivery and management are no longer as necessary (Tripathi, 2016).

According to the official record, the development of local water sources or stone taps, known in Nepali as "Dhunge Dhara," started during the Lichhavi era. In the early days of the Lichhavi era, the stone spouts known as "Dhunge dhara" were termed "Kriti". The meaning of Kriti is merit. During those days, those who used to build Dhara received merit because drinking water had been an essential basic human life need. Building it was termed as honorable task (Pradhan, 1990). The first stone tap for drinking was built in 550 A.D. at Hadigaun, Kathmandu. It was built by Bharavi, the grandson of King Mahendra (Pradhan, 1990).

Later, a large number of stone taps were built for various water uses. Stone spouts were then known as ⁹PRANALI. 'Pranali Gosthi' was established during Lichhavi's reign to manage water resources, including the development of irrigation and drinking water infrastructure. The Malla era came after the Lichhavi era and continued until Prithivi Narayan Shah united the tiny states. The Malla period is known as the "Golden Era" in terms of the creation of water resources for both drinking water and agricultural purposes, as well as the management of these resources/systems by the people.¹⁰Raj kulos (irrigation canals) were well-known construction of the Malla period (Pradhan, 1990). Additionally, many stone spouts, pokharies(ponds), wells and other drinking water sources were built during this time period to provide drinking water both inside and outside the Kathmandu Valley. Among the well-known stone spouts of this era were the Dhunge Dharas of Hanuman Dhoka Palace, Tusa Hiti in Patan Durbar, and Thatu Hiti in Bhaktapur Durbar. Built

⁹ Pranali is known as Stone Spouts.

¹⁰ Raj Kulos is known as irrigation canals.

during this period, the waterspouts of Balaju and Naulos (spring protection) are still in use in the Far Western districts of Baitatdi, Darchula, Dadeldhura, and others. During this time, the Sithi Nakha festival evolved to preserve and manage water systems, which is still celebrated by Newar communities today. At this festival, the communities gather to clean spouts, wells, ponds, etc. (Pradhan, 1990).

The Rana rulers introduced the western water management system without any proper study and research (UN-Habitat, 2007). Many social welfare and development projects, such as the installation of a piped water system, were carried out during the Rana era. Examples included the construction of a minor hydropower project in Kathmandu at Pharping and Sundarijal. In 1895, Bir Shumser built the first organized water delivery system, Bir Dhara, which moved water from Shivapuri to a central reservoir in Panipokhari. In late 1891, then-Prime Minister Bir Shumser also installed a piped water system in the Kathmandu Valley. The practice of building stone spouts, wells, and ponds gradually vanished with the arrival of piped water supply. (GWP Nepal/ Jalsrot Vikas Sansthan, 2018).

Newars were the inhabitants of the Kathmandu Valley with superb skills in managing water resources (UN-Habitat, 2008). However, after unification by Prithivi Narayan Shah, especially Ranas failed to understand the Newari skills of Kathmandu valley. They failed to preserve the beauty of traditional stone spouts too. As a result, they betrayed the Newars of the Kathmandu Valley's ancient knowledge and wisdom. The worst phase after 1950 was the post-democracy era since indigenous practices were destroyed during this time. They prioritized modern Western culture and education. (UN-Habitat, 2007).

The unmanaged urbanization has been pressuring the Valley. It has caused lots of problems in human life. One of the problems is the issue of water. However,

stone spouts are boon for the valley offering adequate water to fulfil water needs.

Unfortunately, human behaviour towards stone spouts is disappointing. Here is the table showing stone spouts present in LSMC, along with their location and discharge per day, as mentioned in Sunil Shakya Report.

Table 3

Stone Spouts in LSMC

S.N.	Stone spouts	Location	Ward	Discharge (L/day)
1.	Alko Hiti	Ikkhachew	22	499,402.1
2.	Amrit Hiti	Kumbeshwor	22	287,611.8
3.	Bagdole Hiti	Bagdole	4	287,611.85
4.	Bhandrakhal Hiti	Mangalbazar	11	-
5.	Bhindhyolachhi Hiti	Chysal	11	-
6.	Bhola Hiti	Bhol dhoka	9	-
7.	Bholakhel Hiti	Bhol dhoka	9	-
8.	Byan Hiti	Ikkhachew	11	66,240
9.	Byanchha Hiti	Chysal	22	7854.54
10.	Chhyabahal Hiti	Chhyabahal	21	21,600
11.	Chyasa Hiti	Chysal	11	4,80,960
12.	Dathu Hiti	Ikkhachew	22	2,057.1
13.	Dhola Hiti	Dholahiti	14	-
14.	Elhane Hiti	Nagbahal	16	103,542.85
15.	Guita Hiti	Guita	8	-
16.	Hiku Hiti	Dhobighat	3	2,30,400

17.	Iku Hiti	Dhobighat	4	351,114.89
18.	Jawalakhel Hiti	Jawalakhel	4	57,600
19.	Kal Dhara Hiti	Kusunti	13	17,000
20.	Kani bahal Hiti	Kanibahal	6	55741.9
21.	Kusunti Hiti	Kusunti	13	13,292
22.	Kwachhen Hiti	Balkumari	8	-
23.	Kwonti Hiti	Kumbeshwor	22	311,606.59
24.	Lagankhel Hiti	Lagenkhel	15	96000
25.	Mangah Hiti	Balkumari	8	64477.6
26.	Manga Hiti	Mangalbazar	11	129600
27.	Mani Mandap Hiti	Sincha	17	43200
28.	Misha Hiti	Kumbeshwor	22	230961
29.	Nakhipot Hiti	Nakipot	14	-
30.	Naran Hiti	Chysal	9	345660
31.	Naricha Hiti	Naricha	6	144000
32.	Na twa Hiti	Natwa	21	29622.8
33.	Nuga Hiti	Sundhara	6	1,01,622.8
34.	Nyagachhyo Hiti	Ekantakuna	20	-
35.	Pattipa Dhara	Bagdole	4	-
36.	Pucho Hiti	Pulchowk	3	5400
37.	Sankhamul Hiti	Sankhamul	9	-
38.	Sauga Hiti	Saugal	6	1,28,706
39.	Shova Hiti	Tikhideval	14	27000
40.	Sin Hiti	Afaldole	3	21600

41.	Sincha Hiti	Sincha	6	358141.9
42.	Situ Hiti	Sabkhamul	22	-
43.	Subha Hiti	Subahal	8	273600
44.	Tanga Hiti	Tangal	12	129009.8
45.	Tapa Hiti	Tapahiti	22	104640
46.	Thapa Hiti	Thapat tole	6	293142
47.	Tikhideval Hiti	Tikhideval	14	31000
48.	Tusa Hiti	Mangalbazar	11	-
49.	Tyaga Hiti	Tygal	7	12342
50.	Washa Hiti	Ikkahchhen	22	40114.2
51.	Nahahil Hiti	Nahahil	16	Not Exist
52.	Pilachhen Hiti	Pilachhen	7	Not Exist
53.	Swoti Hiti	Chaubato	-	Not Exist
54.	Kupondol Hiti	Kupondol	10	Not Exist
55.	Bahila Hiti	Himalayan	10	Not Exist
		Hotel		

(NGO Forum, 2004, p. 45)

Historical Background of Traditional Water System in Kathmandu Valley

The idea of stone spouts first appeared during the Kirat era. Then, during the Lichhavi period, stone spouts further evolved, and the Malla government assisted in extending its development. In the past, the Kathmandu Valley had a reliable water supply because of the state's network of canals, ponds, and waterways. Stone spouts are refilled from a nearby shallow aquifer (10 meters below the ground). State canals additionally recharge this (Rajkulos) (Upadhyay et al., 2011).

The first Kirant dwellings marked the beginning of the Kathmandu Valley's stone spout construction. In the tar fields and on the slopes of the hills, Kirats had utilised ponds and springs. Later, Lichchhavis created a connection between the ponds and stone spouts. (Tiwari, 2002). The oldest Hiti in Patan is the Manga Hiti, built in 570 AD. This Hiti was built by Bharavi, daughter of Lichchhavi king Mandev. Patan's other well-known old hities include Alkwo Hiti, Nuga Hiti (Sundhara), Thapaa Hiti, Taapaa Hiti, Chyasaal Hiti, Tyaga Hiti, Kwonti Hiti, and many others (UN-Habitat, 2008). Forty-seven hities are working in Patan at present (NGOFUWS, 2006). After the Lichchhavis, Mallas expanded the water system in the valley to serve the growing population. Jitamitra Malla of Bhaktapur, Pratap Malla of Kathmandu, and Siddhinarshinha Malla of Patan contributed to these three cities' water systems. It is said that Siddhi Narasingh Malla brought the canal into the Bhandarkhal Pokhari situated within his palace in the Patan city. This is why canals were termed rajkulo, which means 'royal canal. A King built the entire 11.2 kilometers of the Rajkulo from its source in Tikhabhairabh to Patan Durbar Square. The rajkulo also collects and deposits water to aquifers. In the case of Bhaktapur city, rajkulos were probably built by Tula Maharani. King Jitamitra Malla probably expanded the canal system. In the case of Kathmandu city, there are no records on who built Kathmandu Rajkulo. However, King Pratap Malla is given more credit because he built the Rani Pokhari, which depended on rajkulo for water (Bisht, 2011).

Stone spouts are rapidly vanishing from the Kathmandu Valley but are still considered important water supply systems. Additionally, these are natural processes that move and store water through wells, ponds, canals etc., using gravity and rainwater. Even though there were formerly 389 working stone spouts, many of them no longer exist or have dried up. Stone spouts, however, continue to provide a reliable

source of water throughout the Valley, particularly for the urban poor. Today, the stone spouts have been negatively impacted by human activities. Compared to the past, none of the stone spouts is in perfect condition. This is a tragic loss.

Policy Review

The policy analyses conducted in order to conceptualize the issues raised are listed below.

Nepal's Legal Protections for Preserving Cultural Heritage Sites

During the Malla period, the role in the conservation of Cultural Heritages like temples, stone spouts, etc. was played by Guthi. Mallas also established Chen Bhadel Adda, a cultural heritage preservation office (Pokharel, 1997). The laws for protecting Nepal's cultural heritage, including its World Heritage Sites, include the Ancient Monument Preservation Act (AMPA) 1956, Ancient Monuments Preservation Rules 1989, Guthi Cooperation Act 1964, Pasupati Area Development Trust Act 1987, Local Administration Act 1971, Lumbini Development Trust Act 1984, and Local Self-Government Act Page 60 of 246 1999 (Bhatta, 2008).

The Ministry of Land Reform and Management formed Nepal Guthi Corporation in 1972 to conserve historical, religious, and cultural practices (Bhatta, 2008; Maharjan, 2013; Sinha & Malla, 2004, as cited in Tripathi et al., 2018).

Theoretical Lenses

I chose the Modernization theory and Social-Ecological System to provide a theoretical background.

Modernization Theory

Modernization simply means the conversion of traditional society to a modern lifestyle. The theory says that to develop and have economic growth in a country, we should come out of our traditional society, ancient knowledge and our indigenous

values because they are the barriers to development. With the growing urbanization and technological advancement, we are slowly eliminating our indigenous values and being more compatible with the modern environmentally unfriendly stuff. Our indigenous water sources, which were the only sources of drinking water, have now been degraded and abandoned in the name of modernization. Though modernization has made our life easy, it has degraded our Environment (Anderson et al., 2006).

The innovation of private water taps in every home has made the life easy, but it has affected the value of indigenous taps. People started finding pleasure in water packed in plastic bottles rather than the water from those indigenous taps, which are fresh and pure. Hence the scenarios of these taps are vulnerable at present. The growing unmanaged urbanization has affected the scenario of the indigenous taps of Kathmandu valley. Most have already dried, some are critical, and few are in careless use.

If we look at the stages of the Rostow Model of Economic growth, it says- to develop a country, it needs to pass through five different stages of development and they are traditional society, preconditions for take-off, take-off, maturity stage and mass consumption. Most of the developed countries today applied this model a long time ago. This model is also recommended for developing and under-developed countries for economic growth. This proves that most developed countries have given up their traditional values and indigenous knowledge (Rostow, 2009). This is directly applicable to the traditional stone spouts of Kathmandu Valley.

Social -Ecological System (SES)

The interaction of humans with nature is very deeply connected. We are fully dependent upon our nature. The Social-Ecological System is the strong interlink

between social, economic, ecological, political, cultural and other components in which humanity is integral (Petrosillo et al., 2018).

The Resilience Alliance, a nonprofit association of scientists from many fields, developed the Social Ecological theory in the 1980s to investigate the dynamics and potential evolutions of the SES. These theories also draw their foundation from adaptive cycles, resilience, adaptability, transformability, and hierarchy. With this knowledge base, complex adaptive systems may be managed, and sustainable development can be accomplished in theory and practice.

Dipendra and his team (Gautam et al., 2017) conducted a study entitled “Indigenous water management system in Nepal: Cultural dimensions of water distribution, cascaded reuse, and harvesting in Bhaktapur city”. The study includes a qualitative method to understand indigenous skills and traditional values. The study found that it is important to value our indigenous skills and practices since they are compatible with the environment and sustainable. Traditional stone spouts fall under the Socio-Ecological System.

CHAPTER III

RESEARCH METHODOLOGY

This chapter includes methodological procedure. The chapter deals with interpretive paradigms and philosophical considerations, including epistemology, ontology and axiology. Further, it is followed by descriptions of ethnographic Inquiry as a research method. The chapter also includes a description of the study site, the participant selection process, data collection methods, data analysis and interpretation, quality standards, and ethical considerations.

Philosophical Considerations

Epistemology

I believe knowledge is subjective, and so my epistemology is based on subjectivism. Also, my research participants had different stories of interaction with the traditional stone spouts as everyone has a different way of living a life and a different perception towards traditional stone spouts (Hussain et al., 2013). Positivism and interpretivism are two approaches and branches that make up epistemology. Positive thinking's guiding concept is a scientific perspective on the world and knowledge. Interpretivists recognize that reality and knowledge are not objective but rather influenced by people within the environment and are interested in specific, contextualized contexts. Additionally, this philosophical viewpoint cannot be extended similarly to positivist research because it is more subjective and vulnerable to biases (Gorman and MacIntosh, 2015).

Ontology

Interpretivism adopts relativist ontology. As my study is based on subjectivism and relativism, there is no single reality. Ontology is explained by Crotty

(2003) as “the study of being”. It is interested in “what kind of world we are investigating, with the nature of existence, with the structure of reality as such”. Also, it is used with different meanings in different communities. Further, they are very broad categories suitable for investigating many different formalisms and fields of applications. Early in the 1990s, Gruber offered the ontological definition of computer science as an explicit specification of a conceptualization. Guarino also offered another well-liked definition, saying that ontology is an engineering artifact made out of a particular lexicon to explain a certain world. As a result, knowledge must be recorded so that computers can understand while also being unanimous and reusable to develop ontologies (Tapia-Leon et al., 2017).

Axiology

Axiology is concerned with the science or study of trust or worth (Engle, 2009). Everything has value determined by a person's knowledge, culture, and location. Multiple realities exist. And subjectivism is what drives my research. It is the area of philosophy that is concerned with worth or quality (Rosenthal, 1967). Furthermore, Lapie and Hartmann introduced the term "Axiology" in the early twentieth century (Arora, 2010). There are two branches of axiology. They are Ethics and Aesthetics (Arora, 2010). Knowing about ethics studies values in the realm of human conduct (Kneller, 1971). Further, ethics evaluates human habits, character, voluntary determination, and propriety (Singh & Nath, 2008). On the other side, aesthetics studies values in the realm of beauty (Kneller, 1971). Moreover, axiology serves as a guide for humankind.

Description of the Study Site

Banglamukhi temple lies inside the Kumbheshwar temple complex. Kumbheshwar temple is one of the country's oldest Hindu pilgrimage destinations in

Nepal . It is located 200 meters from Patan Durbar Square's northern end. This oldest temple in Patan was built by king Jayasthiti Malla in the 14th century. It is a pagoda-style temple with five stories and a pinnacle at the top. The mighty Lord Shiva is honored in the temple's main shrine. The temple is renowned for its exquisite wood carvings and beautiful proportions. The water source that supplies the ponds is also thought to come from Gosainkunda, which is 43 kilometers north of Kathmandu. As a result, it's thought that bathing in the pond during the festival of Janai Purnima is similar to doing the same thing in Gosainkunda. The Nandi bull, Shiva's mount, is also knelt in front of the main Kumbheshwor Temple. Additionally, the temple is crucial from a religious perspective. Among the numerous temples in Patan, this one is one of the most well-known (Nepal Travel Guide, 2020).

My research site was the three stone spouts Misa Hiti, Konti Hiti and Konti Pokhari of Banglamukhi Temple area.

Misa Hiti: Misa Hiti is attached near Banglamukhi Temple gate. This Hiti is believed to have been built by Dharma Dev in 1416 AD. This Hiti is popular for its ritual practice during Panchadan every year. All the information about the Misa Hiti are from the inscriptions found on the site.

Konti Hiti: Konti Hiti is located opposite of Banglamukhi Temple gate. This Hiti is worshipped during Yanya Purnima. It is one of the largest Hitis in Patan, with an area of 229 square metres. All the information about the Konti Hiti are from the inscriptions found on the site.

Konti Pokhari: Konti Pokhari is located inside Banglamukhi Temple. Konti Pokhari is a holy pond where the festival of Janai Purnima takes place. There is one spout (Hiti) which provides water to the pond. It is located in Ward No. 11. It is located in tole Konti, Kumbeshwor. It is constructed in Malla Period. It is unknown

who constructed it. All the information about the Konti Pokhari are from the inscriptions found on the site.

Research Methodology

This is qualitative research. There are different types of qualitative research. In this study, I have used ethnography as the research methodology. By immersing themselves in a group for a while, ethnographers using this research methodology gather information through participant observations, interviews, and documentary data such as meeting minutes, diaries, and photographs (Hulst et al., 2016). The researcher directly involves in the setting (Brewer, 2005, p.17 as cited in Gautam, 2016). It is a study in which the researcher studies a cultural group for a certain period by collecting primarily observational and interview data. It involves encountering the lived realities in the field setting (Creswell, 2009, p. 30, as cited in Gautam, 2016). As a primary source of information, ethnographic methodology prioritizes observation. It does, however, include casual conversations, individual or group interviews, and documentary materials (diaries, newspapers, photographs, etc.) (Atkinson et al., 2015).

I design ethnographic research by choosing the following methods to collect data with my research participants. I have chosen Newar citizens as my research participants.

In ethnography, the primary methodological approach is participant observation. An in-depth interview is another method that I used in my ethnographic research. These interviews are also termed focused, unstructured or ethnographic interviews (Reeves et al., 2013). These interviews don't include fixed questions but try to bring out understanding and interpretation from the interviewee through conversation (Liamputtong & Ezzy 2005, p. 332 as cited in Reeves et al., 2013).

Interpretive Paradigm

I have chosen the interpretive research paradigm. The study is done in a natural setting within a cultural community. According to this paradigm, truth and knowledge are subjective and based on lived experiences. Interpretivism takes a relativist ontological perspective. Relativists believe that only through socially constructed meanings is a reality known. Hence, reality has many different representations (Ryan, 2018). It is not universal. I am guided by subjective knowledge and multiple realities as I am interested in focusing on the real background of the people and their lifestyles. Interpretive research has helped me to discover a real background. To find an answer to my research question, I tried to bring lived experiences from local Newars residing and interacting with the traditional stone spouts.

Selection Process of Participants

All of my research participants are the local Newars of Patan. When I visited the Banglamukhi temple and interacted with a few people, I realized that most of the local Newars had migrated from that place. The main reason behind it is splitting off from a joint family. As mentioned earlier, most of joint families live together, and when the family grows bigger, people split from the joint family. As I was collecting lived experiences of Newars with traditional stone spouts, most of the participants were those who had migrated from the Banglamukhi temple area to some other place after marriage. They had childhood experiences to share with traditional stone spouts.

Altogether, 15 Participants were selected for the interview. The criteria for selection were: A Newari Citizen and A Local Newar of the Banglamukhi temple area. Altogether, 9 Females and 6 Males were selected for the Interview. All my participants were between the ages of 30-80 age group. Academic qualification of,

one participant is a Master's degree holder, five are S.L.C passed, and 9 are not literate. Two of my participants are unmarried, and the remaining thirteen are married.

Data Collection Methods

The data collection techniques help researchers for collecting information and set the boundaries for the research. In the data collection of qualitative research, there is a need for the involvement of the participants. I chose in-depth interviews and on-site observation for collecting data. The interview helped me discover the local Newars' perception of traditional stone spouts. Observation helped me to know about the present conditions of traditional stone spouts. Three methods of data collection are used in ethnography: observation, interviews, and archival research (Angrosino, 2007, as cited in Sangasubana, 2011). To obtain diverse individual opinions and capture participants' responses more significantly, I adopted two types of data collection techniques: interview and observation. Brief discussions on these tools are as follow:

Interview

I used an interview for data collection (Qu & Dumay, 2011). It was essentially an informal conversation interview. Thanks to the interview, I learned a lot about the participant's opinions and experiences. Interviews are regarded as a significant source of evidence among qualitative research approaches since they are focused and perceptive. A qualitative interview does not employ standardized questions and is instead steered by a list of subjects that will be covered in-depth.

I interviewed 15 Newar community members, all of whom were of a different gender but shared similar ethnic backgrounds, socioeconomic status, and geographic areas. After informing the respondents of the research's goals and procedures, all interviews were done with their formal consent. Depending on the respondents' degree of interest and knowledge, interviews lasted anywhere between 30 and 120 minutes.

Observation

Observation is the systematic description of events, behaviors, and artifacts in a social setting (Marshall & Rossman, 1989, p. 79 as cited in Kawulich 2015).

Observation is used in research for collecting data and is a regularly used tool (Kawulich, 2015). Moreover, observation is one way to collect primary data.

Observation is the fundamental base of all research methods in social as well as behavioral research. This study is a behavioral as well as social research. Therefore, I adopted an observation tool for data collection.

Data Analysis and Interpretation

The analysis is done in this research through observation, notes, records, and in-depth interviews. Also, thematic, empirical, and theoretical literature helped analyse the information. In ethnographic research, there are three aspects of data analysis. They are description, analysis, and interpretation. The description means describing data. It treats data as fact. Analysis helps in examining the relationships, factors, and linkages in the data points. Interpretation helps in understanding and explanation of data (Reeves et al., 2013). Firstly, I recorded information obtained from the field. The obtained information was transcribed and noted down. The raw data was then categorized according to the research questions. It was further refined according to the theme to draw the outcome. The gathered information was analyzed by categorizing and arranging it according to the themes. The research questions and outcomes were systematically presented, linking with the theories to maintain the quality standard. Ethnographic Content Analysis helped in verifying theoretical relationships (Altheide, 1987).

Quality Standards

Quality standards are needed to be maintained in research so that quality works come as an outcome (Riggs, 2015). There are different quality standards in social science research, as claimed by different researchers. In this ethnographic research, the participants with enough knowledge and experience on traditional stone spouts were selected. Secondary data were collected from trusted and valid sources. Quality Standard includes terms like Credibility, Transferability, Dependability, Confirmability, and Authenticity. The report on the research should be clear, and the data should support the findings and conclusion (Riggs, 2015).

Ethical Considerations

A confidential environment was created among the participants. Also, any harm was not created during the research. Plagiarism is strictly avoided. It is challenging for a researcher to keep ethics in the research work. Maintaining privacy during the research to have a secure conversation with the informants is very important. Also, there might be a certain point where privacy should be maintained with a certain group/individual. Therefore, I was much aware of maintaining all these throughout this research.

CHAPTER IV

CONNECTION OF NEWARS WITH STONE SPOUTS

Newars have their own kind of indigenous knowledge, skill, art, and ritual practices (Manandhar, 2011). Historically, Kathmandu Valley residents known as Newar were responsible for taking care of stone spouts (UN-HABITAT, 2008). They had a group that was in charge of carrying out activities related to preserving traditional stone spouts. And it is obvious that there is a high interaction of Newars with stone spouts. Meanwhile, as one of the community's central meeting places, these spouts served as a means of social communication. In this chapter, I have addressed my research question - How do elderly Newars experience their interaction with the traditional stone spouts over time? Under my research question, I have developed four sub-themes: traditional stone spouts and sustainability, traditional stone spouts and connected ceremonies, traditional stone spouts management, and dilapidated stone spouts and ecological disturbance.

On 2 April 2021, I had my first visit to stone spouts around Banglamukhi temple. Since then, I had frequent visits to stone spouts. In the summertime, I could not see the flow of water from those spouts while in the rainy season, there was a good flow of water from those spouts. I was grown up in the local Newar Community, and traditional stone spouts are common identities of the Newar community. It is found everywhere, from temples to local resident areas. However, my interest in continuing my thesis research emerged after I did my assignment on traditional stone spouts in MSD first semester. Through this, I also got the opportunity to explore in detail the realities of stone spouts and their present conditions. Kathmandu, Lalitpur, and Bhaktapur are culturally rich cities with local Newars living in these cities.

Traditional stone spouts are very common resources in these cities. In the beginning, I was planning to do my research in one particular area of Bhaktapur. I visited over there and had a few conversations with an elderly local Newar in Bhaktapur. But later, I made changes to the research site. After interacting with local Newars, I learned that traditional stone spouts were deeply connected with them. Traditional stone spouts were like a basic need for them. Based on my data, I have developed sub-themes from observation and interviews.

Traditional Stone Spouts and Sustainability

When I asked local Newars of Patan about their interactions with traditional stone spouts, the common answer was to drink water, bathe, wash cloths, and do everything. From my participants, I also came to know that there were Public Taps made by the government as well. Also, rivers were too clean to drink water. So, during those times, it was not only traditional stone spouts, but people were dependent on all the sources. The water was clean and safe for drinking.

On 24 April 2021, I had a conversation with one of the participants. And the conversation with her made me realize how stone spouts and sustainability are interconnected. I began my question with – *what are the sources of water for household purposes?* She gave a quick smile and told me that there was well. People also used to go to *hiti* for washing and bathing. Also, there was a government tap. She told-

Water was everywhere. During those days, we used to depend on well. The water of the well was very clean. Also, we used to go on hiti (traditional stone spouts) for washing and bathing. For drinking, I remember collecting water from a tap built by the government. There was no water tap in the house during those days. There was only a government tap.

Another participant told me – *“We used to wash our face. Most of them who came back from the field used to go there and wash their hands and legs. Also, people who used to go temples used to go to those Stone Spouts and enjoy the water.”* Her answer amazed me. When I compared the situation of water today and past time, I felt pity for the present situation of water scarcity in the valley. When I visited those spouts, I could see accumulated dust everywhere on those stone spouts. The stone spouts were like a dumping site. Most of the research participants told me that they used to depend on government taps for drinking water. Although there were a number of water sources during those days, the dependency on the government taps made me curious.

And when I asked my research participants why the government tap was for drinking purposes? Why not other sources? My research participant said,

People used other sources as well. Every source was clean. I prefer government tap. There were lots of options for water during those days. Also, there were no renters like today. There were only a few local people. The water was more than enough during those days.

Water during those days was very readily available sources. But today, if we see the scenario, the situation is very different. For people during those days, water was not a big issue, while today, the water shortage has been a common problem. Water and sustainability were considered during those days.

One of my readily available participants used to come to meet me regularly. She loved talking and gossiping with me. She told me that she used to drink, play and wash her legs in stone spouts. But she wouldn't wash clothes on stone spouts. But today, I could see dry stone spouts everywhere. Hardly few stone spouts give a flow of water. She told me that she prefers going to Bagmati River. She told –

“We used to wash clothes in Bagmati River. The water was very clean during those days. Even after marriage, I used to go to my parent's house and wash my children's clothes because there was a big space for drying clothes. Also, during those days, there was no soap. We used to wash with Nau (ashes).”

My conversation with my participant amazed me because the situation of the Bagmati river is very critical. She also told me that the Bagmati river was too clean those days, even though they could drink water from it. This is very sad news for me to see the situation of the worst Bagmati river at present time. During those days, everybody depended on common property, which belonged to all.

However, one of the research participants told me she had a drinking tap in her house. She said, *“We used to go there and play. We also used to wash our legs. But we were alert too because we often used to see snakes in those stone spouts.”* Stone spouts are not only for daily purposes. They were also maintaining sustainability on the river. Snakes, frogs and other aquatic animals maintained the sustainability of the place. But today, we have broken the sustainability of our surroundings.

From my research participants, I learned that people depended on traditional stone spouts and government taps for drinking and daily purpose during those days. Personal taps at home were considered a luxury. The original water delivery system was later easily replaced with piped water systems. The traditional water supply system has been compromised by the convenience of having a personal tap at home. So, with time, the spouts were neglected and poorly managed.

Traditional Stone Spouts and Connected Ceremonies

These stone spouts have historically been significant to the social and cultural life of Newar villages. Religious celebrations like Sithi Nakha, during which locals clean wells and other water bodies in anticipation of the monsoon season, are centered

on the stone spouts and ponds in the valley. While certain spouts, like Washa Hiti in Patan, are thought to contain water with medicinal and tantric characteristics, others have historical significance because they are located near the Valley's most significant temples. Moreover, traditional stone spouts were not only used for fulfilling basic needs, but they were also connected with rituals and ceremonies. During those days, stone spouts were necessary for celebrating rituals and ceremonies. I had a frequent visit to another elderly participant. On 20 April 2021, I had another visit to her. She said,

The traditional stone spout is a necessity for performing death ceremonies. During those days, a person whose family members died needed to go and bathe on those traditional stone spouts. They also needed to cut hair on these spouts. Now, all these traditional stone spouts have dried up, but still, people carry water from their houses and bathe on these stone spouts. (She laughs)."

My participant said, "It was a compulsion to go on these stone spouts."

I have seen death ceremonies performed in the stone spouts, but there is no water in the stone spouts. Everything is dried up today. This is obviously the impact of Modernization. With modern practices we have adapted, we have forgotten our old traditions, rituals and ceremonies. Our old practices were very compatible with the environment, but sadly we are forgetting our eco-friendly practices and practicing new global practices in every possible area. My yet another frequent participant on 9 June 2021 told me –

I rarely remember cleaning those stone spouts. There was "Pori" (a lower Newari Caste). They used to clean those stone spouts. But our tole (society) used to clean it once a year during Sithi Nakha Festival. Those stone spouts were the God of a source of water. We used to worship too."

I think Pori nowadays are rarely seen. People are busy with other work. However, there are few people who still practice traditional rule and regulations. I have also seen people's engagement in cleaning during the festival named Sithi Nakha. The practice is still followed, and also delicious foods are cooked during this festival. Another participant, too, told me about the stone spout and Sithi Nakha. She said,

I remember cleaning the wells in Sithi Nakha. With the help of a ladder, people used to go down and clean it. After completing the cleaning process, people used to cover the well, and nobody could take water out of it for five days.

According to the results of the interviews, the dead people's kin in Newar communities uses stone spouts that are close to where they live as part of their religious practices. Furthermore, according to the respondents, local people historically maintained and managed stone spouts and played an important role in rituals and festivals. Traditional stone spouts also have a unique religious significance. Heard from the participants, some of the traditional ceremonies connected with traditional stone spouts for the management of stone spouts are as follows:

Sithi Nakha

People clean traditional stone spouts during Sithi Nakha, as mentioned by my research participants. Sithi Nakha is a Newar community festival associated with cleaning water sources, including stone spouts. It is believed that on the day of Sithi Nakha, Naag (Snakes) move out of water sources. This gives a chance for people to clean water sources. Following cleaning, herbal plants, after chopping, are sprayed on these water sources to purify them further, and the water is covered for a few days.

Naag Panchami

Naag Panchami is another ceremony when snakes are worshipped. Also, people believe that Naag and water gods are closely connected, so are further connected with stone spouts. It is believed that if waterspouts were kept dirty or polluted, the Naag would get annoyed and causes sickness to them. This belief helped in conserving stone spouts during those days. Naag Panchami also helped in maintaining the sustainability of water sources. But today, the scenario is very different. Neither the environment around us is green, nor is there a balanced environment for snakes. Also, we hardly see snakes in stone spouts. Most of the stone spouts have dried up and are neglected by locals.

Traditional Stone Spouts Management

Traditional stone spouts and water flow symbolized sustainability during those days. Stone spouts and wells were charged through shallow aquifers back then. This magical geological formation allowed water to be stored in the sand reservoir. Water was also channelled from the aquifer to the stone spouts via a burnt clay channel. In some places, wooden channels were also constructed. This was how the sustainable way was adopted back then, without using machines or non-biodegradable materials.

My other participant lived at Dhobighat. Her maternity house was around the Banglamukhi temple area in Chyasaal. Although she was brought up in a typical Newari community in the Hindu religion, she and her entire family decided to change their religion and embraced Christianity. Today, she doesn't regret being Christian. However, she cannot erase those young age memories of Newari culture and the stone spouts. I went for interviews with her a couple of times. I interviewed her on 21 Nov 2021. My research participant told me – *“We used to go to Manga Hiti. In that Hiti, people could not bathe and wash clothes. They couldn't take anything like soap with*

them. The purpose of this Hiti was only to drink water.” This statement proves that local people made rules for the proper use of stone spouts for sustainability. This practice was very helpful during those days in maintaining sustainability.

She further added-

The Hiti was only used for drinking. It was located at the top. It was used for drinking and rest in other remaining stone spouts located at lower places and were useful for other purposes. We wouldn't drink from other places except this.

Stone spouts were designed during those days in such a way that it maintained ecological balance and also social balance. The Hities during those days maintained the balance between humans and the environment. Different stone spouts located in different places have their unique value and purpose. As my research participant said that there were stone spouts located in lower and upper places. And local people had their own disciplined lifestyle of using those stone spouts.

Adding to it, she also said,

There was Tole Sudhar Committee, and there were many males in that committee. They were engaged in cleaning activities during those days. Females were not allowed being Patriarchal Society. During those days, there was no dust like today we have. Not much cleanliness was required. People who used to go to take water from those stone spouts used to talk with other friends and engage in pulling and cleaning grasses around the spouts.

Another research participant said,

“When the government built personal taps in our houses, there was a decrease in going to other sources. It was difficult to go and bring water from other sources for daily purposes. In the beginning, there was very little flow of water from personal taps. So, we still used to bring water from other sources,

including the government tap. But later, we had enough water. Now, I hardly go. Everything has dried up. Those government taps are also no more in use now. There is no flow of water from there. I think the government has stopped it after personal water taps were built.”

The main reason behind the negligence towards stone spouts was the development of piped water system. Stone spouts during the earlier time were an important source of water for Kathmandu Valley. So, people were also concerned about conserving and preserving it. With time, when people found better water options slowly, people started neglecting Stone Spouts. Also, haphazard urbanization affected the water channels of traditional stone spouts, and hence stone spouts dried up. The construction of new roads, sewage lines, building foundations, cement walkways, and private wells affected the traditional stone spouts. Thus, it was due to the state policies of making access to people piped water at homes they were compelled to neglect the stone spouts. The state adopted the policies of modernization which devalued the traditional ways of drinking water management.

This ancient system is at risk of extinction due to the unchecked and unplanned urbanization that has occurred in recent decades under the guise of modernisation. Most public areas in and around the Valley that served as rainwater collecting places have been substantially concreted or encroached upon. Similarly, the subterranean systems for bringing water in and filtering it have essentially been destroyed because of negligent construction works. Approximately two-thirds of Kathmandu's urban population is now connected to the water supply system's pipe network. However, the population relies on water tankers, nearby wells, and stone spouts.

Dilapidated Traditional Stone Spouts and Ecological Disturbance

Traditional stone spouts are known for being environmentally beneficial. Drying stone spouts has caused ecological disruption today. People do not understand the ecological surroundings and environmental services that land provides. The amazing invention on the land was the traditional stone spout. Traditional stone spouts and their use was created by the Kirats, improved upon in the Lichchhavi Period, and further developed in Mallas Period. Because of changes in human behavior, the ponds that collect surface water and recharge the aquifers are disappearing. Additionally, the majority of them were farmers back then.

The shallow aquifers that supply water to traditional wells and stone spouts are interrelated and keep the ecosystem in balance. In order to maintain the channels and spouts operating sustainably for generations, the builders also used a local biological intervention. Everything happened naturally. However, we can see now that our stone spouts are negatively impacted. Modernization has an impact on all of our conventional knowledge and skills.

Discussion and Conclusion

This section deals with the result and discussion of the research question - How do Newars experience their interaction with the traditional stone spouts over time? Under the research question, the four sub-themes were developed: Traditional Stone Spouts and sustainability, Traditional Stone Spouts and connected ceremonies, Traditional Stone Spouts management, and dilapidated Traditional Stone Spouts and ecological disturbance.

The findings from Chapter IV show that there is a great interaction between Newars and traditional stone spouts from the very beginning. Traditional stone spouts are significant in terms of culture, society, and the environment. Traditional stone spouts

were associated with rites and ceremonies and utilized to meet the fundamental necessities of the local people. Additionally, research from interviews reveals that in Newar communities, the deceased's kin used stone spouts that were close to where they lived as part of their religious practices. Furthermore, according to the respondents, local people historically maintained and managed stone spouts with an important role in rituals and festivals. Therefore, traditional stone spouts had a special religious significance. Besides, stone spouts last many centuries with very few maintenance requirements. We don't need to regularly invest a substantial sum for these stone spouts. Therefore, it is essential to protect our existing stone spouts (Thanju, 2012).

The beauty of these traditional stone spouts back then was that they charged through local aquifers naturally. Back then, people were also skilled at recharging the local aquifers via canals known as rajkulo (UN-HABITAT, 2007). So, these traditional stone spouts were all interconnected, maintaining ecological balance. It was a natural process. However, stone spouts are influenced today. Our traditional knowledge and skill of recharging groundwater to serve well and hities are all influenced by a modern way and re-construction of these stone spouts.

There is a relationship between the stone spouts and local people (UN-Habitat, 2014). With the change over time, society adopted the theory of Modernization. The modernization theory claims that society goes through industrialization, urbanization, and other social changes, completely influencing people's lives. Meanwhile, according to modernization theory, traditional societies will evolve as they adopt more modern practices, as is the case seen in our traditional stone spouts. The construction of new roads, sewage lines, building foundations, cement walkways, and private wells affected the traditional stone spouts. The state

adopted the policies of modernization which devalued the traditional ways of drinking water management.

Chapter Summary

Traditional stone spouts provide independence, longevity, and sustainability. It requires minimum cleaning and minor maintenance and lasts for many centuries. Today, despite very minimal upkeep and human assistance, it is still operating. Each element of the hiti system was created using local knowledge and resources, including dirt, wood, bricks, and stone. Unfortunately, unplanned development activities without adequate planning damage the aquifers. Aquifers have been impacted by construction operations such as building drainage systems, wells, pipelines, and big building foundations, which has affected the entire water transfer process.

CHAPTER V

IMPACTS OF RAPID URBANIZATION ON TRADITIONAL STONE SPOUTS

The uncontrolled and unplanned urbanization in Kathmandu Valley has negatively impacted the traditional stone spouts. We can see lots of visible negative impacts on these traditional stone spouts. This chapter summarizes the answer of one of the research questions of the study – In what ways do they explain the continuous disappearance of Traditional stone spouts in their locality due to rapid urbanization? To answer this question, I have made a personal observation of three stone spouts of the Banglamukhi temple. I repeatedly observed these stone spouts to see the impact of rapid urbanization in this area. This chapter includes five sub-themes: Traditional water system, Disappearance of Traditional Stone Spouts, Haphazard Urbanization, Over Population and Excessive Ground Water Extraction.

Traditional Water System

After reading the papers, I came to know that the traditional water management system and the beauty of our ancestors' skills were miracles during those days. The stone spouts during those days were constructed so that they served water throughout the year. Also, different aquifer sources were used to minimize the risk of drying. So, the issue of dryness was scarce. The traditional water management system was a very sustainable way of using and conserving our traditional water sources.

Further, I learned that the three components connected to traditional water management systems were Rajkulos, Aquifers and Hities.

Rajkulos: Rajkulos were also known as city canals. These canals were built from upstream and taken to the valley's ponds. The purpose of this earthen canal was

for irrigation in the fields and to serve water to the settlements. All the ponds were filled, and the remaining excessive water was discharged into the Bagmati river.

Aquifers: Stone spouts and wells of the valley were charged through shallow aquifers. Stone spouts were connected with these aquifers linked by burnt clay or wooden channels. These aquifers were charged by Rajkulos. Naricha is the largest aquifer in the Patan area.

Stone Spouts or Hities: Water was linked to the stone spouts from the aquifer through burnt clay channels. Also, before entering into stone spouts, it would go through a traditional filtration system using sand of various grading, gravel and charcoal.

I believe that the traditional water system was the sustainable source of the valley. When I had a conversation with my research participants about stone spouts during the early days then, I came to know how sustainability was maintained during those days. The scenario is very different today. Also, the stone spouts were made for the convenience of people so that they don't need to go a long way in the rivers and ponds to fence water for their livelihoods. Further, our ancestors were much concerned about the preservation of this property. Meanwhile, they had always been compatible with the environment with the application of conventional methods. Still, with time, in the name of urbanization, our respect towards historical relics and traditional knowledge is decreasing. It is sad to know that we somehow failed to carry the legacy of stone spouts which our ancestors left.

Disappearance of Traditional Stone Spouts

I observed three different stone spouts of the Banglamukhi temple. These three stone spouts were Misa Hiti, Konti Hiti and Konti Pokhari.

Short Descriptions about These Three Stone Spouts

Patan area in itself is rich in traditional stone spouts. There is a number of stone spouts built by ancient kings. Misa Hiti is one the most popular stone spouts built Near Banglamukhi temple gate. Opposite Misa Hiti, there is another stone spout known as Konti Hiti. As you enter the Banglamukhi temple, take a left, and after moving a few steps, there is yet another traditionally rich stone spout, Konti Pokhari (Pond).



Figure 1: - Misa Hiti

Misa Hiti

On the notice board which is present, there is written: “This Hite is popular for its ritual practice during Panchadan every year in August. FuDyo (the last God) is brought to the Hiti with religious fanfare. On the way, the participants offer Panchadan (a Charity consisting of five different food grains) to Buddhist priests and lastly to FuDyo. Nobody then takes Panchadan until the next year. Inside the Hiti there is spring. The Hiti is believed to have been built by Dharma Dev in 1416 A.D.”



Figure 2: - Kwonti Hiti

Konti Hiti

On the notice board which is present, there is written: “This Hiti complex with six water spouts belongs to three different Guthis (trusts). All three groups worship this Hiti during Yanya Purnima (Full moon) in September. It is one of the largest Hitis in Patan, with an area of 229 square meters. “

Konti Pokhari

On the notice board, which is present, there is written: “This is a holy pond where the festival of Janai Purnima is celebrated on the full moon day of Shrawan (the Fourth month according to the Nepalese calendar). A spout (Hiti) on the southeast corner of the pond provides water to the pond”.



Figure 3: Kwonti Pokhari

Observation of These Three Stone Spouts

I am a more environment-concerned person with engagement in conducting different environmental workshops for diverse groups. On 2 April 2021, in collaboration with one of the organizations, I was conducting one of the programs for the women's group. One of the team members from the organization asked me to pick her up as she wasn't aware of the location. She asked me to come to the Banglamukhi temple area as a picking point. So, as I was waiting for her around the temple area, I saw two stone spouts opposite each other at the front gate of Banglamukhi temple. Both those stone taps were dry, and waste was collected in one corner of the front gate side of the stone spouts. As it was a busy street, I saw people there, but I saw no one entering inside the stone spouts. Stone spouts were like a burden. After 30 minutes of observation, my friend arrived, and I returned to work.

On 22 April 2021, I again decided to observe the stone spouts of the Banglamukhi temple to know the interactions of Locals with stone spouts. I planned to observe Misa Hiti, Konti Hiti and Konti Pokhari (Pond), and other stone spouts around and see people's current interaction with it. But unfortunately, it was a cloudy day, and the road, too, was full of dust. Banglamukhi temple is in the middle of the

busy street of Patan. There are beautiful narrow lanes paved with environmentally friendly stones. But, as I was riding in my scooter, I saw a noticeboard that said that roads were blocked. Also, I was traveling in a rainy time, so I was in doubt about the narrowness inside the road. Also, road construction work too was going on in different parts of the Patan area. So, it was difficult to ride during rainy times. I was trapped in these narrow lanes because I was looking for a good way not to dip myself in those muddy lanes.

I also had another observation on 24 April 2021. When I reached the gate of Banglamukhi temple, I could see the flow of many pilgrims with hush and rush in the area. My main objective of the visit was to see how the interaction of people with traditional stone spouts at present. So, I went near the Misa Hiti to see the present condition. I had to take downstairs to watch these stone spouts. There were also a few beggars at the entry point downstairs near the gate of Banglamukhi temple. There was a crowd of people, but sadly I felt like the stone spouts were so quiet, sad, and neglected. On the way downstairs, I could see scattered waste, including plastics, chip wrappers, water bottles, papers, and clothes. As I reached the downstairs ladder, I saw an extensive waste collection at one end of the corner. This was a miserable scenario inside the stone spouts. The waste included mixed inorganic and organic debris, so there was a horrible smell. During my 15 minutes of observation of these stone spouts, I could see no presence of humans inside the stone spouts. Even though it was a busy street. It looked like a stone spout was a burden for the city. There was no flow of water for these stone spouts. It was a dried stone spout. When I looked everywhere, I saw one notice board where it had a description of Misa Hiti.

On Nov 2021, I visited the Banglamukhi temple again to observe the stone spouts: Misa Hiti, Konti Hiti and Konti Pokhari. It was a Saturday, and I was

expecting the people to hush and rush in these Hiti to bathe and wash their clothes (as expected from my previous to this place). The scenario were very much closer to what I was expecting.

After observing all these stone spouts in the summer, the common thing I found between all these stone spouts located very near to each other was that they all were dry. There was no water coming out of those stone spouts. One of the local inhabitants of Banglamukhi temple told me – *Stone spouts are dry now in this summer season. If you want to see the flow of water, then you need to wait for the monsoon.* Also, when I had a conversation with another participant, she told me – *“There was a high volume of flow of water during those times, and flow was for 12 months in a year. Yes, the volume of water in summer is lesser, but I have never seen stone spouts drying like today.* Yet, another participant told me a surprising thing about stone spouts –

One day, it was already too late, maybe around 12 pm, and I was coming back with my husband from our celebration program. On the way, when we passed by the stone spouts, I could not hear any sound of water from stone spouts. I was shocked and scared. My husband told me that everybody needs to sleep and this water too.

Today, these ancient water supply systems have been ignored at the moment. Instead, there is a lot of attention on development and modernization. As of now, the stone spouts have been negatively impacted by human activities. Compared to the past, none of the stone spouts is in perfect condition. People should be concerned about several strategies for protecting these stone spouts against future destruction. The people somehow understand the need to preserve and utilize these traditional water sources. It would be better if these traditional stone spouts came up with local innovations.

Misa Hiti

When I reached the gate of Banglamukhi temple, I could see the flow of many pilgrims with hush and rush in the area. So, I went near the Misa Hiti to see the present condition. I had to go downstairs to watch these stone spouts. There were also a few beggars on the entry point downstairs, which was near the entrance of Banglamukhi temple. There was a crowd of people, but sadly I felt like the stone spouts were so quiet, sad, and neglected. All the stone spouts were totally dried up. During my observation of these stone spouts, I could see no presence of humans inside the stone spouts. Even though it was a busy street; it looked like the stone spout was a burden for the city.



Figure 4- Scenario of Misa Hiti

On the way downstairs, I could see scattered waste, including plastics, chip wrappers, water bottles, papers, and clothes. As I approached the downstairs ladder, I saw a big collection of wastes at one end of the corner. There was a miserable scenario inside the stone spouts. The waste included mixed inorganic and organic waste, so there was a horrible smell



Figure 5: Scenario of Misa Hiti

coming out of it. There was no flow of water from these stone spouts. It was a dried stone spout. When I looked everywhere, I saw one notice board with a description of Misa Hiti.

As one of my participants told me to revisit these stone spouts again in the monsoon season, I waited as the monsoon was not too far. In monsoon time, when I revisited these stone spouts, I was totally surprised to see the different situation.

Banglamukhi temple was closed due to the COVID-19 pandemic, but there was a good flow of people outside the temple. Although the temple was closed, devotees were worshipping God from the closed gate.

When I had an observation in Misa Hiti, I was shocked to see the crowd of people in these stone spouts. Misa Hiti, too was crowded with people. In Misa Hiti, people were not having bath, but they were washing lots of clothes. The place was occupied by women and their clothes to wash. There was no water flow from the stone spouts of Misa Hiti, but when I observed, I saw one stone spout with a good flow of water at one corner. People were busy



Figure 6: Scenario of Misa Hiti

washing clothes with soap, which was degrading the whole stone spout's scenario. Also, from my observation, I found that most of them who were washing their clothes were renters with little or no access to reliable tap water. Maybe, it was not affordable for them to buy water from private tankers. Also, it was heartbreaking to see the household garbage piled up in one corner of Misa Hiti, which made the cultural property more disgusting. Moreover, the residents were found to be less concerned about protecting cultural property. It was very sad to see the degrading scenario of our traditional property, but what could we do. There's no alternative option for the daily water supply. I actually wanted to click the photographs, but the crowd was objecting not to doing so. It was a Saturday. So, most of them who lived in rented rooms migrated from the village to this busy street to find opportunities and were seen washing their clothes inside the Misa Hiti.

Konti Hiti

Then, I had another visit to Konti Hiti opposite Misa Hiti. The area covered by this Hiti was bigger, with several stone spouts. These stone spouts were dry and there were green algae in a few moist places. There was a bigger tank in one corner inside these dry-stone spouts. The water tank and its pipes were then connected with these stone spouts. As in Misa Hiti, here in Konti Hiti, too, there was no flow of people inside it. In Konti Hiti, there were lots of males having a bath. As it was the rainy



Figure 7: Kwonti Hiti

season, there was a good flow of water from those spouts. It was a Saturday. So, people were busy washing their bodies. I often chose Saturday to visit my research site because I had to go to work on the remaining days. In Konti Hiti, only males could bathe because it was an open place, and females were hesitant to bathe publicly.

Konti Pokhari

The name of this stone spout is Konti Pokhari (Pond). As it was a Saturday, I could see a crowd of people inside the temple area with very few precautions taken for a pandemic. Priests were worshipping and praying with different puja items on one side of the corner. I entered the Banglamukhi temple. After moving a few steps, there was yet another traditionally rich stone spout Konti Pokhari (Pond). The pond was bigger. As



Figure 8: Konti Pokhari

this pond had already dried up, there was no water inside it. At one side, there was one small stone spout, which, too, had dried up completely. I went downstairs inside this huge pond, and it was a big pond with pigeon-eating dry grains of rice given by pilgrims.

In monsoon time, there was a good flow of water from Konti Pokhari. However, people were not allowed to wash or bathe in this stone spout. As this stone spout was inside the Banglamukhi temple, there were specific rules and regulations that needed to be followed by people. So, only devotees were seen sprinkling water in their bodies and enjoying and taking pictures in this Konti Pokhari.

Haphazard Urbanization

Haphazard Urbanization has a strong negative impact on stone spouts. Unplanned human settlement in Kathmandu Valley has given stress to the valley. Also, the situation becomes vulnerable. One of my research participants told me that these stone spouts have dried up because of the human settlement. She further explained-

If you see today, the construction of houses is not environment friendly. The concrete houses block the flow of water. There is a chain connected with which water flows on these stone spouts. The housing and its construction are very wrong. The digging for house building is very dipped, which is dipper than a chain of the flow of water in these stone spouts. So with this unfriendly construction, there is a block inflow of water. Concrete renovations have affected these stone spouts. If you have noticed, if it rains for quite long days continuously, water is collected like stagnant water on those traditional stone spouts.

She further explained house construction during the old days. She said -*Before while building houses, people didn't use to dig quite a dipper. It all used to be above stone spouts. Also, cement was not used before for construction.*

Another participant added to it when I asked her about the present situation of traditional stone spouts, and she told me – *“Now, most of them have dried. This is all*

because of cemented construction. Also, there is a rapid increment in People making personal wells. This also affects those stone spouts. In those days, there was very little privatization. Government Tap was available in every Tole. There was the timing of the water supply, so we used to collect water from those taps.

In addition, development without proper sustainable thinking has had an impact on our traditional knowledge, practices, and identities. It is said that the victory of Kathmandu Valley was brought about by rulers from the hills with inferior cultural skills. It is also said that the new rulers were concerned about the superiority of local skills. Later, Ranas, who were close to British India's rulers, began to adopt western technologies rather than indigenous skills. These rulers had little regard for indigenous resource management knowledge (Water Movement, 2007).

Over Population

Over Population is another issue for the degradation, negligence and extinction of our traditional stone spouts. Kathmandu Valley, including Lalitpur, Bhaktpur and Kathmandu, has been a high-density area. The high population is forced to adjust to limited resources. Also, when I had site observation on Saturday, there were lots of people engaged in washing clothes and bathing in Misa Hiti and Kwonti Hiti. Traditionally, an ancestor had developed stone spouts to minimize the water stress of the valley. But today on the one hand, western technology has affected our stone spouts, and on the other hand, over population has created water stress in the valley.

Also my research participant also mentioned that fewer people lived there, so the water was more than enough during those days.

My research participant told me – *“People use other sources as well. Every source was clean. I prefer government tap. There were lots of options for water during*

those days. Also, there were no renters before, like today. Fewer local people, so the water was more than enough during those days.”

Overcrowding has undoubtedly resulted in the destruction and degradation of traditional stone spouts that have served water to the people of the Kathmandu Valley. It is necessary to conserve, protect and preserve our stone spouts to solve the water crisis issue.

Excessive Ground Water Extraction

Due to increased urbanisation and rapid population growth, water demand has increased in the Kathmandu Valley. The immediate solution to the water problem was the Ground Water Extraction. Further, the groundwater is extracted excessively. Unfortunately, it is another reason behind the degradation and dryness of our traditional stone spouts. Privatization has also affected our stone spouts. Today, we see personal wells in most houses that also affect our stone spouts.

Discussion and Conclusion

This section deals with the result and discussion of the research question: How do they explain the continuous disappearance of traditional stone spouts in their locality due to rapid urbanization? The five sub-themes Traditional water system, Disappearance of Traditional Stone Spouts, Haphazard Urbanization, Over Population and Excessive Ground Water Extraction, were developed under the study.

The Newars, who were the first people to live in the Kathmandu Valley, relied on stone spouts to meet their water needs. These regional aquifers replenish these traditional water sources. It wasn't until a few decades ago that this fundamental system started to fail (Shrestha et al. 2012). Later there was the introduction and expansion of modern piped water systems (Shrestha et al., 2012). With the advancement of modern piped water, there is a blockage of underground water

channels that fed the stone spouts resulting in non-functioning waterspouts. We can see the groundwater sources have been exploited. Increased Population and Unplanned Urbanization are to be blamed for the exploitation. Also, Due to overpopulation, the supply of water is found to be inadequate. Therefore, people need to understand the need to preserve and utilize this traditional water source. And, they have to come up with local innovations.

With the growing urbanization and technological advancement, we are slowly eliminating our indigenous values and being more compatible with the modern environmentally unfriendly stuff. Our indigenous water sources, which were the only drinking water sources, have now been degraded and boycotted in the name of modernization. However, modernization has made our life easy but has degraded our Environment (Anderson et al., 2006). The growing unmanaged urbanization has affected the scenario of the indigenous stone spouts of Kathmandu valley. Most of them have already dried, some are critical, and few are in careless use. Moreover, there is a disappearance of our Indigenous traditional stone spouts.

Chapter Summary

Since a long time ago, Kathmandu has experienced a lack of water, particularly drinking water, and the problem has been worse every year. According to our government, the Melamchi Water Supply Project was the long-term fix. Unfortunately, it failed. However, these Stone Spouts would have been the best solution to the water problems. Also, these traditional stone spouts last many centuries. However, these traditional stone spouts are neglected since the past few decades. Due to this carelessness, ponds and other water distribution channels have been destroyed or overtaken, among other water system components. Similar to how managing stone spouts has become a big problem now because of population growth,

urbanization, and modernity. Also, people are much money minded. They are more into commercialization. There is a lot of attention development and modernization, but our traditional knowledge and property have been ignored. Moreover, these stone spouts are affected by the haphazard development resulting in the growing water crisis at the moment. Sadly, these spouts are increasingly under threat of extinction.

CHAPTER VI

DISCUSSION AND CONCLUSION

My research found that the traditional stone spouts in the Kathmandu Valley, including the research site of the study the Banglamukhi temple area- are in a vulnerable state. Haphazard urbanization, over population and the new and western way of lifestyle have negatively affected the traditional stone spouts. The research was focused on the experience/connection of elderly Newars to the traditional stone spouts and the two most important factors that have negatively impacted traditional stone spouts of the study area (Banglamukhi temple area of Lalitpur district). These are modern piped water supply systems and rapid urbanization and modernization.

Under this study, the existing condition of the stone spouts of the Banglamukhi temple was observed. It was found that the stone spouts' situation is very miserable. Because of urbanization and modernization, new piped water supply systems have been established in the cities of Kathmandu Valley. As a result, most people do not use the traditional stone spouts for their water needs, and therefore most of them are neglected and left without any basic maintenance. Some of the findings of this study are described in detail below:

Modern Water System Betrayed Traditional Water System

One of the primary reasons for the decline of traditional water systems is the use of modern water systems. Piped water supply developed gradually, and common people were facilitated with private personal taps in their houses. This actually betrayed our traditional stone spouts. Before, stone spouts could attract people because of their fresh and unique taste where elderly used to collect the water and termed it as Nilah (sacred water) to offer to God and to perform daily pujas and rituals.

The assets that have been passed down to us from our ancestors are traditional stone spouts. The local aquifers were replenished by rajkulos canals at the time. At that time, the Kathmandu Valley relied on stone spouts to provide water all year round. Also, surprisingly, the technologies used by ancient experts were maintenance-free for longer periods. However, the Western water management system affected the traditional water management system.

According to the modernization theory, society undergoes industrialization, urbanization, and other social changes that fundamentally alter people's lives. The modernization theory contends that traditional civilizations advance as they take on more contemporary norms. Our traditional stone spouts demonstrate this situation. The current development activities have reduced the capacity of traditional spouts to recharge. Additionally, this has left the conventional spouts in very bad shape and weakness. Similarly, urban expansion and the modern way of living and action have affected traditional patterns and identities. It has also affected the conservation of the aquifers. With time, we have observed drastic changes in the urban settlement of Kathmandu Valley. These stone spouts look like pits without water and people. It seems like these spouts are slowly dying. Further, government rules, regulations and policies are very weak. The policies related to water use and water rights are not looked upon seriously by the government.

Impact of Urbanization on Stone Spouts

I learned about the profound impact of Urbanization on our traditional stone spouts. When these stone spouts were dry, people began neglecting them. People threw waste at the corner of it. Nobody was really interested to see the beauty it carried a long time back. Nobody really cared about it. Although there was a good

amount of water flow from these traditional stone spouts, people were still using it haphazardly.

The Social-Ecological Theory suggests the strong interlink between social, economic, ecological, political, cultural and other components in which humans are integral. Here, looking back at the indigenous culture, we see how compatible our ancestors were with these stone spouts. Also, during those days, local Guthies were very addictive in managing traditional water systems. Traditional people and their traditional beliefs saved our stone spouts. Superstitions and beliefs were the tools used to manage our stone spouts in those days. People during those days would offer pujas to snakes. They would clean the water sources when one gets sick to recover from sickness. So, damaging and destroying the water resources during those days was not allowed.

During those days, Guthi too were very active, and so under the leadership of the Guthi, whole society members participated in the maintenance of the local water system. Also, festivals were boon for cleaning stone spouts.

But today, the scenario is very different. We, the new generation, seem not compatible and cooperative with our traditional stone spouts. Social cohesion diminished as a result of modernization tendencies and other forms of growth. Consequently, fewer local conventional administrative systems are left to preserve stone spouts as social institutions, norms, and values crumbled. Our traditional stone spouts are in a vulnerable state. Urbanization has been affected badly. Stone spouts are like dumping sites today, where lots of plastics are accumulated in the corner of these stone spouts. Also, we see people not really caring about maintenance. Stone spouts today are in a critical state. They are not functioning at the moment. Human negligence towards these stone spouts has worsened the environment. The people

wash clothes haphazardly in these spouts during monsoon time, and during summer time, the stone spouts are dry. Also, cemented factories have a negative impact on these stone spouts. People are haphazardly making cemented houses that affect the chain of stone spouts. It is also regrettable that little has been done to protect stone spouts as a result of a lack of funding and staff. Additionally, we must take care of national monuments requiring emergency protection. Spouts have, sadly, not been our first priority.

Conclusion

The existing conditions of the stone spouts of Banglamukhi temple are underthreat of extinction. Encountering our previous history, our ancestors were much concerned about preserving our indigenous properties, including stone spouts. They had always been compatible with the environment by applying conventional methods. However, we have somehow failed to carry our ancestors' legacy.

Today, Nepal is urbanizing at a very fast pace. With time, in the name of urbanization, our respect towards historical relics and traditional knowledge is decreasing. The stone taps were a source of drinking water during the period of kings. Further, water flowing from these stone spouts was free for all. No human beings died due to thirst. Meanwhile, there was a special significance of these spouts. Moreover, there was a deep connection between humans and stone spouts previously. People were more interactive with these stone spouts in their daily life.

Also, the impact of Urbanization and Modernization has negatively affected our traditional stone spouts. Those dried stone spouts are not in use anymore, and they are considered dead hitis with no chances of life again. As of now, we need to focus on the preservation of our environment by maintaining the stone spouts alive for lifelong.

Further, the respective stakeholders need to be concerned about revitalizing the remaining stone spouts. Indeed, a widespread and systematic revitalization effort can materialize to ensure that people can continue to access essential public water sources and cultural heritage sites.

Traditional Knowledge and practices of the local community, especially Newar communities of Kathmandu Valley, on managing stone spouts should be acknowledged, recognized, and respected. All stone spouts should be protected and revitalised to preserve our ancient cultural heritage and also to solve the present water scarcity in the Kathmandu Valley.

Implication

The Ethnographic research was designed for the study. The Newar citizens were chosen as the research participants. Further, chapter IV discussed Interaction of Newars with stone spouts, where four sub-themes were generated, including traditional stone spouts and sustainability, traditional stone spouts and connected ceremonies, traditional stone spouts management and dilapidated traditional stone spouts and ecological disturbance. Likewise, chapter V discussed the Role of Urbanization on traditional stone spouts, where the researcher addressed the question: In what ways do they explain the continuous disappearance of traditional stone spouts in their locality due to rapid urbanization? After a repetitive observation, the impact of rapid urbanization on the traditional stone spouts was observed. This chapter included five sub-themes: Traditional water system, Disappearance of traditional stone spouts, Haphazard Urbanization, Over Population and Excessive Ground Water Extraction.

This research has the potential to be extremely useful in helping our government and industry create services, regulations, and goods that will support the promotion and preservation of traditional stone spouts. Additionally, this research can

offer communities and decision-makers helpful suggestions and potential courses of action for dealing with the issue of traditional stone spouts. Further, no commercial or public organizations have agreed to take on the duty of maintaining the canal that supplied water to the majority of spouts in urban areas when guthi ceased to operate as a result of the privatization of guthi property. Hopefully, our decrepit traditional stone spouts will come back to life with the proper steps.

Similarly, the research is focused on the Newar community. Newar communities inhabit their own kind of distinct society. Further, their customs hold unique indigenous knowledge. And to protect such knowledge from extinction, it is essential to implant such knowledge into young minds through formal education. Likewise, there should be a transmission of indigenous knowledge through effective communication, which helps in the preservation of such knowledge. Therefore, making the new generation aware of indigenous knowledge is essential.

ANNEX/Questionnaire

1. How was your Childhood?
2. Do you remember any memories of traditional stone spouts?
3. How was your connection with traditional stone spouts?
4. How important were the traditional stone spouts?
5. What are cultural, religious and historical values related to traditional stone spouts?
6. How do you narrate the history of the stone spouts of Patan?
7. How is sustainability maintained from traditional stone spouts?
8. What are the connected ceremonies with the traditional stone spouts?
9. How were the traditional stone spouts managed before?
10. What is the existing condition of traditional stone spouts?
11. Why are our stone spouts drying?
12. How is Ecological Disturbance caused by drying traditional stone spouts?
13. What are the reasons behind drying traditional stone spouts?
14. What is the impact of Rapid Urbanization on traditional stone spouts?
15. Can stone spouts solve the problem of water scarcity if well managed? How?
16. What measures are needed to take to solve the management issues of stone spouts?
17. What can be your individual step for conserving traditional stone spouts?
18. What is the reason behind the negligence towards the management of stone spouts?
19. What are the reasons behind the extinction of stone spouts?

20. Do urbanization and modernization have a profound impact on the traditional stone spouts of Lalitpur?

REFERENCES

- Ahmed, A. (2008). Ontological, epistemological and methodological assumptions: Qualitative versus quantitative. *Online Submission*.
- Altheide, D. L. (1987). Reflections: Ethnographic content analysis. *Qualitative Sociology*, 10(1), 65-77.
- Anderson, R. B., Honig, B., & Peredo, A. M. (2006). Communities in the global economy: where social and indigenous entrepreneurship meet. *Entrepreneurship as Social Change*, 56-78.
- Arora, N. (2010). *Educational philosophy*. Saurabh Publishing House.
- Atkinson, P., Hammersley, M., Lull, J., & Morley, D. (2015). *Ethnographic methods*. SAGE.
- Beyond the Forest (2016). *Kathmandu Valley's ancient stone spouts*.
<http://graduate.cees.wfu.edu/magazine/kathmandu-valleys-ancient-stone-spouts>
- Bhatta, K. D. (2008). *Urban heritage conservation: Promoting sustainable community development: A case of historic town Thimi, Nepal* (Unpublished Master's thesis). The University of Hong Kong, Hong Kong.
<http://hub.hku.hk/bitstream/10722/55103/3/FullText.pdf?accept=1>
- Bisht, K. (2011). Renovating Kathmandu's Ancient Canals. *ECS Nepal*.
<https://ecs.com.np/features/renovating-kathmandus-ancient-canals>
- Chikaire, J., Osuagwu, C.O., Ihencacho, R. A., Oguegbuchulam, M. N. Ejiogu-Okereke, N., & Obi, K. U. (2012). Indigenous knowledge system: The need of reform and the way forward. *Journal of Agricultural Science*, 1(8), 201-209.

- Crotty, M. (2003). *The foundations of social research: Meaning and perspectives in the research process*. SAGE.
- Dubin, R. (1976). Theory building in applied areas. *Handbook of industrial and organizational psychology*, 17-39.
- Duxbury, N., & Saura, M. S. (2010). Culture, sustainability and communities: Exploring the myths. In 6th *International Conference on Cultural Policy Research*, Jyvaskyla Finland, 24-27.
- Engle, E. (2009). Ontology, epistemology, axiology: Bases for a comprehensive theory of law. *Appalachian Journal of Law*, 103-122 (16).
- Gautam, D., Thapa, B. R. & Prajapati, R. N. (2017). Indigenous water management system in Nepal: cultural dimensions of water distribution, cascaded reuse and harvesting in Bhaktapur city. *Environment Development and Sustainability*.
- Gautam, G. R. (2016). Ethnography as an Inquiry Process in Social Science Research. *Tribhuvan University Journal*, 29(1), 47-66.
- GWP Nepal/ Jalsrot Vikas Sansthan, (2018). *Water Nepal: A historical Perspective*.
<https://jvs-nwp.org.np/wp-content/uploads/2018/09/Water-Nepal-A-historical-Perspective.pdf>
- Hulst, M. V, Koster, M., & Vermeulen, J. (2016). Ethnographic research. *Encyclopedia of Public Administration and Public Policy*. <https://doi.org/10.1081/e-epap3-120051222>
- Hussain, M.A., Elyas, T. & Nasseef, O.A. (2013). Research paradigms: A slippery slope for fresh researchers. *Life Science Journal*, 10(4), 2374-2381.
- Indigenous Voice (2022). *Who are Newar?*
<https://www.indigenousvoice.com/en/indigenous-peoples/14/newar.html>

- Joshi, J. (2011). Heritages sites, open space and Greenery. *Managing Environment and Cities for Sustainable Development Kathmandu, Nepal*, 6(3), 221-225.
- Kawulich, B. (2015). Collecting data through observation. *Doing Qualitative Research in Language Education*. 61-84. [z](#)
- Kneller, G. F. (1971). *Introduction to philosophy of education*. John Wiley & Sons. Inc.
- Lukinbeal, C. (n.d.). Traditional infrastructure, modern flows: Cultural politics of development in the Kathmandu Valley, Nepal.
http://apcgweb.org/sites/default/files/editor_uploads/files/pacificaf14.pdf
- Manandhar. A. (2013). *Sithi Nakha: The Newar environment festival*.
http://www.ngoforum.net/index.php?option=com_content&task=view&id=11305
- Morrow, S.L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology*, 52(2), 250-260.
<https://doi.org/10.1037/0022-0167.52.2.250>
- Nath, R. & Singh, Y.K. (2008). *Education in Emerging Indian Society*. APH Publishing Corporation.
- Nepal Travel Guide (2020). *Historical monuments around Patan*. <https://www.nepal-travel-guide.com/historical-monuments-around-patan/>
- Neupane, D. (2018). Ranipokhari ma dubdai teen crore. *Kanitpur*, p.5.
- NGO Forum. (2010). Traditional stonespouts. Retrieved 2 February, 2016.
http://www.ngoforum.net/index.php?option=com_content&task=view&id=9800&Itemid=78.
- NGOFUWS. (2008). Traditional stone spouts. *Ngo Forum for Urban water and sanitation*.

http://www.ngoforum.net/index.php?option=com_content&task=view&id=98

[00](#)

Nigal, S.G. (1986). *Axiological approach to Vedas*. Northern Book Center.

O Tapia-Leon, Mariela & Santamaria Lopez, Teresa & Chicaiza, Janneth & Lujan-

Mora, Sergio. (2017). *Ontology for the personal learning environments in the development of thesis projects*.

<https://www.researchgate.net/publication/319449170> *Ontology for the personal learning environments in the development of thesis projects*

O’Gorman, K. and MacIntosh, R. (2015). Mapping research methods. in: O’Gorman,

K. and MacIntosh, R. *Research methods for business and management*.

Oxford: Goodfellow Publishers Ltd.

Pestrosillo, I., Aretano, R., & Zurlini, G. (2018). Socioecological systems.

Encyclopedia of Ecology, (October 2017), 419-425.

<https://doi.org/10.1016/B978-0-12-409548-9.09518-X>

Pokharel, R. (1997). *Course manual of urban design and conservation* (Unpublished

Master’s Thesis). Tribhuvan University, Kathmandu, Nepal.

Pradhan, R. (1990). *Dhunge Dhara: A case study of three cities in Kathmandu Valley*.

Department of Archaeology.

http://himalaya.socanth.cam.ac.uk/collections/journals/ancientnepal/pdf/ancient_nepal_116-118_02.pdf

Qu, S.Q., & Dumay, J. (2011). The qualitative research interview. *Qualitative*

Research in Accounting and Management, 8(3), 238-264.

Rai, D. B. (2012). The impacts of Modernation on the traditional Sakawa Sili festival in the Rai Kirat community of Nepal: A case study of the Rai community.

Master of Philosophy in Indigenous Studies.

- Reeves, S., Peller, J., Goldman, J., & Kitto, S. (2013). Ethnography in qualitative educational research: AMEE Guide No. 80. *Medical Teacher*, 35 (8).
- Reynolds, J., Naiga, S., Taaka, L., & Chandler, C.I.R. (2013). *Quality Assessment & Strengthening of Qualitative Research An example protocol*. SAGE.
- Riggs, D. W. (2015). Qualitative Research in Clinical and Health Psychology. *Qualitative Research in Clinical and Health psychology*.
<https://doi.org/10.1007/978-1-137-29105-9>
- Rostow, W.W. (2009). The stages of Economic Growth. *The Economic History Review, New Series*, 12(1), 1-16.
- Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse Researcher*, 25(4), 14-20.
- Sangasubana, N. (2011). How to conduct ethnographic research. *Qualitative Report*, 16(2), 567-573.
- Senanyake, S.G. J. N. (2016). Indigenous knowledge as a key to sustainable development. *Journal of Agricultural Sciences*, 2(1), 87.
- Sharma, S., Bajracharya, R., & Sitaula, B. (2009). Indigenous technology Knowledge in Nepal- A review. *Indian Journal of Traditional Knowledge*, 8(4), 569-576.
- Shrestha, A., Shah, D. N., Bajracharya, R. M., & Shrestha, S. (2022). Traditional stone water spouts status and its practical significance in urbanizing Kathmandu Valley, Nepal – a review. *Environmental Challenges*, 8(June), 100573
<https://doi.org/10.1016/j.envc.2022.100573>
- Shrestha, S., Pradhananga, D., & Pandey, V. (2012). *Kathmandu Valley Ground Water Outlook*. Output file (wordpress.com)
- Thanju, J.P. (2012). Kathmandu Valley Ground Water Outlook. *Hydro Nepal. Journal of Water, Energy and Environment*, 11, 72-73

- Tiwari, S. R. (2002) *Transforming Patan's cultural heritage into sustainable future: Case studies of the past and the present*. UN.
- Tripathi, M. (2016). *A Comparative Evaluation of Stone Spout Management Systems in Heritage and non- heritage areas of Kathmandu Valley, Nepal* (Unpublished Doctoral Thesis). Lincoln University,
- Tripathi, M., Hughey, K. F. D., & Rennie, H. G. (2018). The state of traditional stone spouts in relation to their use and management in Kathmandu Valley, Nepal. *Conservation and Management of Archaeological Sites*, 20(5–6), 319–339.
- Tripathi, M., Hughey, K. F.D., & Rennie H. G. (2018). The State of Traditional Stone Spouts in Relation to Their use and management in Kathmandu valley, Nepal. *Conservation and Management of Archaeological Sites*, 20(5-6), 319-339.
- Turnbull, S. (2002). Social Construction research and theory building. *Advances in Developing Human Resources*, 4(3), 317-334.
- UN-Habitat (2008). Water movement in Patan with reference to Traditional stone spouts in Nepal. UN- Habitat Water for Asian Cities Programme Nepal.
- UN-Habitat (2007). *Water Movements in Patan with reference to Traditional Stone Spouts*. UN-Habitat Water for Asian Cities Programme Nepal, Kathmandu.
- Un-Habitat. (2011). *Traditional Water management and Machhendranath Festival*. <http://unhabitatnepal.wordpress.com/2011/07/15/call-to-preserve-traditionalwater-management-system/>.
- Upadhyay, S., Thapa, A. B., & Prajapati, R. (2011). *Status of traditional stone spouts in the Kathmandu Valley*, 188–192.
- Upadhyay, S., Thapa, A.B., & Prajapati, R. (2011). *The Status of Traditional Stone Spouts in the Kathmandu Valley*. Nepal Publication.