INDIGENOUS KNOWLEDGE AND LEARNING PROCESS IN NEWAR SOCIETY: ETHNOGRAPHY OF SĪKAHMI OF BHAKTAPUR, NEPAL

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DEDICATION

This dissertation is dedicated to my parents and my late wife Kalpana Thapa who encouraged and supported my studies.

DECLARATION

I, hereby, declare that this dissertation has not been submitted for candidature for any other degree.

---------- Date: February 4, 2022

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AN ABSTRACT

Of the dissertation, *Saroj Raj Gosai* for the degree of *Master of Philosophy in Education (Development Studies)* presented on February 4, 2022.

Title: INDIGENOUS KNOWLEDGE AND LEARNING PROCESS IN NEWAR SOCIETY: ETHNOGRAPHY OF SĪKAHMI OF BHAKTAPUR, NEPAL.

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Sīkahmi (Silpakār), a Newar caste group in Kathmandu Valley, has deep knowledge and skills in making woodcrafts and structures, applying their centuries-old skill. The structures they made could resist big earthquakes as well. With this fact, that ancient art was explored to find out the knowledge, skill, opportunities and challenges associated with it. Participant Observation, in-depth interviews, and meetings with experts were the tools used to collect data. The data were analyzed under different themes and were interpreted by applying Bandura's social learning theory, experiential learning theory of Carl Roger and social constructivism of Vygotsky.

The *Sīkahmi*s know a lot on wood and its uses. They also know how to construct earthquake-resistant buildings. They have deep knowledge of art and craft, science and technology and architecture.

The *Sīkahmi*s transferred their ancestral skills in *Āga (n),* the house to orient and impart knowledge to the lineage of *Sīkahmi*. Education is given by the priest in secrecy to perform various ritual activities. They have *Thyā-safū* (Folded book) to

teach the carpentry designs. This book has the sketches and designs of the monuments and woodcarvings on the basis of Vāstu-Shāstra. A woodcarver seriously observes his seniors and tries to emulate them. Although this art is related to their livelihood, this is their contribution to the society and country.

Many of the artists are self-employed and get good income. They are highly honored by the local people. Retention and transfer of this art is not without challenges. The challenges are: less interest in traditional occupation in new generation, more inclination of youth towards modernity, escalating cost of wood and low-quality of wood in the market.

I found Bandura's theory is aptly fitted in learning wood-carving; Jean Piaget's theory is well applied by *Sīkahmi* while solving their problems; John Dewy's theory was well fitted to know learning in socio-familial settings; and social constructivism of Vigotsky were found applicable in reflecting, evaluating and reconstructing *Sīkahmi*'s knowledge and skill transfer practices.

Finally, I concluded that *Sīkahmi*'s knowledge can be included in the school curriculum. Once it will be done *Sīkahmi*s can be tutors, thus bridging the gap between generations.

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GLOSSARY OF THE NEWARI TERMS INTO ENGLISH

Āsī: Axel, the two pieces to be inserted in the center hole of the wheel

Āčajū: priest

Āga (n) chhen: the house of tutelary God

Āgan Dyo: one of the two forms of the Kulguru (lineage deity)

Āikar and barmā: A tool used to make holes in wood

Angul: diameter of a pointer finger

Ava (Awāl): the brick-makers and masons

Awa nāyo: head of the mason

Awāl: masons

Bahā: monasteries

Bāhān: vehicles of God

Baiga: attic floor

Bajī: beaten rice

Bāhkā: Legend

Bāku Jhyā: Symbolically halved windows in a row of odd numbers

Banmālā s (gatha or gathu): cast group of people who perform famous dances, the Navadurgā Nāch

Basilā: modern adze

Batān: angle iron

Béta Sin: The longest and largest wooden structure to stretch upward in the front and straight in the back of the Bhailakha (chariot)

Béta dyo: Béta God

Bétali and dakshinā: perks with good blessings

Bhailakha: chariot of Bhairav

Bhairav: Tamas face of 'lord' Shiva

Bhutū: kitchen area

Bidhi Jhyā: Wooden jolly

Biman Jhyā: window with bow type frame

Biskā jātrā: Biskā Festival, the peculiar festival of Bhaktapur, celebrated in between the end of the old year and the start of the New Year

Biswokarmā: 'God' of skills

Čakkaā: wheels

Čapanchā: Chisel with a circular shape is called

Čeng kathī: the thin metal measuring unit thatwas traditionally used measuring exactly 1cmx46cmx1cm

Čaukos: window frame

Chhā: hard / itching

Chhāpa Jhyā: Single window

Chhipā: a group of people who color clothes

Chhyelī: ground floor

Čitrakārs: the painters

Čotā: the second floor

Čukū: wooden bolts and pegs

Dāi: brother

Dakami: mason

Dāku: measuring tool

Darāj: almirah

Dikhā /Dikchhyā: an initiation to the secret things of Tantrism

Or: The training given in the Āgan Chhen (house of Āgan Dyo)

Dhalin: joists

Dhalinčā: beams

Dhon: a water outlet pipe made of clay

Dhon: a water outlet pipe made of clay

Dhukū kotha: a store of grains and pulses

Dhurī: the ridge beam

Dhwākā: Arched city gate

Digu Dyo: lineage deity found in an open sanctuary (pith) outside the town

Dyo chhen: Shrine

Falčā (Pati): Inns

Ga Jhyā: Balconied window

Ga Jhyā: Window placed under the roof of a temple which is generally used as a nest by pigeons

Gharbunnā Kāpa: Cloth weaved in handloom

Go Jhyā: Circular window

Goyen: betel nut

Gusinyā dene denegu: sleeping on the bed of firewoods

Hāčā: chisel

Hāčan gayeke majyū: should not be stepped on

Hākah: soot with Tučikan (mustard oil)

Hakhī: instrument to mark lines on wood

Hāku Lohan: hard stone

Hāku Prasi: black sari

Hasé and Hainsé: the rhythmic sound choir

Hijā maga: wooden tool used in washing

Jambo: the tool used for pulling out the nails

Jani: sash for waist

Jhyā: windows

Jhyā pā: window piece

Juju dhau: Royal Curd

Jyāba: tools

Jyāpū: farmers

Ka Jhyā: Single window sandwiching a multiple windows

Kaetā: Loincloth

Kaetā Pujā: a celebration that initiates a boy into his caste group

Kamal Jhy: Lotus window

Kami jyā: wood work

Kami nāyo: head of the Sīkahmi

Kami yā swonha bhwātha: Sīkahmi's ladder is wretched

Kāpa Thākimhā Sāhu: person who provides the material to weave cloth

Kāsin: base of the chariot

Katī: hand saw

Khadga: knife

Khāpā: door leaves

Kholā: outer skin of a plant

Khui: the tool used in drying grains is also made of wood

Khul: traditional adze

Khulu: adze

Khwon (Thelā): Thickened skin because of the scar

Ku or *Kādalī*: spade

Kuchhī (haat): measurement from knuckle to finger tip

Kuldevatā: deity god

Kumha: pottery/ clay craftsmen

Kun Jhyā: Corner window

Lipī: script

Lohakamī (Shilākārs): stone carvers

Lohan Hiti:

Dhungedhara: stone spout

Lukhā Khāpā: Door flaps

Lwoh kami: stone/rock carvers,

Madhi kami (sweet or plain bread makers), Sija kami (bronze vessel makers)

Maga (khata muga): a farming tool used to break up the big

Maka pānegu: making fire in a clay pot

Māka tā yāng syong sā sai dhasā manu na masailā: A monkey can be trained, why not a human

Mānandhar/Sālmī: people who produce oil (mustard) Mandap style

Mantra: hymn

Math: Monastery

Mātha: Chisel with straight edge is called

Mhekhā Jhyā: Peacock window

Mhu Kuchhī: measurement from knuckle to fist

Mikhā kankegū: opening of the eyes of the image of God

Muga: mallet

Musī: roof rafters

Nakamī: Blacksmith

Nalā swān: Jamara, the barley seeds sowed in Dashain festival to produce barley

Nāyo: Head of the clan

Ngakha: horn

Nghe Ngyāpā Jhyā: Fifty Windowed Palace

Ngyātāpola: Five-Storied Temple

Ngyātāpola Chhātamaru, Bhaila Dyo patāmaru: The Ngyātāpola lost only the top storey whereas the Bhairav temple fell to the ground

Nitya-Pujā: Dāily worship

Nyā kamī: iron craftsmen,

Nyāmaga: iron hammer

Nyāsī wane masamhasya boye hathāye: One should not try flying without learning to walk

Pān: hatchet

Pagodā style: a multi-tiered temple with multiple roof

Pākhan (bittā): about 9 inches

Pān: axe

Pancha Jhyā: an assembly of 5 windows

Pāngrā: wheel

Pārijāt: the night jasmine flowers

Pasukā Jhyā: A row of 5 small windows

Phukī: Lineage

Pith: sanctuary

Polan: flake of roof

Polan apā (jhingati in Nepali): local ceramic tile

Pu: bund

Pulangu sin: old timber

Punhi: full moon day

Purohit: family priest

Puwāčā: saplings of rice

Pyāgu sin: Fresh timber

Pyāgu sin: wet wood

Randā: plane

Randā or Mātha: a wood planer

Rath Jhyā: chariot window

Sālko pāt: leaf of Sal tree (*Shorea robusta*)

Sālmī: oil makers are making mustard oil with quality and natural fragrance

San Jhyā: Oriel window

Sanduk: wooden box to put cloths and other things

Sankha: conch

Sata (Satal): Tavern

Shilpa Shāstra: the science of Shilpa (arts and crafts)

Sī: Wood

Sinmuga: wooden hammer

Suryamukhī Jhyā (Sun window),

Swapā Jhyā (Triple window),

Swasilī hānčā: the chisel with a V-shaped edge

Ta Pukhu (SidhaPokhari): the biggest pond in Bhaktapur

Takkuwā tapulī (Bhadgaunle topī): the black cap

Tāmrākār: the copper worker

Tanra-Mantra: hymn

Tethā : a huge wooden hammer to nail the bamboos in making bars

Tethān tiye then wa wola: there is heavy rain

Thakāli pinsa dhāla jaka tan chāye majyū: No worry if the elders are rude in correcting you

Thāmā Pujā: the worship of the house after the completion of it called

Thān (Thān): posts

Thyā safū: a folded manuscript with informant that havesome designs of temples and idols

Thyā-safū: Folded book

Tikī Jhyā: the peculiarity of this type of window is that an insider can see through the window very clearly but the outsider cannot see an insider

Tole: Locality

Tonasin: supporting slots under the edges of the roofs

Tučikan: mustard oil

Tundāl: Strut

Tunthī (Inar): well

Twāka: support

Uga: large wooden made tools like mortar

Uli kilannai makhu: It is not so damaged by termites

Viswokarma: craftsman deity and is well-known as the surpassing carpenter

Wā mhu: a bundle of paddy

Yaku Jhyā (Windows on either side of the main entrance of a temple),

Yama dyo: Thanigu din, the day of the erecting of the Yama God

Yāunse čon: comfortable

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CHAPTER I

INTRODUCTION

Knowledge and Skill of My 'Illiterate' Mother

My mother, 77 is '*ākha masamhā*' ('illiterate') and cannot speak the Nepali language, the official language of Nepal. She had the opportunity to try the Nepali language because a literacy class was organized in my house by *Samāj Sudhār* Secondary School. She never went to the literacy classes that were run in the evening. But, I believe that she is experientially qualified and I always feel that I might have theoretical knowledge but I have less experience, less knowledge and less skills in performing various household works including farming. In contrast, though staying aloof from written literacy my mother has good knowledge of weaving cloth, *Gharbunnā Kāpa*, with the handloom we had. In fact, in those days, one of the minimum qualifications for a girl was to have the skill of weaving cloth of quality. She used to train young girls of our locality to spin and weave cloth. During any problem in spinning and weaving to the locals, she would be always ready to solve it. Her enthusiasm for weaving new designs of cloths made her a busy and proficient weaver.

Apart from weaving, my mother had knowledge and skills in farming which helped to run my family of 12 members. I find that my mother is an *expert* in making rice seedbeds; she knows the best ways to produce potato, cabbage, cauliflower, chilly, green vegetables, and many more. She is equally skilled in fermenting curd, brewing alcohol, and a local drink, *thon*.

I feel amazed when I hear her saying '*ākha masayā*' (illiterate me). Why does she feel so? Many questions run around my head. Why is her immense knowledge not

valued and recognized? Are there not many people who have various degrees from different universities but are handicapped in terms of knowledge and skills necessary to run a family? Is the knowledge of my mother not more than equivalent to the highest degrees rewarded by the universities?

Unrecognized Skills in Houses and Around

There are many brilliantly skilled, intelligent and creative people in my locality but they are living unrecognized. How can their knowledge be recognized? What degree should be awarded to recognize their knowledge and skills? How did they acquire knowledge and skills? These questions haunted me for many years and consequently, I decided these questions are to be answered.

I used to wonder why every ladder of my house has seven rungs. Is it just a co-incident? Is there any cause? Actually, every wooden ladder of a traditional house of Bhaktapur has the same number of rungs. Why there is a uniform height of every rung of the ladders? Obviously, if there is not so one would fall down. The size of the stairs also maintains the uniformity of the height of the houses. Perhaps, that is how the number becomes an important symbolic number.

One of the attractions of *Bisket Jātrā*, the peculiar festival of Bhaktapur, celebrated in between the end of the old year and the start of the New Year, is pulling a wooden chariot more than 25-feet high. Hundreds of people pull it from both sides, like a tug of war. The chariot rises from the ground or tilts because of the pull but it remains erected. One striking thing is that the chariot does not have any nails used. Fully traditional technology is used to make it. Perhaps the same technology is used to make the traditional houses and monuments. So they are very much resistant to earthquakes.

Fortunate me in the Land of Heritage

Bhaktapur is a city of immense cultural heritage and United Nations Educational, Scientific and Cultural Organization (UNESCO) has included Durbar Square of Bhaktapur in their list of World Heritage Sites. Seven historical and cultural sites of the universal importance of Nepal are enlisted in the World Heritage Sits in 1979 and Bhaktapur Durbar square is one of them (Amatya, 1999, p. 155). Bhaktapur is taken as the abode of ancient Nepali culture, custom, and art of excellent craftsmanship. Bhaktapur, largely dominated by the Newars, is a hub of traditional knowledge and skills. The age-old cultural heritages, both tangible and intangible, are painstakingly preserved by the working-class people of Bhaktapur.

I was born into a *Newar* family in Bhaktapur, the town of artists. Bhaktapur is also called Khwopa and its ancient name is Khowpring. Sharma (2000, p. 1) states that the word Khwopa is a derivative form of Khwopring which was a very popular name in the Kirant era. He adds that the name Khwopring was engraved in the stone tablet of Shivlinga in Deupatan erected by Ratna Sang in the Mandev era.

The foundation of the *Ngyātāpola* (Five Storied Temple), the highest temple in Nepal, 30 meters high (Warlow, 2008, p. 9) in the Mandap style was laid in my hometown in 822 N.S. Kartik (1758 B.S. to 823 N.S; Jestha,1959 B.S.; Vaidya, 2004) when Isaac Newton just propounded the theory of gravitation and law of motion. *Ngyātāpola* was built within 7 months. There is a popular legend (*Bāhkā*) in Bhaktapur. A local farmer of Taumadhi Tole went to his farm. When he returned after 6 months to his home with harvested crop (possibly wheat) he was confused to see Ngyātāpola in his home area (Conversation with Om Dhaubadel, September 21, 2013). According to Vaidya (2004) altogether 117 from Bhaktapur, *Bhonta* (Banepa) and *Thimi* worked to build *Ngyātāpola*. Ramhari, Chhātrasing, Laghu, Jibraj from

Bhaktapur and Jayaram, Shivakrisna and Shiriman were awarded with silver bangle (*bala*) of 22 *tola* (220 gram) to each. Today, everybody acclaims *Ngyātāpola* as the best example of architectural engineering left by the ancestors. The massive earthquake of 1934 destroyed many monuments of the Kathmandu Valley including the minaret *(Dharhara), Sinha Durbar,* and Clock Tower *(Ghantaghar)* of Kathmandu, but the *Ngyātāpola* Temple of Bhaktapur had just suffered some minor damage. There is a popular saying in Bhaktapur related to the damage done by the massive earthquake of 1934, *Ngyātāpola Chhātamaru, Bhaila Dyo patāmaru* (The *Ngyātāpola* lost only the top storey whereas the *Bhairav* temple fell to the ground). Ngyātāpola stood elegantly for 300 years facing natural calamities including the earthquakes of 1890 B.S., 1990 B.S., 2045 B.S., rain, and hurricane (Baidya, 2004, p. 1). Our ancestors made such a unique temple in such a period when there was not any modern technique like today. After sixty years of the notorious earth quake of 1934, Bhaktapur Municipality and the Department of Archeology jointly renovated *Ngyātāpola* within eight months from 2053 B.S. *Asoj* to 2054 *Jesth*(1996-1997ibid) using the traditional knowledge and skills of the local artists. Even today, *Ngyātāpola* stands as a glory of the richness of our architecture and craftsmanship. It is the blending of wonderful wood-art, stone-art, and metal-arts.

Dattātraya, the oldest temple of the town of Bhaktapur, dates from 1427 A.D. in the reign of King Yaksa Mall (Bernier, 1978, p. 107). It is a common belief of the Bhaktapurians that "one tree trunk is reported to have supplied all of the wood needed to construct the entire temple" (ibid). The *Nghe Nghapā Jhyā* (Fifty Windowed Palace), historically recorded as constructed between 1702 A.D. and 1722 A.D. by King Bhupatindra Malla, one of the masterpieces of the medieval period architecture, was built by the local craftsmen and builders using the then local technology and

using local materials (Shrestha, 2006). The palace has been renovated for the second time in 2006 by Bhaktapur Municipality and the Department of Archeology jointly without damaging the age-old and unique paintings on the wall of the palace. One important point is that the palace was renovated with locally available materials by the local and *Dakami* all using traditional technologies.

Changu Narayan temple at the *Changu* hill of Bhaktapur, the *Bhairab* temple in the *Taumadhi* Square, *Watsala* temple (made up of stone), *Chhyasing Mandap* (Octagonal temple) and *Pasupati Temple* in Durbar Square, *Dattātraya Temple* in Dattātraya Square, *Wākupati Narāyan* at *Suryamadhi*, and others are all unique in the art and architecture of their kinds. *Falčā* (Inns), *Sata* (Tavern), *Dyochhen* (Shrine), *Math* (Monastery), *Tunthī* (well), *Bahā* (monasteries), *Lohan Hiti* (stone spout), *Dhwākā* (Arched city gate), etc. are the exemplary gifts of the ancestors. Most of the monuments were built in the medieval period during the reign of the *Malla* Dynasty and so it is called the golden age of arts and architecture. According to Amatya (1999, p. 51), the noble architecture in the Kathmandu valley was developed and flourished during the *Malla* period (1482-1768 A. D.). "Both in secular and religious buildings wood, beautifully shaped and formed and carved in intricate patterns and designs, was extensively used in door-frames, door-leaves, windows, cornices, brackets, lintels, struts, posts, pilasters, and architraves, in fact in all available surfaces of wood as it were" (Ray, 1973, p. 43).

Takkuwā tapulī or *Bhādgāunle topī*, the black cap, the national cap of Nepal is one of the unique inventions of our ancestors. It resembles and represents the high mountain peaks of Nepal. *Takkuwā tapulī* is fit in the environment of the country because it keeps the head warm in winter and protects from the heat and harmful rays of the sun during summer.

The clay works, metal art, stone carvings of Bhaktapur are highly appreciated by the world. Some special productions like *Juju dhau* (Royal Curd), potteries, green vegetables and *Bajī* (Flattened Rice), and so on of Bhaktapur are admired by the visitors. Though very rare, we find the sound of the hand-loom weaving local cotton cloth. Some of the *Tāmrākārs* are making the metal vessels with the same enthusiasm. Some *Čitrakārs*, the painters are continuing their traditional profession making their life meaningful. *Banmālā s (gatha or gathu)* have been performing their famous dances, the *Navadurgā Nāch* for about five hundred years. *Sālmī*, oil makers are making mustard oil with quality and natural fragrance. *Awāl*, the masons are so good at decorating the buildings and houses with tiles. The farmers make good vegetables and other crops.

It does not mean that the centuries-old occupation based on the caste system is not affected by modernization and globalization. Some of the traditional professions are on the verge of extinction. Nepalese art may be somewhat tarnished today as more and more Newars of so-called higher caste (appendix 1, the *Newa* caste groups and their traditional occupations) leave their traditional vocations in workshops for more 'modern' occupations (Bernier, 1979, p. 28). Although, the zeal of the learned people, the artists, craft persons or technicians, the experts in their ancestral occupations is intact but there is doubt how long the knowledge lasts. Sill there is hope. Bhuju (2012) recalls the incident of 18 years back that:

Bhaktapur Municipality organized a meeting of and *Dakami* of Bhaktapur to renovate the *Ngyātāpola* temple before celebrating its third centenary. There was a query on whether the new generation can renovate the temple or not. All of them and *Dakami* at the meeting unanimously stated that our forefathers (parents) had made such a

temple and if we even cannot renovate it, we will be like rejecting our existence (pp. 12-13).

Moreover, it may be quite interesting to many to know how the knowledge and skill of *Nāpit or Nau,* the barbers at trimming hair, *Kasāi or Naye,* the butchers at cutting water buffalos, *Kau or Nakarmi*, the blacksmiths at making iron tools, *Kāpali (jugi)* at tailoring, Joshi at astrology, *Pode (Pon)* at making bamboo goods, *Shākya (Bāre)* at making ornaments, *Mali* at vendoring varieties of flowers, *Ranjitkār* (*Chhipā)* at coloring and printing the cloths, *Pode(Pon)* at cleaning the sewage is being transferred to the new generation?

There are several intriguing questions. How has the traditional skills and technology got continuity? How is traditional knowledge being transferred from generation to generation? What is the knowledge-building process in them? How does the evolution of knowledge occur? Can the attraction to the white-collar jobs of the new generation preserve the indigenous art and culture forever? How can we preserve our own knowledge for generations to come? Can we make traditional knowledge the part and parcel of our school and college education? What are the circumstances and environment of learning such indigenous knowledge? What is indigenous pedagogy? What motivates the people to learn their ancestral occupation? Only scientific research can answer the questions.

The Newar

In the late period of my childhood, I used to go to *Lhāsapāko Sasudyo* which lies in the eastern hill for some hours' walk at Sudal of Bhaktapur. The etymology of *Lhāsapāko* says that Lhasa is Tibet, *Pā* means hill and *'ko'* means country in Chinese. *Sasudyo* is said to be the god of learning. It is believed that Sasudyo comes from Tibet in the winter every year and teaches the people of Nepal. We were told that the

Sasudyo remains for some days only and visited the temple in that period. Narayan Man Bijukchhen (2015):

> *Saraswati' is a word in Sanskrit or of Aryans. This is why the word 'Saraswati' probably comes from India but not from Lhasa. But, there used to be nuns coming back and forth from Lhasa every year in winter. The ancient tribe residing here used to go for oil massaging with those nuns from Lhasa and on the next day, they used to go for study and making chaatamari (Newari bread). This custom is going on even today. Thus, it is proved that the ethnic groups, which settled in the valley, have come from the north.*

There are different versions of the introduction of Newars in *Nepal Mandal*. Newar is not a race like Tamang, Gurung, Magar and Limbu. Some Newars are Aryan, some are Mangolian and some are Astro-drabidins in the race. Maniklal Shrestha (2016) says that ninety percent of the Newars are Tibeto-Burman or Mangol and are the indigenous people; the rest of the Newars is from a different origin. Newars are classified into four groups on the basis of religion: Shiva, Bhudism, Islam, and Christian. If we see the appearance of the Newars, they do not seem one. Some have blunt (*Thepcho*) noses; some have *chuchenāk* (pointed nose). So, Newar is not an ethnic community rather it is an ethnic geo-linguistic community. Those who have Newar mother tongue are Newar. Napit, Mali, Chitrakār, Ranjitkār, Tandukār, Silpakār, Prajapati and Jyāpū are all Tibeto-Burman in origin. Manik Lal Shrestha says:

> *In the history of Nepal, there comes Hari Sinhadev. He was the king of Simrangadh that lies in the Bara district of Nepal. He was attacked by the Muslims from the south and he ran away to get asylum in Bhaktapur. But Hari Sinha Dev died on the way and his son got asylum in Bhaktapur. He was a*

> *Rajput in caste but later they were called Layepu. The Layepu were included in Shrestha. Some Vaidya from Gujrat, India came to Kathmandu valley in the period of King Bhupatindra Malla. They worked as royal physicians. The Brahmans from the south changed to Rajopadhya some 6-7 hundred years ago and they are said to be Newar Priest. The Tirhute Brahman from Terai (Jha and Mishra) spoke the Newari language and later they too became Newar.*

Deo (1969) refers to Regmi (1960) that the "Newar is a derivation from or corruption of Nepal, and as such, they represent the oldest inhabitants of Nepal who can as well be identified as *Kiratis*, whose language bears similarities in vocabulary with Newari" (p. 15). The Newars say *Nepā* to denote Nepal even today. "In contemporary Nepal, broadly speaking, Newars are those whose mother tongue is Newari and who belong to a distinctive culture that distinguishes them from other Nepalese"(Slusser, 2010, p. 1). According to Nepali (1965), "the term Newar is applied to designate a number of former ethnic groups who have, through centuries of interbreeding, been welded into a homogeneous community with common traditions of language and other social heritage" (p. 18). Slusser (2010, p. 1) states:

The ancestral Newar are Tibeto-Burman speakers who millennia ago drifted south into the salubrious Kathmandu Valley to become its primary occupants. Over the past two millennia, this initial population has been swelled by immigrants from the south, among them Kusana, Licchavi, Maithili, and Rajput, whose diverse populations and cultures were absorbed in varying degrees to form the complex Newar society of today.

The Newars, an important part of any study of Nepalese art, speakers of the Newari language, are the racial product of the mixture of immigrants who came to

Nepal from the north and south to populate the fertile valley of Kathmandu and its surrounding regions (Bernier, 1979, p. 26).

The period of Mall kings (from 10th to 18th) century can be called a 'golden age' of the slaves and masters in Nepalese society (Bijukchhe, 2015). According to Manik Lal Shrestha (2013), the people who built the art, culture, and civilization of Nepal could never become the masters of their land but always remained the ruled subjects, subjugated tenants of the successive rulers of different times. Bijukchhen (2015) says that in the slavery age, masters used to provide work to the conquered people according to their own necessity and the characteristics of the conquered ones and this management develop the division of work and skills. So, the working people were always the ruled subjects. When the Kirats were the rulers (from 800 BC to 300AD) and the *Newā* (Newar) the subjects, at another time the Lichhavis became rulers (from 400 to 750 AD) and the *Newā* were ruled subjects, still, later Mallas seized the Government as rulers and the Newās remained their subjects and during the rule of the last monarchial dynasty, the Shah Kings from 1768 A.D. to 2006, the *Newā* people were the subjects of Shah rulers (for some period during this time the *Rana* military oligarchy ruled in the name of the Shah Kings) (Shrestha, 2013).

In this sense, Newars are language groups with mixed blood; an ethnic group that shares the Mongolian blood; and different occupational group within the Newar socio-cultural structure.

Silpakār, the Traditional Craftsmen

The Silpakār is one of the Newar groups of Kathmandu valley. Deo (1969) refers to Regmi (n.d.) that they are not a single ethnic group but a mixture of different ethnic elements. But the caste analysis of the Newar community shows that they belong to the Newars who have special Silpa (skill) and hence are called Silpakār.

The Silpakār Newars are the carpenters or the woodcarvers. These Silpakārs have sculpted the idols, houses, temples, and palaces for centuries. Almost all the historical woodcarvings, the beautifully shaped, formed, and carved in an intricate pattern and design extensively used in door frames, window cornices, brackets, lintel, struts, posts, etc. are made by the Silpakārs.

In Nepal Bhasa (Newari) *sī* means wood and *kamī* means worker or crafter) means woodcrafter. The artists (*Kaligadh*) who work related to wood are called *Karmī* or *Sīkahmi* (Baidya, 2004, p. 33). Silpakār means the person who can make a design with craftsmanship. The earliest stone tablet that mentions the name of a Silpakār who made four stone idols at *Jagatpal Mahabihar* in Kirtipur dated 793 N.S. (Sandhya Times, 2068, Asoj 4, as cited in Silpakār, 2012, pp. 87-94). Levy (1992, p. 81) stated that *Kamī* is one of the occupational groups and were traditionally wood carvers, one of the Newar high arts and now make furniture and do woodwork in the construction and repair of houses. All the woodworks in making Math, temple, Buddhist monasteries, tavern, etc. is are deified to the God and Goddesses (Sharma, 2012, pp. 53-54).

There are about 350 households and 5000 population of Bhaktapur. Out of them Silpakārs are centered at *Tekhāpukhu, Ghugacho, Ichādo, Mulākhu, Itāchhen, Khaumā, Gomārhi, Yāchhen, Bholāchhen, Jenlā, Tahamalā (Thane*), etc. (ibid).The original place of this caste group stays nearby the monasteries and palace area. Sharma adds that the windows, doors and the frames, posts, stairs, etc. of the palace and the monuments of those days were made by them and they are assigned to repair the wooden parts. According to Sharma, they were learned people of Tantrism. The mother tongue of Silpakār is *Nepal Bhasa*. They follow the Hindu religion and

Viswokarma, the legendary architect mentioned in Vedas is their *Kulguru* (Family Teacher).

Indigenous Knowledge (IK)

"Indigenous technical knowledge refers to the art of using natural resources and is passed on from generation to generation" (Sharma, Bajracharya & Sitaula, 2007). It also refers to traditional and local knowledge possessed by groups of people living in a particular area for a long period (Langill, 2007, as cited in Jonjoubsong & Chinnakunwong, 2010).

Indigenous people in the Kathmandu valley that include Bhaktapur have developed very rich cultural heritages, both tangible and intangible. The Newars of Bhaktapur are considered to be very rich in indigenous traditional knowledge due to the classification of the people into different caste groups according to their occupation. Nevertheless, they have developed their own way of culture and practices including art and architecture. Deo (1969) stated:

> *There is architectural peculiarities of wooden structures of Nepal that comprise the use of the heavy wooden framework, ingenious arrangement of load distribution with the help of struts and bracket capitals, projecting or balconied window groups, multi-storied receding roofs, massive posts, and elaborate window and door frames (p. 14).*

The skill of woodcraft artists to create the artistic doors and windows, *torans*, *Tundāls,* and traditional houses of common people with the artistic wooden pattern are special. They are according to the geographical condition, environmental and the social condition of this place is peculiarly specific and original.

Terminology

I have used different terms in this thesis with specific meanings. They are as follows:

Knowledge Transfer

Knowledge transfer is a part of socio-cultural life. "Knowledge transfer is the process of knowledge passing from one person to another person or from a group of people or organizations to another group of people or organization" (Gupta et al., 2004, as cited in Jonjoubsong & Chinnakunwong , 2010, pp. 85-91). It is done directly by working together, communicating, doing things, apprenticing, face-to-face discussions, etc. A father transfers his son how to handle things, how to make an object to his son. A mother trains her daughter how to manage a house, how to do household works. Knowledge transfer occurs knowingly or unknowingly. There is no need fora curriculum and textbook or classroom to teach the posterior. However one can argue that there is a hidden curriculum that has been transferred from generation to generation through situated as well as peripheral learning strategies. In many ways, traditional knowledge is transferred to others verbally. Rana (1990) stated:

These age-old forms of performing arts have been preserved and perpetuated by the local inhabitants through many generations, by their system of verbal tradition and complete socialization. The socio-cultural settings, traditions, and economy helped Bhaktapur to develop its cultural heritage. (p. 5)

There were not enough books and other ways of documentations that we find today. Not enough schools were there in the past to teach like we do have today. So, people had to learn by heart, the older generation gives knowledge to the new generation by saying and by application.

Knowledge Building

Scardamalia and Bereiter (in press) state that knowledge building is the production and continual improvement of ideas of value to a community, through means that increase the likelihood. They (ibid) further state:

Learning is an internal, unobservable process that results in changes of belief, attitude, or skill. Knowledge building, by contrast, results in the creation or modification of public knowledge-knowledge that lives 'in the world' and is available to be worked on and used by other people (p. 3).

In knowledge building, idea improvement is an explicit principle, something that guides the efforts of students and teachers rather than something that remains implicit inquiry and learning activities (Scardamalia, 2002, as cited in Scardamalia& Bereiter, 2006, p. 6). It is relevant to study how they have built knowledge. How one enhances the knowledge according to the need and demands of society. It is for sure that knowledge building helped them to adapt to society. Moreover, it helped to eke out their hand-to-mouth problem.

Research Gap

There have been many research studies carried out in the field of indigenous knowledge such as Amartya (1999), Bernier, R. M. (1978), Fatema (2011), Gajurel &Vaidya (1994), Gurung (2009), Silpakār (1981) and Silpakār (2021). I have taken their substantial help in justifying my study. Nevertheless, there is not enough research on the knowledge and skill-building process of woodcarvers of Bhaktapur in specific. Specifically, the Newar carpenters have never become the subject of study in relation to the indigenous knowledge system. Their ways of dealing with the day-to-day needs and worldview of the Newar communities reveal a rich cultural landscape from which we can delve deep into their perception of the world. Still, the

*Sīkahmi*s have not been dealt with formal research studies in depth as the available studies suggest. Their perceptions, understanding, and vision have not been taken as a source of data to theorize indigenous knowledge as such. Therefore, this research has explored the process of knowledge building in special reference to woodcarving. It has found out the indigenous pedagogy of woodcarvers of Bhaktapur. The available studies on indigenous knowledge system also tend to follow the deductive reasoning, aiming at testing the established theories in Nepali cases. This study takes departure from this position as the thrust of this study is on seeking a general pattern in the ethnographically collected data.

Most of the studies in the area of Indigenous knowledge focus on cognitive domain but they hardly examine psychomotor skills. With the consideration, this study has been carried out to contribute knowledge in the area of Indigenous skills.

Statement of the Problem

The younger generations are often tempted to have modern lifestyles. It was so because they attend a formal educational system, which introduces the western culture and colonial mindset, (Jonjoubsong & Chinnakunwong, 2010). Because of the changed mindset of the youths, traditional knowledge and skills have been challenged. The apparent reason is that there is a growing trend of making concrete buildings. Wood is expensive and not available easily (conversation with Kali Bahadur, September 12, 2013). The next reason is that the state has less attention in developing woodcraft that fits with the concrete buildings as well. This signifies that there is a threat of loss of valuable knowledge and skills. Silpakārs' skill and knowledge are also in the same boat.

The world of education also did not pay attention to the protection, development, modernization, and marketing of traditional skills. In other words, the

education system could not include traditional knowledge and skill as part of formal education. Both formal and non-formal education has not included such productive skills in their curriculum. Even the policy could not properly honor the skilled people with accreditation/certification.

The three problems that I mentioned above made me interested to undertake this study. So, I have tried to dig out the age-old traditional knowledge and skills of the Sīkahmi group of Bhaktapur. How the so-called 'illiterate' are generous in their field of knowledge. What is their process of knowledge building? What are the challenges they have been facing? Wonders like these are the main crux of my research.

Rationale of the Study

There are three rationales to conduct this study. One, I have selected the field of study since our time demands inclusion of local practices in the curriculum of the school and colleges now. Two, our dependence in the imported knowledge had led to formation of consumer culture in terms of creation of knowledge and hence I want to dig out the knowledge of my lived community to relate it with the imported knowledge. Three, such study helps explore the models of knowledge transfer in local context which later becomes instrumental in determining the course of action we apply in our schools to promote traditional form of knowledge.

Purpose of the Study

The main purpose of this study is to explore the traditional practices of Sīkahmi's knowledge and skills of Bhaktapur. The study has specific purpose of generating information on learning, schooling, and educating practices of the Sīkahmis to the learners. It has aimed to find out the traditional pedagogy which can be useful to apply in our formal education as well. In a nutshell, the purpose of this

study is to explore the huge knowledge bank of the Sīkahmi group and the challenges in the matter.

Research Questions

1. What has been the *Sīkahmi*'s knowledge and skills about wood and carving?
2. How do they make use of pedagogical devices to transfer their knowledge to the coming generation? How are their traditional ways of knowledge and skill transferred?
3. Why do they still continue their professions and how do they understand the challenges and opportunities in the field?

Significance of the Study

The study has contributed to unveil the teaching-learning practices of the *Sīkahmi* and explore the road to use these practices in formal education as well. It has established that more value should be given to the local skills and knowledge and on the other hand, it has helped highlight the importance of the local art and culture. It has also created a loop to make formal education more productive by introducing the knowledge, skills, and pedagogy of the *Sīkahmi*. Implicitly, it argues that the current educational policies can benefit a lot by deriving the approaches of knowledge transfer from such studies in terms of content and method. This study helps enrich the policy makers, academicians, and future researchers by proving them with the mode of understanding of the local culture and knowledge system.

Delimitations of the Study

The study has focused on the knowledge-building process in *Sīkahmi* of Bhaktapur. Though they also have good knowledge in agricultural farming and skills of stone carving, woodcarving is their main traditional occupation of this group. But I have delimited on the knowledge building of them in relation to woodcarvings only.

Besides, this study focuses only on the knowledge transfer among *Sīkahmi*s and their individual ways. Since the photographs can reveal the confidentiality and breach the traditional protocols that the target communities practices, I have not included such pictures by respecting the indigenous practices. There are other forms of knowledge that the local people have been practicing in their Daily life: this study can methodologically signify them as well. However, this study is limited only tithe wood-cravers of Bhaktapur, their knowledge, and their ways of transferring the knowledge to the coming generation through formal and the non-formal education systems.

Structure of the Dissertation

I have organized this dissertation into eight chapters. The first chapter consists of background, statement of the problems, research purpose, research questions, significance and delimitation of the research, and organization of the dissertation.

I have included theoretical and thematic foundations via literature review in the second chapter. I have studied and reviewed literature on woodcarving and carpentry in the beginning. Likewise, I have reviewed the theory of indignity, the transfer of indigenous knowledge and skills, Benjamin Bloom's learning domains, Bandura's social learning, Jean Piaget's cognitive development, theory of social construction of Vygotsky, John Dewey's theory, theory of Socialization. I have done theoretical compliance in wood carving and empirical review, tried to find the research gap and made a conceptual framework, and derived the summary of the chapter.

I have included the research paradigm and philosophical stances of the research study in the third chapter. I have portrayed research design, ethnographic

method, locating the study context, research participants, and data collection methods and tools in it. Likewise, I have written on quality concerns, data analysis, and interpretation, ethical concerns, and summary.

I have discussed knowledge related to wood carving, carpentry, and designing buildings. I have included vividly written on the characteristics of the wood used by the *Sīkahmi*. I have written some paragraphs on the scientific principles applied in making *Bhailakha* and its' procession in *Biskhajātrā*. Finally, I have written a summary of the chapter.

The fifth chapter portrays the process of knowledge transfer by the *Sīkahmi* to their posterity and other people. I have written the teaching and learning environment created by the *Sīkahmi* too.

The sixth chapter includes the opportunities and challenges faced by the *Sīkahmi* in Bhaktapur. The seventh chapter denotes research findings and discussions and the final chapter is on the conclusion and implications.

Chapter Summary

My upbringing in the Newar family has given me a kind of exposure to the unique ways of dealing with the problems of everyday life. My parents and the people in the community have always invented their ways and promoted the unique skills into the coming generations in their own ways. Actually, the indigenous knowledge system has remained ignored at the bank of the society where the people are left untreated with the required degree of dignity and honor for their knowledge. Still, their knowledge helps them find solutions to their everyday issues. Such knowledge requires integration into the mainstream ways of life. Until and unless the nation recognizes its own native ways of dealing with everyday issues of life, the nation becomes dependent on imported models that may not be adequate to address the deep-

seated issues of life. In this sense as well, the indigenous knowledge system requires discussion, debate, critical scrutiny, and theorizing in the academic context.

CHAPTER II

REVIEW OF LITERATURE

A literature review is one of the most important parts of research without which a researcher cannot delve into the depth of the subject matter. We need valid justifications and substantiations to go to a conclusion. Various evidences should be produced to prove an issue. Reviewing early established theories, research articles, books, and documents is one of the most important parts of research.

Review of the past study done by academicians, researchers and intellectual personalities in a particular subject matters helps to have the background knowledge. In doing so, this helps to generate new knowledge, dimensions, and insights into a researcher.

A literature review is a critical view of the previous knowledge so that we can find a new research issue. It works as a bridge between the past and present conditions of the research work. This chapter includes review of all the possible literature related to my study.

Woodcarving

The term woodcarving is taken as that product which is made by manual labor using only hands and legs of craftsmen with the help of tools. Oxford Dictionary online says that woodcarving is the action or skill of carving wood to make functional or ornamental objects. It is also an art of the people. In Oughton's words, wood crafting is,

The meaning of carving is the art of removing or subtracting material from a solid back to produce the required shape and modeling is the art of building up or adding material to produce what is required. So, in woodcarving work, there should

be carving and modeling. Carving is three things transformation, transfiguration, and preservation (Oughton, n.d., as cited in Silpakār, 1981, p. 28). Shrestha (1980, p. 13) quotes Oughton (n.d.) that says:

> *Wood is organic. Even when the tree is chopped down it remains alive, meaningful. The wood carver needs to enhance this life by creating beauty and utilizing grain and texture. And then he imparts the final finish and stands back to look at it and the wood has a new life. Carving is three things – transformation, transfiguration, preservation.*

Woodcarving is said to be one of the oldest skills of a human. The human of the stage hunting and gathering must have used wood as one of his first tools. But wood crafts could not remain till today because most of them are destroyed during the war, human negligence, and natural calamities.

Shilpa Shāstras describe arts, crafts, and their design rules, principles, and standards. *Shilpa Shāstra* literally means the science of *Shilpa* (arts and crafts). In the context of Hindu temple architecture and sculpture, *Shilpa Shāstras* was manuals for sculpture and Hindu iconography, prescribing among other things, the proportions of a sculptured figure, composition, principles, meaning, as well as rules of architecture (Wikipedia).

In Egypt, eleven wooden panels were found in 1860 that had been preserved under the sands for over 4000 years. The earliest three-dimensional figure yet found is thought to have been carved around 2500 B.C." (Wood Carver's Cavin, 2009).

Deo (1969, p. 9) stated that no architectural monument built earlier than the fifteenth century has survived to this date. He further said "the fourteenth century witnessed a variety of events and Nepal had then a taste of Muslim vandalism at the hands of Sultan Shamsud-din Ilyas of Bengal" (p. 7). However, Mary Shepherd

Slusser proved that there prevails a lot of evidence including carved wood artifacts that represent the pre-medieval period. Slusser (2010, p. 19) says that as confirmed by radiocarbon testing, the *Belache čapāh* struts (*salabhanjika* struts), possibly the oldest wood carvings of Nepal, were made sometime between 660 and 860. Slusser (2010, p. 3) further states: "Who would believe such ancient material was still before our very eyes? By now almost two dozen objects have been radio-carbon tested. They say that majority were carved between the sixth and eleventh century". This signifies that "Wood-work has been a part of Nepal's traditional architecture since the Licchavi period" (SKILL-Nepal, 2010, p.1).

The culture of Nepal is made of two great religions - Hinduism and Buddhism. Both religions have co-existed and there is deep religious tolerance. Shrestha (1967, P. 2) that interwoven with Buddhism and Hinduism is the third form of worship known as Tantrism- a mysterious and obscure belief and as a result of the influence of these religions; Under Tantrism, Nepal shows diversity in arts and architecture.

As I have already stated that the *Kuldevatā* (deity god) of the Hindu Newar working people is *Vishvakarma*. Bernier (1997, p. 29) says that the Kulguru's guide has been employed in the building by the craftsmen. There are Silpashatras (books on woodcrafts) available in the market. *Manasara* is considered as one of thirty-two *Silpasāstras* that were first revealed by *Visvakarma*. According to Silpakār (2012, p. 87-94), *Silpakārs* also have *Āga (n) Dyo* or *Āgan* God, one of the two forms of the Kulguru (lineage deity), and only *Silpakār* with or *Dickhhyā* or learned can enter into the place. The training given in the *Āgan Chhen* (house of *Āgan Dyo*) is called or *Dikchyā*.

"The Nepali woodcraft tradition has three types of craftsmen: the designers, the woodcarvers, traditionally from the Silpakār family and the carpenters, commonly called *Sīkahmi*," (Bonapace & Sestini, 2003, p. 71). The designer and woodcarver is often the same person.

The woodcarvers have a good knowledge of types of wood, their properties, and their use. So they can be said to be experts of wood. It is said that to make a house, seven types of wood should be used. "Nepal is rich in *Sāl* and *Sisau* forest. *Sāl* is a high-quality wood that is very strong and durable and is used for the construction of structural elements like posts, struts, and beams as well as for windows, doors, etc. Apart from *Sāl* tree, which comes from the *Terai* region, the most common species used for construction are *Gwoye Chhāsi* (*Schima wāllichi*), *Sallā* (*Pinusrox burghii*), and *Utis* (*Alnus nepalensis*), and all are found growing on the slopes and hills around the Valley" (Port, n.d., as cited in Bonapace & Sestini, 2003, p. 51). Besides, the most commonly used species are *Čāp* (*Michelia champaccca*), *Haldup* and *Sisau*. Ray (1973, p. 43) stated "contemporary builders use *Sāl (agrath)* and *Čāp* which are all available in plenty at and around Kathmandu. She further says "*Sankhu* wood is, however, considered to be the best".

There are many monumental designs like *Shikhar* style which according to Gonga (2003), symbolically represents the alpine peaks and are much more synonymic to that of the Indian erections, the *mandap* style, generally, made twined with the Pagodā style is the second in line with Newar architectural designs (pp. 112-130). Gonga adds "The *mandap* style of erections has its own indigenous features, one of them being the square shape with doors on all four directions. The other form of the temple style is octagonal design like the *Chyaslin Mandap* having all eight directions open".

The medieval housing and construction were overwhelmingly compounded with indigenous materials, crafts and technologies. The houses and monuments are built according to the environment of the valley. The Silpakārs, crafts-persons of the Kathmandu Valley have good knowledge of the geography and environment. In the valley, people did not make more than four storied houses because it is an earthquake prone area. Bonapace and Sestini mention, one of the most important features of the Newar style buildings and monument constructions technique is the assembly of different components using special joints of wood and so subsequent repair operations are relatively easy. The traditional houses are made in such a way to withstand earthquakes to some extent (Bonapace & Sestini, 2003, p. 53).

This feature is also designed in accordance with the nature of the geography of the Valley. The stories maintained the low height of each of the floors to help retain room temperature. Several windows were designed in favor of ornamental outfits. It's really astonishing that the Datttrya area of Bhaktapur has more than half a dozen types of wooden windows beautifully carved more than five centuries ago. These windows along with their pictures are given in the table below:

Table 1

Silpakārs' knowledge and skills envisaged in the windows

S. N.	Name of the Window	Picture of the window	Tools to make a window with a picture
1	*Mhekhā Jhyā* (Peacock window		1.*Khul* (traditional adze),

2	*Pancha Jhyā* (an assembly of 5 windows)		
3	the *Bimān Jhyā* (window with bow type frame)		2. *Basilā* (modern adze), 
4	*Gā Jhyā* (Balconied window)		3.*pa* (hatchet), 4. *Hakhī* (instrument to mark lines on wood) (1), 5. *Batān* (angle iron) (2), 6. *Dāku* (foot) (4), 
5	*Kamal Jhyā* (Lotus window),		
6	*San Jhyā* (Oriel window)		
7	*Tikī Jhyā* (Mesh window)		7. *Randā* (plane), 
8	*Kā Jhyā* (Single window sandwiching a		8. *Muga* (mallet),

	multiple windows),		*9. Hān* (chisel) 
9	*Kun Jhyā* (Corner window),		
10	*Gā Jhyā* (Window placed under the roof of a temple which is generally used as a nest by pigeons),		
11	*Go Jhyā* (Circular window)		
12	*Chhāpa Jhyā* (Single window),		

13	*Pasukā Jhyā* (A row of 5 small windows),		
14	*Bāku Jhyā* (Symbolically halved windows in a row of odd numbers),		
15	*Bidhi Jhyā* (Wooden jolly),		
16	*Yaku Jhyā* (Windows on either side of the main entrance of a temple),		
17	*Suryamukhī Jhyā* (Sun window),		
18	*Swapā Jhyā* (Triple window),		

19	*Rath Jhyā* (chariot window)		

I have borrowed English terms for the local windows from Gutschow, Kolver & Shrestha (1987) to make it more comprehensible to the people as and when the terms come in the above tabulation.

Mhekhā Jhyā (Peacock window) of different sizes, *Pancha Jhyā* (an assembly of 5 windows), the *Bimān Jhyā* (window with bow type frame), the *Ga Jhyā* (Balconied window), the *Kamal Jhyā* (Lotus window), the *San Jhyā* (Oriel window)and different types of *Tikī Jhyā* (Mesh window) at Dattatray area of Bhaktapur (Joshi, 1990, pp.10-32).

According to Joshi (1990, p. 9), the windows spread in different parts of Kathmandu valley like *Ka Jhyā* (Single window sandwiching multiple windows), *Kun Jhyā* (Corner window), *Ga Jhyā* (Window placed under the roof of a temple which is generally used as a nest by pigeons), *Go Jhyā* (Circular window), *Chhapā Jhyā* (Single window), *Pasukā Jhyā* (A row of 5 small windows), *Bāku Jhyā* (Symbolically halved windows in a row of odd numbers), *Bidhi Jhyā* (Wooden jolly), *Yaku Jhyā* (Windows in either side of the main entrance of a temple), *Suryamukhī Jhyā* (Sun window), *Swapā Jhyā* (Triple window), *Desemadu Jhyā* (Unique window), etc. differ from one to another in many respects including designs. All the wood crafts are masterpieces and they attract not only art lovers but also commoners.

Narayan Man Bijukchhen (2015) wrote a critic on 'Bhaktapur: Capital of song and Dance' written by Jagadish Shamsher Rana and says that Rana has

mentioned the peacock window, the fan window, the horse window, the pigeon window, and the eye window calling the architecture, the woodcraft, and the sculpture 'unique collection'. Bijukchhen claims that Rana did not mention the camel window; perhaps, he was not informed about it. The camel window is not in existence at present as it was divided into two parts during the quarreling between two brothers for patrimonial property (Bijukchhen, 2015).

Many traditional tools have been developed in woodcarvings such as *Khul* (traditional adze), *Basilā* (modern adze), *pān* (hatchet), *Hakhī* (instrument to mark lines on wood), *Batān* (angle iron), *Dāku* (foot), *Randā* (plane), *mugha* (mallet), *hān* (chisel) and many more (Gutschow, Kolver& Shrestha, 1987, pp. 267-268).

The windows made hundreds of years before are the product of the creativity of the people of the past. Otherwise, they would not be such unique items. They are just not the physical need of the structures of the monuments and buildings; they do have aesthetic value too. They depict the value system of the people.

Carpentry

Sīkahmi (carpenter) works on wood for the construction of houses, temples and buildings. Wood has been a most handy, easily available, and useful construction material for hundreds of years in Kathmandu valley too. It is used more than any other construction material in masonry types of buildings. *Sīkahmi* makes different structures of wood in buildings like windows, doors, *Dhalin* (joists), *Khāpā* (door leaves), *Musī* (roof rafters), *Thā* (*n*) (posts). Making such structures is call *Koro* work by *Sīkahmi*. They make different furniture like *Sanduk* (wooden box to put cloths and other things), *Darāj* (almirah), table, chair, etc. Nowadays, carpentry is not limited to the *Sīkahmi* caste group. It is done by any caste group. The *Sīkahmi*

in Bhaktapar is basically involved in the renovation of age-old monuments and buildings.

Theoretical Review

The theory is said to be a mirror in research. It helps a researcher to dive into reality. Theoretical review of literature gives a base for understanding, generalizing, analyzing, and interpreting the ground realities. Also, it leads the research work in a proper direction by integrating the present and past issues in the concerned issue.

Theory of Indigeneity

Ideas of indigeneity are generally founded on two key factors: time (priorness) and space/place (homeland) (Mandelman, 2014 as mentioned by Baird, 2021). Baird (2021) writes:

> *Most people would agree that there are two essential conditions for being considered Indigenous. First, Indigenous peoples are those recognized as being the descendants of the first inhabitants of particular spaces. Second, these 'first peoples' or 'first nations' are tied to geography or particular places, as they are considered to be the original inhabitants of particular spaces, territories or aboriginal homelands.*

There is a number of assumptions about how indigenous knowledge is evolved. The first assumption is the bestowed of the *Viswokarma*, the *Kulguru*. The second assumption is that it emerged from many years of experiences on trial and error basis for problem-solving. The third assumption is that it became a part of the culture with its interpretation that retained and developed it over the years. Four, creative and innovative people add their ideas and skills to make them always new.

With the aforesaid assumptions, one can say that (indigenous knowledge shares seven common characteristics viz. (a) Indigenous knowledge is generated

within communities (b) It is location and culture-specific (c) It is the basis for decision making and survival strategies (d) It is not systematically documented (e) It concerns critical issues of human and animal life; primary production, human and animal life, natural resource management (f) Indigenous knowledge is dynamic and based on innovation, adaptation, and experimentation, and (g) Indigenous knowledge is oral and rural in nature (UNESCO, 2007, as cited in Gurung, 2009, p.11).

The Newars are the original populace of Nepal Mandal. Manik Lal Shrestha (2013) mentions Sylavan Levi and Suneeti Kumar Chattopadyay in a speech:

> *The renowned French historian Sylvan Levi has said ´Either the country Nepal has been named after the name of the Newar (Newā) community or the name Newā has come from the country´s name`. Another reputed scholar, a linguist of international fame, Suneeti Kumar Chattopadhyay has more categorically commented that the country has been named Nepal as being the land inhabited by the Newars (*Newā people*).*

Sīkahmi, *Awāl* (masons), *Kumha* (pottery), *Nakamī* (Blacksmith), *Chhipā* (colors clothes), *Jyāpū* (farmers), and so on are the indigenous Newars and were subjugated by the ruling class Newar who conquered Kathmandu in different time periods.

Transfer of Indigenous Knowledge and Skills

In many cases, traditional knowledge and skills have been orally passed for generations from person to person. It is in the form of an undocumented state. It is expressed through culture or folklore. It includes beliefs, values, and practices. Some forms of traditional knowledge are expressed through stories, legends, folklore, rituals, songs, art, and even laws" (Kothari, 2007, p. 4). It is stored in

people's minds and memories in the process of entertaining perpetual activities. It is expressed through the medium of proverbs, cultural and social values, beliefs, and rituals practices. It is shared knowledge and experience transmitted information and communicated orally from one generation to another.

"Traditional education was largely an informal process, where skills were taught as part of everyday life" (Armstrong, 1997 as cited in Leik, 2009, p. 24). Leik further states that learning in an indigenous worldview is a trans-generational process of experiencing, absorbing, and sharing. According to Cajete (1994) as cited in Leik (2009) traditional knowledge is learned through hands-on experience and not taught in abstracted contexts. In this sense, "Indigenous knowledge is both empirical (that is, based on experience) and normative (that is, based on social values)" (Leik, 2009, p. 25).

Theory of Benjamin Bloom's Learning Domains

In 1956, Benjamin Bloom classified learning into three domains. Bloom proposed that learning takes place across three domains: Cognitive (mental skills and knowledge), Psychomotor (essentially skills that are learned), and Affective (students' attitudes and emotions) (Thomson, 2010). He adds that with the Cognitive Domain in mind, Bloom identified key verbs associated with 6 levels of thinking skills, namely knowledge, comprehension, application, analysis, synthesis, and evaluation. This theory gives a clue that Silpakārs used these domains and are applied together without which the learners cannot learn and the teachers cannot teach woodcarvings.

Theory of Bandura's Social Learning

Bandura's Social learning or Social Cognitive Theory states that we learn by observing others. According to him, animals learn not only by doing but also by

observation. Bandura's theory is also called observational learning. Observation does not mean imitation or doing exactly what others do. Imitation means doing exactly the same to others but an observer does not need to do exactly similar to others. According to Shrestha (2010, p. 206), observational learning is a cognitive way of learning. He further states that the process of attention, retention; rehearsal, and reinforcement are the four processes of learning.

Bandura's work centers on personality being developed as the result of an interaction between three things, the environment, behavior, and one's own psychological processes. The second specific of Bandura's beliefs is that modeling can have more impact than direct experience. The four variables that are involved in modeling are attention, retention, reproduction, and motivation. One must be paying attention, be capable of retaining what they have observed, be able to translate the observation into action and be motivated to imitate the observed action (Driggers, n.d.).

There are many types of woodcrafts developed in Bhaktapur. If one had learned only by imitation, it is sure there would not have been so many masterpieces of woodcarvings. One learns by observation and acts according to his/her learning. Bandura's cognitive way of learning is very much applicable in wood carvings.

Theory of Jean Piaget's Cognitive Development

Jean Piaget, one of the great psychologists, says that human is not a passive butterfly but an active artist (Shrestha, 2010, p. 181). Shrestha further refers to Piaget that learning is the process of accommodation and accommodation is a process of solving the problem because a new knowledge immerges while solving a problem (Shrestha, 2010). According to Piaget, accommodation or learning develops a new thought or schema of thought. There are four stages of cognitive development

and they are sensory-motor stage, preoperational stage, stage of pre-conceptual thinking, period of intuitive thinking, concrete operational stage, and period of formal operations (Shrestha, 2010, pp. 189-193). Silpakārs use all these stages while carving the woods and teaching these skills and knowledge to the learners.

Theory of Social Construction of Vygotsky

Vygotsky says that children develop and learn because of the environment in which they grow. Vygotsky as cited by Peregoy (2011) believed that the individual's process of development stems from several sources, such as culture and communication with others. "Vygotsky's theory emphasizes that learner gain knowledge through the process of interacting with the teacher, fellow classmates, and the socio-cultural environment in order to solve problems" (Peregoy, 2011). His theory has been used in one or in other ways while learning and teaching woodcrafts.

John Dewey's Theory

I assume that amid all uncertainties there is one permanent frame of reference: namely, the organic connection between education and personal experience; that the new philosophy of education is committed to some kind of empirical and experimental philosophy (Dewey, n.d.).

Dewey continued this argument with "all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other". For Dewey, the experience of the learner is very much important in learning. He believes that learners always analyze their experience by reflecting, evaluating, and reconstructing and this review of their experience may lead to further action (Andresen, Boud, & Cohen, n.d.).

According to John Dewey (1899), as cited by (Westbrook, 1999) "By the time the child entered the classroom, he was 'already intensely active, and the question of education is the question of taking hold of his activities, of giving them direction."

Deway's theory of learning shows that people learn by conceptualization, experimentation, experience, and reflection. Conceptualization gives the means to tackle new and different problems in different contexts. Dewey warned educators that more 'doing' or activity was not enough to produce learning; rather, doing should become a trying, and experiment with the world to find out what it is like (Raelin, 1997). For Dewey, learning often occurs through experience. Learners first need to undergo a particular experience and then, upon reflecting upon the experience, extrapolate learning from it (Long, as mentioned by Raelin, 1997). He says that learning acquired through experience is often referred to as implicit learning, meaning the acquisition of complex knowledge that takes place without the learner's awareness that he or she is learning. Reflection in Dewey's understanding constitutes the ability to uncover and make explicit to oneself what one has planned, observed, or achieved in practice. Reflection is concerned with the reconstruction of meaning.

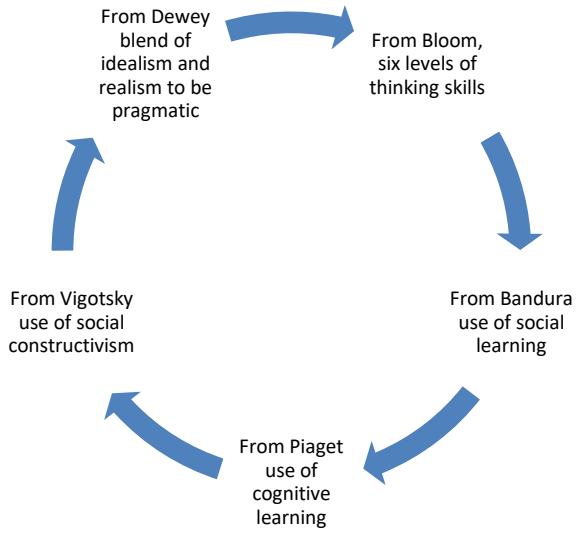
Theory of Socialization

Socialization is the process of adjustment in society and family. The process by which individuals learn the culture of their society is known as socialization. Giddens like many other sociologists therefore sees socialization as a fundamental process in societies, and one of the main means by which societies are able to endure, as their culture is passed down from generation to generation. (Haralambos & Holborn, 2007, p. 665). Knowledge and skill are usually learned informally by

imitating examples provided by the elders. The children are oriented by the family and society in their learning process. Socialization takes place during the whole life of a person.

Theoretical Compliance in Woodcarving

Sīkahmi learns woodworks in a family environment as it is an occupation based on the family lineage. There are some learning theories mentioned above that have been applied in the learning process of *Sīkahmi*. With this understanding, I have used the parts of the following theories while interpreting the field findings. The chart below shows my theoretical plan.



Benjamin Bloom says there are 6 levels of thinking skills, namely knowledge, comprehension, application, analysis, synthesis, and evaluation. Silpakārs too use these skills in the learning process. Bandura's cognitive way of learning is very much applicable in wood carvings. People observe the woodcarvings or they observe the process of working and apply by themselves. Jean Piaget's theory of cognitive development is also applied in the learning process of woodcarvers. People learn by solving the problem that comes along with the works they do. The environment in which one grows is a very important factor that

encourages one to learn accordingly. The theory of Vigotsky is also applied in teaching-learning practices of *Sīkahmi*. Learners always analyze their experience by reflecting, evaluating, and reconstructing and this review of their experience may lead to further action. This is the main theme of John Dewy and is applied in the learning process of the skills in *Sīkahmi*. *Sīkahmi* learn in social settings of family, *Tole*, relatives, and neighbors.

The theoretical understandings above are the basis of my study to interpret the field and see what the processes of knowledge transfer are there in Silpakārs (*Sīkahmi*).

Empirical Review

Here is the review of some relevant and available books, articles, and dissertations.

Gurung (2009) studied "indigenous approaches to knowledge generation" and tried to unveil the ways to knowledge generation, continuation, distribution, and control of the *Pariyars*. He studied on *Panchai Bājā* culture of *Pariyārs* (*Damai*) and focused on the knowledge generation process. The researcher did ethnography but did not do participant observation, could not write on the personal feelings of the respondents. He could not put down on the natural setting he formed. He collected data simply by doing some interviews and surface observation. So it cannot be a complete ethnography.

Pun (2012) studied to "explore the perceptions and practices of people towards local knowledge embedded in *Dhukūti* as a means of livelihood and knowledge transfer practice in the development process." The ethnographic study done under the interpretive paradigm on *Dhukūti* in Mustang by Pun tried the best to establish that recognizing the local knowledge is an inevitable part of development.

His worldview, local knowledge is "underestimated, ignored, overlooked and, in many cases, neglected by the government, non-governmental and private organizations, and individuals in the development process" (p. 102) is considerable. Pun found "mutual trust, common consensus, reciprocal exchange of resources and social morality" in *Dhukūti*.

Sharma and his friends (2009) studied the indigenous technology in Nepal and tried to establish that "indigenous practices provide invaluable knowledge and aid in making the best use of natural resources". The researchers have collected very important indigenous technologies in water resources management, soil fertility management, biodiversity and forest management, pest management, bio-fencing, agricultural tools making, etc. The researchers state that "indigenous technology knowledge' should be included in the curricula of environment and sustainable development as a cross-cutting issue". The education would be more pragmatic and relevant if the school and college education imparts the local knowledge as well.

Fatema (2011) published an article on the "preservation of traditional indigenous skills" of woodcarving at Bungamati in Nepal. The researcher talks about different forms of capital assets like cultural, economic, and human capital of the traditional indigenous skill. The ethnography done by Fatema found that there is fear of the loss of the entire occupation of traditional woodcarving of Nepal due to modernization and globalization. It states that "female woodcarvers are not confident about making decisions by themselves……..women are not permitted to design the more intricate parts of sculptures." The study lacks how the traditional skill is being transferred. The researcher mentioned Bhaktapur as a village. However, it tells on the programme of subsidy of Bhaktapur Municipality to people to build a house with woodcarving.

Shrestha (1980) studied the situation of woodcrafts production in Kathmandu valley. The study "tried to point out the factors responsible for wood-carving production in Nepal". The researcher showed that "there is a positive relationship between tourist influx in the country and woodcarving production" He found that production of woodcarving increased due to an increase in demand for the decoration of hotels in Kathmandu. There may be other factors affecting woodcarving production such as availability of loans to the investors, availability of workers and marketing facilities, government policies, and the law of the country but the researcher oversaw the factors while study. He studied only 3 woodcarving industries of Kathmandu. The research is quantitative one and there is a question of reliability and validity of the findings because of a number of woodcarving industries he studied.

Another dissertation is done by Silpakār (1981), "A study of woodcarving industry in Patan Town Panchayat area' tried to focus on 'employment opportunity in woodcarving industry', 'consumption of raw materials in woodcarvings', production and market situation or woodcarvings' and he found that there is an increase of woodcarvings production. She obtained the data of 8 woodcarving industries. The data were mainly based on the production of the crafts, so she could not fulfill her research objectives properly. The research is a quantitative one. The researcher did not put any theory to analyse the data.

The research done by Leik (1992) on 'Bringing indigenous perspectives into education: A case study of 'Thunderbird/Whale Protection and welcoming Pole: learning and teaching in an indigenous world' found that the Pole Carving course provided by the University of Victoria, Canada is a model for the implementation of indigenous pedagogical and cultural perspectives within an academic setting. Leik

states that "the indigenous approach to experiential learning was developed through allowing students to observe first and gradually take a more active role in both the carving and small group projects"(p. 113). The study links indigenous epistemological perspectives with the cultural practices of learning and teaching used. Purposive sampling was done for the research and in-depth interviews, email questionnaires, researcher observation, and documents data which included textual and multi-media sources where the data collection tools were used. However, the researcher interviewed on a voluntary basis and it was determined by the class members' availability and willingness to be part of the study.

The research done by Silpakār (2021) on 'Traditional Wood Craftsmen of Bhaktapur-The Silpakār Community' gave some knowledge on indigenous technology and the skills applied by the Silpakārs during construction. The research studied the pattern of dwelling clusters and space organization of the Newar community. But the study didn't cover the teaching and learning practices of the Silpakārs.

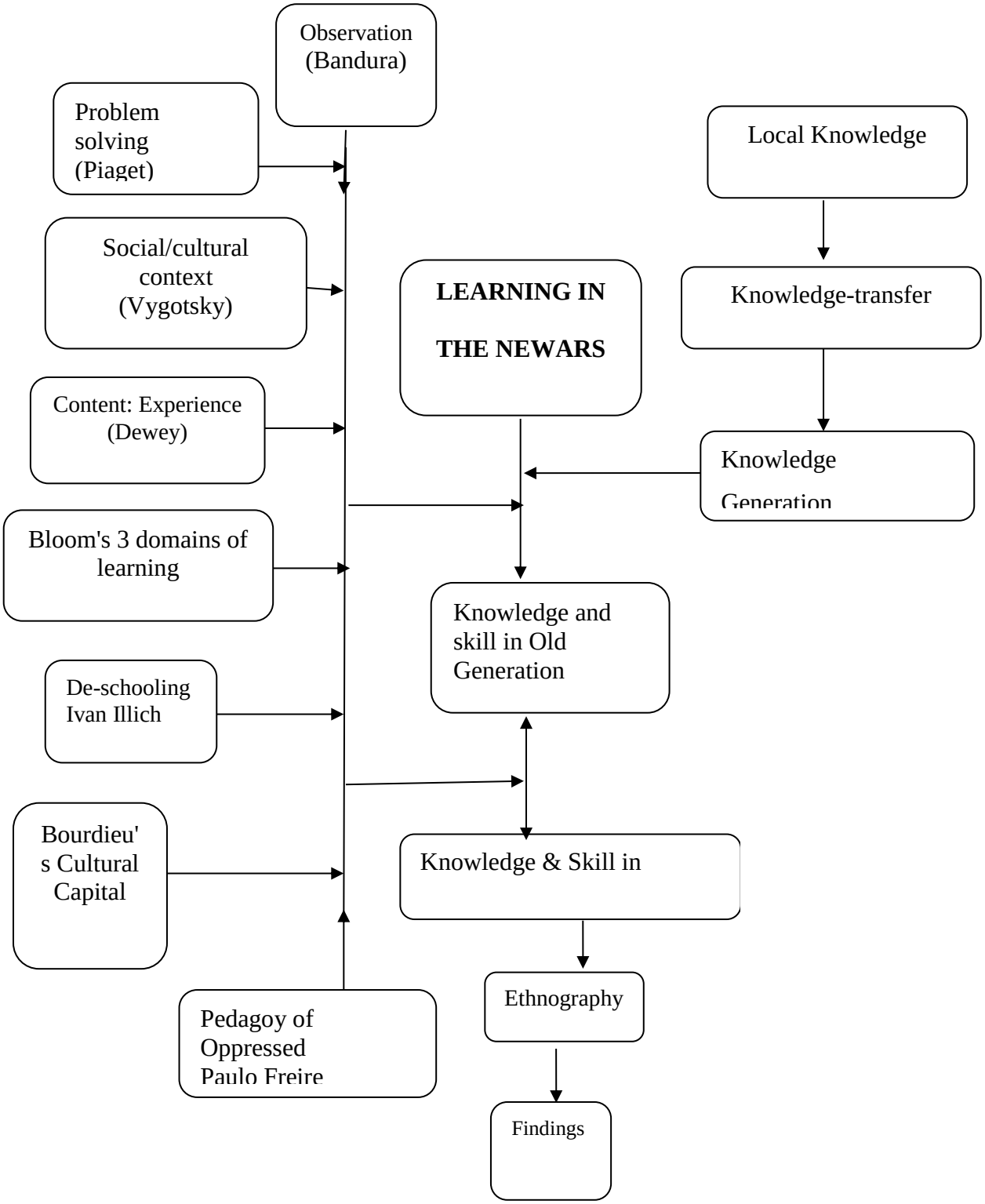
The literature didn't talk about the way of transfer of the indigenous knowledge of Sīkahmi group of people especially in the field the woodcarvings and challenges they have been facing. It is where I wanted to relate the knowledge of Sīkahmi with the school level curriculum and include their knowledge in the curriculum of school education. Besides, I wanted to find the age old tradition of teaching-learning practices so that they can be introduced in the modern school education system.

Conceptual Framework

In every community, people have their own local culture developed over the years of experience and practice that have helped to ensure livelihoods. This

conceptual framework discusses knowledge building process that leads towards cultural capital formation by manifesting the local knowledge. The advanced knowledge of the Newars of Kathmandu valley is the product of the evolution of knowledge. To bring out the desired outcomes of the research product, the frame given below provides a base. Thus, to fulfill the purpose of this research, a skeletal has been presented to give an overview of the research work.

Figure 1: Conceptual Framework



Chapter Summary

This chapter includes a review of all the possible literature related to my study including the theoretical and empirical literature. It elaborated some literature on woodcarving, carpentry, wooden designs, research gap, and conceptual framework.

The term woodcarving is taken as that product which is made by manual labor using only hands and legs of craftsmen with the help of tools. Without a good knowledge of types of wood, their properties and use a carver cannot work properly. *Sīkahmi* (carpenter) who works on *Korā*-works works on wood for the construction of houses, temples, and buildings. *Sīkahmi* can be a woodcarver too.

Traditional knowledge and skills have been orally passed for generations from person to person. There are some learning theories mentioned above that have been applied in the learning process of *Sīkahmi*.

I have discussed relevant literature related to the indigenous knowledge system to see the gap in the study to cover the experience of the carpenters of Bhaktapur. The available documents do not show any seriously carried out study on the domain my study has ventured to address. The third chapter provides a picture of the philosophical stances of the research methodology, research paradigm, and research methods, locating the study context, research participants, quality concerns, data interpretation, and summary.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology provides a forward in particular research. It provides a base for research from the theoretical ground. Methodology creates a philosophical base in the research work. So, various research methods are used to gather relevant information related to the study. Both primary and secondary data are collected to serve the purpose of the study. In my research qualitative research method has been employed.

Philosophical Base

The research work has been put together on the basis of post-positivistic philosophy. Ethnographic perspective is applied to investigate the research topic. The ethnographic study is based on the indigenous knowledge of the people and their practices to transfer the skill and knowledge to their posterior.

Under philosophical foundations, I have discussed my ontology, epistemology, research methodology, and research paradigm, thereby interpreting and describing the multiple realities and dialectic interactions with and other woodcarvers. In the meantime, I have employed an interpretative research paradigm and ethnographic research method. In this section, I provide philosophical bases to interpret the research issue.

Ontology

Punch (1994) states that ontology raises basic questions about the nature of reality. What are the universal characteristics of things that exist? It is an ontological question (Willis, 2007, p. 9). I argue that reality is subjective. Reality cannot be measured objectively. Different people possess different life experiences simply

because of their different economic and cultural backgrounds, the environment they live in, and the education they obtain.

Different groups of people may have different perspectives on a single issue and on the opposite different groups of people may have similar understandings on an issue. There are multiple realities. One phenomenon can be perceived and interpreted differently by different people. This study functionally assumes that knowledge resides in the way of viewing reality and solving the problems of Daily life by people in Bhaktapur. The use of material and technology of construction in Bhaktapur is one aspect of knowledge, while my ontology is to know how to perceive their own knowledge. How do they learn the building technology? I want to know the ground realities of local knowledge of the Silpakārs in Bhaktapur.

Epistemology

Epistemology, the theory of knowledge, talks about the knowledge generation process. According to Punch (1994), "Epistemology asks how we know the world. What is the relationship between the inquirer and the known?" (p. 99). According to Willis (2007, p. 9) 'How can we know the things that exist?' is an epistemological question.

In my research, I have discussed and interacted with the research participants to collect data. The data has come in the form of an interview, field notes, personal reflections, and recollection of experience of the research while growing up in the city. I have found the teaching and learning practices through keen observations. Then, the data is interpreted to seek out a common pattern in the ways of understanding, solving the problems, and transferring the knowledge to the coming generation. The underlying pattern stands as the foundation of knowledge in the

research. The interpretive design of the study focuses on the data collected to derive findings, conclusions, and implications.

Research Methodology

Methodology, in fact, helps to enter the field of knowledge. It generates knowledge by pinpointing the issues that are around us. Punch (1994) adds, "Methodology focuses on how we gain knowledge about the world" (p. 99). Under the interpretative research paradigm, a descriptive study has been undertaken to point out the overall phenomenon.

To study the day-to-day activities and the experiences of Bhaktapur, I have done ethnography. To gain the experience and 'thick description' of this method is suitable.

Research Paradigm: Interpretative

Research paradigm guides and directs research actions and processes. According to Willis (2007, p. 8), the paradigm is a comprehensive belief system, world view, or framework that guides research and practice in a field. In this study, I have followed the interpretative paradigm. The interpretive paradigm deals with explaining meanings and human experience (SAARC, n.d., p. 30). Humans are also influenced by their subjective perception of their environment- their subjective realities (Willis, 2007, p. 6). "An interpretive approach provides a deep insight into 'the complex world of lived experience from the point of view of those who live it" (Schwandt, 1994, as cited in Andrade, 2009, pp. 42-60). Andrade further cites that, "Interpretive research assumes that reality is socially constructed and the researcher becomes the vehicle by which this reality is revealed."

Since this study follows interpretive paradigm, I have made use of inductive approach that helps seek out a general pattern in the data collected from the field. In

other words, I have not started with concepts determined a priori; rather, I have sought to allow these to emerge from encounters in the field. The subjective reality of knowledge building in the woodcarvings is studied through interpretative paradigm. The findings are described within the domain of the interpretative research paradigm.

Research Design

The construction of the research design has helped to frame the plans of the study. It helped to precede the research, analyze and interpret the findings. I have employed descriptive and exploratory research design to gather necessary information and data about local knowledge rooted in *Sīkahmi* of Bhaktapur. My research is qualitative in nature and it 'seeks rich descriptions of *Sīkahmi* in their natural habitat. It has followed the constructivist or ethno-methodological approach, which focuses on "how a sense of social order is created through talk and interaction" (Elliot, 2005, p. 18). Qualitative research adopts interpretive description (words) rather than statistics (numbers) to analyze underlying meanings and patterns of social relationships (Parks, 2007). I employed the ethnographic method as a methodological theory and tried to draw out the subjective realities of *Sīkahmi* of Bhaktapur.

Ethnography: A Research Method

I used the ethnographic method to explore a thick description of *Sīkahmi* people and their culture. The ethnographic research method emphasizes studying a phenomenon within the context of its culture. In the essence of ethnography, Denscombe (1998) discusses, "The term 'ethnography' literally means a description of peoples or culture" (p. 69).

As a researcher, I had to be deeply immersed in the social culture over an extensive period of time. I had to engage, observe, and record the learning culture of the *Sīkahmi* community people within their natural setting. Participant observation

was done for data collection, and data were analysed. It was clear that I should have extensive field notes, in-depth interview and narrate it. As Parks (2007) adds that ethnography is a detailed study of the life and activities of a group of people by researchers who may live with that group over a period of years whereas the ethnographic method is to capture the real voice of people as if their real culture is manifested. In this research, a thick description is explained in connection to local knowledge of *Sīkahmi* in Bhaktapur.

As an ethnographer, I explained the local knowledge, traditional pedagogy of woodcarving used by *Sīkahmi* of Bhaktapur. A minute detail of every aspect of the community was taken. As this researcher's I visited the workshop of the *Sīkahmi* many times. I checked, rechecked, and verified the data after translation.

Locating the Study Area

Bhaktapur is well known as a city teeming with art and architecture. Its cultural gem is far to be compared. Its inclusion in the World Heritage list shows the status of the city as “living heritage” or “living museum”. Bhaktapur, 13 kilometers from the capital city, Kathmandu and located at the height of 1,401 meters above sea level, the historic city spread over an area of 6.88 sq. km is home to about one hundred thousand inhabitants (Bhaktapur Municipality, 2013). Most of the people in and around Bhaktapur are Newars - the native inhabitants of the Kathmandu Valley, who are well acclaimed throughout the world for their generations-old traditions of art, culture, and craftsmanship. Their main occupation is agriculture, handicrafts, trade, and service is the main or side-jobs for many of them.

Research Participants

This research is on a caste group of the Newars, who have woodcarving as their traditional profession. The caste group people can be designated as the architect

of all the age-old monuments and buildings of Kathmandu valley. I have used purposive sampling for the study. I have selected the respondents for the study on the basis of their practice, proven knowledge as reflected through their Daily works, academic debates, research, and presence in media. The following tables present the respondents of the study:

Table 2

Research Participants of Sīkahmi of Bhaktapur

S. No.	Participant's Name*	Gender/Age	Address	Profession
1.	Lava Lal	Male (62)	Thucho	Carpentry and carving
2.	Srasta Gopal	Male (50)	Jenla	Social Work
3.	Guru Lal	Male (63)	Suryabinayek	Government service
4.	Raj Kaji	Male (62)	Khauma	Woodcarving
5.	Jouvan	Male (55)	Jenla	Business
6.	Late Kanhaiya	Male (85)	Tekhapukhu	Woodcarving
7.	Prithivi	Male (40)	Golmadhi	Woodcarving
8.	Mahadev Ram	Male (60)	Itachhen	Woodcarving
9.	Kali Bahadur	Male (50)	Bharbacho	Carpentry
10.	Krishna Shyam	Male (60)	Byasi	Wood
11.	Kabi Prasad	Male (50)	Padndu Bajar	Carpentry
12.	Chandra Sundar	Male (50)	Taumadhi	Entrepreneur

* All the names are pseudo names.

Table 3

Research Participants of Other than Silpakār/ Experts

S. No.	Participant's Name*	Gender Status	Expertise	Profession
1.	Rasik Raj	Male (75)	History	Newar Priest
2.	Dhyan Prasad	Male (50)	History and culture	Service
3.	Uttam laLochan	Male (63)	History and	Teaching
4.	Rabi	Male (52)	cultureArt and architecture	Renovation
5.	Late Bhupati Raj	Male (85)	Linguist	Newar priest

* All the names are pseudonames.

Data Collection Tools and Techniques

For data collection, I have used tools like relevant literature reviews, theoretical reviews, thematic reviews, participant observation, interviews, informal talk, and history taking.

Secondary Literature Reviews

The secondary literature reviews of previously published documents help to evaluate the research issue and give some more information to substantiate the research issue. The secondary reviews had been done on the relevant books, journals, dissertations, websites, articles, etc.

Participant Observation

I have mentioned the participants of my research somewhere above. It was very easy to approach them as most of them are familiar to me. They all reside in my

hometown. I had an opportunity to participate in the socio-cultural events of the participants.

"Participant observation is a form of observation in which the observer must be somewhat socialized into the social setting in which the observation is being done" (Baker, 1999, p. 246). It has been done with the interaction of the respondents. As Baker (ibid) cites Schwndt (1997) "the participant-observer is advised to maintain something like dual citizenship". The keen observation was the key to understand and internalize the issues, knowing the context, to get the local practices. Some contacts with the known people have been done initially. I had initially met the respondents. The practices, experiences, knowledge, and behaviors have been observed in depth. Participant observation has remained a very suitable method to know the meaning of the culture in this study.

Diary Making

Diary making is one of the tools of data collection in ethnographic studies. It was not possible to remember all the information I perceived in the field and hence I maintained a diary. Keeping the record of the Daily activities, the information from the informants has been documented in a diary. The information picked up and recorded were the raw materials of my research and they were processed and thematized later.

In-depth Interviews

In qualitative research, open-ended interviews were used to get the broader perspective of people. Interview questions and substitute questions helped to interview a respondent. The individuals who were well informed, knowledgeable, and skilled were interviewed. I got help from my friends of mine from the Silpakār community to figure out to find the proper informants to interview.

Informal Talk

The informal talk was one of the tools I used to collect data. My Silpakār friends helped me to reach the workplaces of the *Sīkahmi* of Bhaktapur. There was some hesitation when I tried to be very formal. Sometimes we cannot approach the informants or may not get real information if we follow a formal way. The informal talk was vital to wipe the distance between the respondent and the researcher. People do not hesitate to say their feelings and perspectives in an informal environment.

Conversation with Key Respondents

I met some of the prominent scholars of Bhaktapur on history, culture, and sociology. I selected on the basis of their write-ups, presentations and public speaking and previous conversations that I did into previous researches. All the informants were very happy to share their knowledge. The in-depth interview with the knowledgeable persons clarified the questions and doubt I had.

Table 4

The tools and techniques of data collection

Participant Observation	Diary Taking	In-depth Interview	Informal Talks	Conversation with Key Respondents
I have visited Golmadi and Bharbacho, Tekhacho, Khauma, Byasi, Suryavinayak, Jellan, and Taulachhen to see how the *Sīkahmi* work there. I have clicked photographs from the field, jotted down certain significant aspects of their work there.	On the solitary visit to the sites, I have collected notes from the field observation about the wooden structures like the windows, pillars, and the like. I have also noted down the ways of teaching and	About 15 *Sīkahmi*s were interviewed for 3 to 4 hours in their own workshops. The interview was recorded on, transcribed, and translated for the purpose of analysis.	A follow-up discussion with the *Sīkahmi*s was made via telephone, personal meeting in teashop or temple, or their workstation.	I have talked to professors, teachers, media persons, experts of culture, education, and the like. These people are listed in the table of respondents.

	transferring their knowledge to the new *Sīkahmi*s in my notebook.			

Member Check

Member check was done to make the research valid. I met the respondent until I am confirmed on the data before writing.

Research Standards

I was sure that the research findings should be very authentic. The report becomes convincing because of the research standards. Guba (1981, as cited in Shenton, 2004) proposed four criteria for judging the soundness of qualitative research which are credibility, transferability, dependability, and conformability.

I chose a gatekeeper among the research participants, who could give the full direction of the field and research participants. I tried to buildup trust to share their knowledge and show their skill. I met research informants in the field. And, I observed, interviewed, and discussed to understand their life experiences, perceptions, and understanding

I visited the workplace and residence twice or thrice that developed the natural setting of the local context. The environment of mutual trust between us favored going ahead in research. The interaction was natural. It helped to dig out the lived experiences. Similarly, I checked the members or participants with their names, ages, social status, and occupations.

There was not any language problem because me, the researcher have the same mother tongue and the respondents. In some cases, old age people may not be heard correctly. In such a case, a family of the respondents helped to understand him\her. I verified data frequently with the help of the informants during the field visits. I kept in touch with the research participants through the means of communication (phone) whether the recorded data represents their opinion or not. I tried to make my text and analysis understandable to the readers. Information had been summarized to the participants.

However, I felt a little bit difficult to organize, analyze and interpret the local knowledge.

In the process of data analysis and interpretation, I made theoretical linkage with the research themes in connection to relevant literature. In a common ground, the qualitative research faces the problems of triple crisis: the crisis of representation, the crisis of legitimation and crisis of praxis in the human disciplines (Denzin and Lincoln, 2005, p. 19). I tried to connect research issues with theories to find the main ides of local knowledge in *Sīkahmi*, as a bricoleur produces a bricolage, that is, a pieced together, close kit set of practices that provide solutions to a problem in a concrete situation.

I analyzed the data minutely to ensure standards. I tried to do context-based analysis in natural settings. There were multiple voices and realities of research participants to be interpreted. Data interpretations were rigorous work and tried to maintain the quality of my research. I kept in touch with the dissertation supervisor and key respondents to avoid mistakes.

I have tried to reflex from my informant's perceptions, feelings, experiences, practices, and understandings. I tried to make sense of their practices. The data

analysis was done based on research themes and the data available. And, I have acquired thick descriptions from the several experiences, practices, facts, and perceptions of *Sīkahmi* of Bhaktapur.

My Changing Mindset

I frequently talked with my professors and colleagues to be clear on my research issues and confusions. The advices of them were very useful. With their suggestions, I went to the field and collected raw ideas and issues. My curiosity and confusion in the research led towards formulating new ideas. I knew that I was not born as a researcher. My actions, interactions, and discussions help me to generate new ideas and insights to proceed ahead.

I believe such a process sharpened my knowledge. My supervisor recommended some books and links to articles which were very useful to me.

I was aware that any cultural practices of a community should be seen through their own eyes. I was a Newar but I do not belong to the *Sīkahmi* community or caste group. There was a narrow gap between me as a *Jyāpū* community and the *Sīkahmi* community thought it might be narrower. I had to enter into such a caste group with which there is a gap in terms of social relationships. There were some differences in social and cultural differences between us. So, I had to go to the field in both an emic and attic person.

I learned that a researcher should develop sensitivity to the culture, social system, habits, and behavior of the people. Otherwise, I could not gather data and information in a desirable way.

A was like a learner to build a relationship with locale in understanding their culture. I had to be familiar with the people and their aspirations. It was a try to investigate knowledge and way of transfer of their knowledge in today's context.

My Standpoint

I tried to collect the multiple realities of the people in my field. I had to collect data from different people from different places that were related to the research issue. I tried my best to focus in my issues to make my research productive, useful, and meaningful.

I was born in the same city and there are many friends who are in the field of wood carving and wood works. But I was not so much informed on many issues of woodcarving and carpentry. It was not easy to spend hours with the people and there was a question that is it good and ethical to spend hours talking to quench my thirst for knowledge.

I was very much new in terms of the type of carvings, designs, and structures that the *Sīkahmi* make. So, I had to ask to speak twice or repeatedly, until or unless I became clear.

I could become familiar with people easily because of my skill of language and adaptive behavior. I could build rapport with the locale and get insightful information easily. The informants never hesitate to tell every detail I asked. Sometimes their answers were more elaborative than the demand of my question. This is how I got sufficient data without any difficulties. I acted as their own brother and they too behaved accordingly.

Ethical Concerns

This study has addressed the issue of confidentiality and ethical concerns that a researcher can come across while in the field. Such issues confronted while doing the studies was taken sincerely. I have tried my best not to harm the personal beliefs, norms, and values of the community. The self-esteem and dignity of every individual of the research area, research participants, and researched people were respected.

There is no discrimination over caste, gender, and age: the purposive method of sampling for the study has helped me to focus on the level of expertise and the output of the professional practices of the *Sīkahmi*s in Bhaktapur. The people who have made a certain level of accomplishment in the domain of their engagement have been taken as the source of data. Furthermore, academic values, norms, rules, and regulations of the university were considered during the research work. Positive comments, suggestions, and feedbacks were accepted open-heartedly. Moreover, all the literature cited are original and they are used according to the ethics of academic credentials

Data Analysis and Interpretation

Data analysis and interpretation is a complex and tiring job in the research work. Data gathering and compilation, transcribing and codification, editing, and processing, categorization, theme making, data interpretation linking with theory, and meaning-making were done to analyze and interpret the data. This made my analysis and interpretation more systematic and scientific.

Data Gathering and Compilation

This is a very much important job that a researcher should complete very sincerely and carefully. The primary data must be very correct, relevant, and authentic. For this, I got the help of some local volunteers. I was getting the help of volunteers on compiling the resources, recording the voice and vision of the respondents.

Transcribing and Codification

The data gathered was viewed and transcribed seriously with cross-verifications and checks. The rigorous process was followed up in making it meaningful. The data were segregated and codified according to their nature.

Categorization

Contents and sub-contents were divided into different sections for categorization. It helped me in making meaning of the data. The research issue was categorized into various groups as per the nature of the data. The categorization helped me make sense in carrying out the meaning. Then the research theme was developed.

Data Interpretation Linking with Theory

The data was interpreted, after dividing the data into themes, linking with theories. Various theories were applied to make the meaning of the data. Data analysis was a systematic way that made the study more meaningful. Data interpretation was self-reflexive. In this process, I tried to examine the connection of the field findings with the grand theories and/ or theorize the field. I studied again various learning theories and tried to find whether my data was related or marched with the theory.

Chapter Summary

Research methodology is a pathway to go ahead with the research issue. It is also a means of research work to collect data. So, I discussed methodological tools, which were used to pick up data and to analyze the issue. It helped to connect research issues, methodology, and theory together. The philosophical foundations helped to put information in a correct manner. I was aware that my personal feelings, learning, and pre-cautions are vital to working as an ethnographer. That's how, one gets thick description and reflection from the respondents.

In the next chapter, I have discussed on the knowledge of *Sīkahmi* on wood, woodcarvings and carpentry.

CHAPTER IV

SĪKAHMI'S KNOWLEDGE AND SKILLS

In the preceding chapter, I have written about the research methodology that was followed in the research. In the present chapter, I have responded to the first research question, i.e., *Sīkahmi*s' knowledge and skill at wood carving. This chapter particularly focuses on the different types of wood used by the *Sīkahmi* in making monasteries, buildings, temples, etc. including the woodcarvings, the tools they used, their calculation method, and the unique techniques to make the structures earthquake resistant. It tries to explore the knowledge of science and tech applied by the *Sīkahmi* during their wood carvings. Let me begin with my personal reflection about wood carving.

***Sīkahmi* of Bhaktapur**

Nearby my residence at Taulachhen, there is *Kami Nani* (square) where about 12 household families of *Sīkahmi* resided. Dattātraya Square is few steps ahead of Kami Nani. The historic Palace of Tularani at Garud Kundal and Chyamhasinga is also within walking distance of about 5 minutes from *Kami Nani*. This symbolizes the relationships between the *Sīkahmi* and the then Palace.

There are three Bahās of *Sīkahmi*s at Khauma, Santan and Kolachhen near the palace of Bhaktapur. At least 30 families have been residing in three *Toles* near Darbar Square. This is all because of the accessibility of the craftsmen in their work in and around the Darbar area. Uttam Lochan confirms that:

> *Whenever there was any work related to wood, they were called immediately. It shows that they were in direct connection to the royal power and were established as a prestigious group in society.*

Rasik Raj, a historian says that *Sīkahmi*s in the past were employed by the palace and they were ready all the time to do the assigned tasks. He says:

> *These days they only go to Taleju for formality. In the past, their responsibility was to renovate the wooden things but these days, as a continuation of the tradition, once a year on the day of Laxmi Pujā, they go to Taleju and mend* the damaged pieces, or *at least, they strike a nail perhaps to bring the tools in reuse.*

A stich in time saves nine. Different festivals have their own meaning and objectives. They are either related to health and nutrition, making fun and happiness, or preserving art and architecture. People clear the unwanted plants on the roof of the Ngyātāpola Temple on a day of *Sawan* called *Busadan* or the founding day of the temple. Regular observation and mending the damaged pieces of the temples make it strong and durable.

Woodworkers in the past were called *Sīkahmi*. The surname *Sīkahmi* changed into Silpakār later. There were many people who had been using their surname *Sīkahmi* till half a decade ago. Rasik Raj, historian opines:

> *Silpakār is a Sanskrit word. However, calling them (the working class) 'kami' or 'worker' sounded a bit pejorative and derogatory. It has been appealed even to the then leader or contemporary king to ponder upon the subject and to make proper justice upon the use of the word. The king finally decided that they should be called 'Silpakār'.*

The *Sīkahmi* popularized and raised the value towards the skilled people and craftsmen. Not only *Sīkahmi* but people of other castes also started appraising their skill like, *lwoh kami*: stone/rock carvers, *Nyā kamī*: iron craftsmen, *kumha*: clay craftsmen, *Mānandhar/Sālmī*: people who produce oil (mustard). A new culture

evolved of adding *kahmi* as a suffix in their names. Because wood-craftsmen were praised a lot, they were named *kahmi* instead of *Sīkahmi*. Wood artists became so popular that even the near ones of Malla kings named themselves as *Sīkahmi*. They even started adding the word *'Karmihās'*. So, people belonging to *Kahmi* profession have always been treated well since they have contributed to the development of the art and architecture of Kathmandu Valley.

Sīkahmi and kami are the same. Though *madhikahmi* (sweet or plain bread makers), *Sijakahmi* (bronze vessel makers), etc. always should have *Kahmi* in the suffix, *Sīkahmi* do not necessarily need to add *Si* in the prefix. With or without *Si*, they are understood as *Sīkahmi* (Kahmi jyā: wood work). Even today, we do not add Sin to *Sīkahmi* people.

Silpakār (*Sīkahmi*) has been deployed for making structures and protecting the city. Dhyan Prasad (50), a Newar Culture expert clarifies:

> *During the period of King Yakshya Malla, he made huge walls with robust wooden doors around Bhaktapur city to protect from invaders. Inscription of Nepal Sambat 501 and inscription of Nepal Sambat 564 at Kwathandau clearly mention about use of wooden doors as a shield around the city.*

Sīkahmi used to work in cooperation with *Awāl*, the masons to complete the temples and buildings. The *Shilākārs*, the stone carvers had also a very important role in making traditional buildings. Sometimes *Nakarmi*, the iron workers, and *Tāmrākār*, the copper worker plays their role in construction. However, *Kahmināyo* (leader), head of the *Sīkahmi*, and *Awanāyo*, head of the mason are included in the special ceremony in laying foundation even today. Tools of making the buildings are worshipped and handed to the *Kami nāyo* and *Awa nāyo*.

In addition, after the completion of the construction of the home, the *Sīkahmināyo* are thanked by gifting them a *Bétāli* and *dakshinā* (perks with good blessings). Considering these aspects, they are well respected and are well paid than people of other professions. Not only this, the then Kings used to gift them with land to show happiness in their work. Vaidya (2004) has elaborately said that at least 7 talented *Sīkahmi* who contributed to making Ngyātāpola temple were awarded 22 *tola* (10 gm. in a *tola*) of gold and a silver bangle that cost 20 rupees to each on *Asadh Sukla partipada* of 822 (NS).

Sīkahmi works as a timber constructor as well as wood carvers in making any buildings. In the past, if one had to build a house, *Sīkahmi* played a crucial role. However, the *Awa nāyo* has a very important role in building houses. The *Kaamināyo* and *Awa nāyo* too estimate and make a map of the particular building in their mind (there was not written map in the past). They hand-over the building to the owner after completion.

Sīkahmi involved in making buildings, temples or any monasteries know about *Vāstu Shāstra* though they might not have read the science of architecture (*Vāstu Shastra*) formally. All the woodworkers followed certain design concepts either in constructing buildings or carving the statues (Silpakār, 2021). Vaidya (2004) explaining the building of Ngyātāpola said that *Ngyātāpola* temple makers were made by the expert artists who might have the theoretical as well as practical knowledge of *Vāstu Shāstra* that was bequeathed by their previous generation.

I have seen a *Thyā safū*, a folded manuscript with informant that have some designs of temples and idols. If one has to build a house, he/she goes to *Joshi*, a scholar of *Vāstu Shāstra* to consult whether the place is suitable or not, which direction the house should face, etc. The *Joshi* advises them according to the science

of architecture. The practice is very common even today in Kathmandu valley. In other words, the informants of my study area go to Joshi just to decide the 'holy' day to lay the foundation of their home. They believe that Joshi knows the celestial connection of the human beings and the land. But the engineers know the modern building technology: s/he does not know the connection of the celestial things with that of the human being and the land. This belief was there in *Sīkahmi* people.

A *Kami nāyo* is given new costly clothes after the completion of the building. He has to participate in the worship of the house after the completion of it called '*Thāmā Pujā'* as well. It means the *Sīkahmi* is given utmost priority. Such tradition is almost lost by the introduction of the modern concrete buildings with the application of materials other than wood. In this sense, the role and function of Sīkahmi is reduced.

Sīkahmi were highly considered because they possessed skills and knowledge related to wood and wood carvings. They were paid well and appreciated high. In every task, the leader of *Sīkahmi* team was placed in a good position in all kinds of religious activities. The then Kings and administrations treated *Sīkahmi* very well. The chariot of Bhairabnath during Bisket Jātrā is completely made of wood, constructed by *Sīkahmi*. Since they are the constructors of the chariot, they are positioned inside the four corners of the chariot with respect to their skill and knowledge. They are also permitted to lead the chariot pulling procession. It is really a matter of great pride to be included in a chariot where kings and their kith and kins stay in.

We hear a saying that *'Kami yā swāna bhwātha*' means '*Sīkahmi*'s ladder is wretched'. This saying does not depict poor economic condition but shows the dedication and busy condition of *Sīkahmi*. They are always busy constructing homes

of laymen to palaces of kings so they find no time to mend their ladders or repair the loose wooden parts of their homes. Actually, it also shows the confidence to work on the loose or degraded parts in no time because they are skilled and knowledgeable people. In addition, they are so good at making the best out of parts of wooden works that a simple lock can run the house for years.

Prosperity and Power in *Sīkahmi* Skills

The name of the artists who had contributed to making the *Ngyātāpola* is recorded in history as mentioned in the book, *Siddhagni Kotyahuti Deval Pratistha* written by Janaklal Baidya in 2004 AD and published by Nepal Pragya Prathisthan.

The social system of feudalistic and there was class discrimination too. Only people of the ruling class were allowed to keep *San Jhyā*: and *Kwosho: Jhyā*: People with low social status used to keep normal *Jhyā*: (windows) without much decoration. There is the folk song:

Hyaun thon, aji thon, kata thon madusān, San Jhyā duthaye laka byu yo ma.

It says a girl wants to marry a guy having *San Jhyā* in his house. The windows were looked at as the symbols of prosperity. Dhyan Prasad, Newar Culture expert says:

At those times, one should be linked to the state or country to decorate their homes with an artistic form of woods but these days, the rich people can easily place any form of windows and doors.

Any house reveals the nature of the home-dweller. A person who is rich and is passionate about art and artifacts definitely places different wooden artistic forms but a poor cannot afford such expensive wooden artifacts. So, *San Jhyā, Tikī Jhyā*, and other wooden artistic forms do show the economic status of a home-dweller. In the past, a well-to-do family was highly passionate to differentiate their living places by

placing fine wooden carvings in the face of their homes which helped *Sīkahmi* to improve their skill. Hence there are various forms of wooden windows like *San Jhyā, Surya Jhyā, Biman Jhyā, Pasuka Jhyā,* etc.

If we look at the homes of people who were near to the palace, their homes were full of finely carved windows, doors, etc. while people below them have plain (no carvings) wooden windows and doors. Probably they were not allowed or they could not afford the finely carved windows and doors. Dhyan Prasad adds: *Pode, sahi, Kāpali, chyamākhala were not allowed to place San Jhyā and were forbidden from keeping any carved windows and doors. The farmers were however allowed to place artistic windows.*

Tikī Jhyā, the peculiarity of this type of window is that an insider can see through the window very clearly but the outsider cannot see an insider. The window is like a CCTV of the past, to have surveillance of what is going on in the street secretly. Usually, a *Tikī Jhyā* is placed on the first floor to observe any ill movements and to keep a home safe.

Political Rivalry in *Sīkahmi* Skills

Political rivalry is also one of the factors in the development of woodcraft. The Malla period was a very favorable period for woodcraft. Lots of masterpieces of the Malla period are still seen in the valley. Malla period is taken as the golden age of woodcraft.

The then Kathmandu valley was divided into three stages in the Malla era. And there was competition among the kings of those three states in every field. Political competition left them helpless and weak, however, competition in education, literature; art, and woodcraft enable the valley to stand as a culturally rich place of the world. Shrestha says:

> *The woodcraft or temple built in Kathmandu was immediately copied by Lalitpur and Bhaktapur. If Bhaktapur erects any new structure, immediately it is copied by the other two states. Kathmandu always tried to dominate Bhaktapur taking the support of Lalitpur. Pratap Malla endeavored to capture Bhaktapur during that time but failed. Bhupatindra Malla was the only king of Bhaktapur, whom the kings of Kathmandu and Patan could not threaten. The Five-storied temple (Nyatapole) was an important achievement of King Bhupatindra Malla which outsmarted other states not only politically, but also in terms of art and craft. That temple is an outstanding example of woodcraft. Neither Lalitpur nor Kathmandu could build such a temple. Though they copied that but could not maintain that fineness and craft. Excited Bhuptindra Malla also built Fifty-five windows palace which other states could not imitate. This is how woodcraft developed in Bhaktapur.*

The three kingdoms in Kathmandu valley, Bhaktapur, Lalitpur, and Kantipur were ruled by the Malla kings and were brothers in relations. One wanted to show more advanced and developed in terms of art and culture to the rivalry kingdoms. This competition was found not only between the monarchs but also amongst the craftsmen in the three cities. Such a competitive mindset resulted to make the historical temples and monuments of Nepal.

Sīkahmi's **Knowledge**

Sīkahmi with knowledge, skill, and art learnedfrom their predecessors keep on polishing their capacity time and again with several trials and thus they become an expert. This process of learning with innumerable experimentation is the backbone of the science of this profession. Just as the customs, traditions, habits, knowledge are

complete outcomes of experimentation carried out from time immemorial so is the knowledge gained by *Sīkahmi*.

If one looks at the construction of our homes, he/she finds that they are faced to the south to gain warmth from the sunlight. In the same way, windows are small to increase the strength of the house. The small windows have maintained privacy. Actually, a home is an *Annapurna* temple.

The Newars take a home as a temple and the main entrance (door) of the homes of *Newars* was made low in height so they would always bow before they enter their home (the temple). In addition, the carvings inside and outside the homes give inner peace and warmth to our souls. For example, a tired body is pleased when s/he looks around the fine carvings of *pāti/pauwā* (resting place), the pain vanishes instantly.

The erotic art made by *Sīkahmi* in the *Tundāl* encourages youths for healthy sexual life. There are several legends and elaborations on the erotic art in the temples. Majupurias (2009) tells one common legend of *Indra*, the lord of Thunderbolt. He says that *Indra* is occupied with sensual pleasure and so he is not inclined to destroy these stimulating and exciting animate scenes. Another common elaboration of the erotic carvings is that they were meant for encouraging procreation. During medieval times, the human population was subject to several epidemic diseases, like the plague, smallpox, etc. and there were also ravages of nature viz., earthquakes. At times, the existing communities were under threat. Infant mortality was also high. Parents also needed future security of their old age. Sex guarantees life. Barrenness causes peril and destitution. Therefore, these erotic carvings were depicted to encourage procreation and preservation of the sanctity of life. Hindu and Buddhist *Tantrism* try

to understand the erotic art that aims for *moksha*, salvation. *Kamsutra* is considered for pleasure and tantric art for *moksha*.

Another example to surface the evidence scientific knowledge that *Sīkahmi* possesses is the technique that they use to construct homes. The homes they make are earthquake-proof much more than one expects. One important component to make the homes stable is the locking system (čukūl) that *Sīkahmi* is an expert on. These minor details in the amenities of surroundings of the Newar community are the proofs of science in knowledge, technique, and skill of *Sīkahmi*. Categorically speaking, *Sīkahmi* has the following knowledge:

Table 5

Categorical Knowledge of *Sīkahmi*

Knowledge area related to:	Knowledge	The source that authenticates *Sīkahmi*'s knowledge
Security	Design of City, Square, Palaces	Darbar Square, Pottery Square, Chwok, Palace
Sexual pleasure	Erotic Carvings	The tudals, the doors, and other carvings found in palaces and temples
Salvation	Hindu, Buddhist Artistic Carvings	Temples pointed towards the sky, the various animals placed at hierarchy on various wooden structures

Science/Mathematics	The architecture of Hindu Temples, Vāstu	Ngyātāpola temples and the like

The carpenters subtly carry the knowledge of the cultural heritage in them. In each of the four domains stated above, the organization of the social life of the Newars is implied. The indigenous knowledge system reflects the cultural worldview that implies the attributes of the modern learning system. Through the practice of the people left at the margin of the formal knowledge system, we can arrive at the understanding that they also live within a perfectly shaped discourse of knowledge that never got the honor it required.

Knowledge of Wood

Trees are reverend in Nepali culture. *Peepal* and *Sami* trees are regarded as Vishnu. *Sāl* tree is favored by Vishnu, in Hindu tradition. Interestingly, Lord Buddha was born under *Sāl* tree, got enlightenment under a *peepal* tree, and died under a *sāl* tree. Different species of trees are extensively used in a religious ceremony of Hindu and Budhist Newars.

Tree has the same respect in Newar culture. Kathmandu celebrates Indrajātrā in August/September called *Yenya Punhi* (full moon day) when *Pārijāt*, the night jasmine flowers bloom in Kathmandu. It is believed, lord of heaven Indra descended upon Kathmandu for collecting the flower. At the festival, a pinewood pole was erected. Some days before the festival begins a select group of men from Kathmandu makes for a pine forest at *Yo sin guncha* not far from Bhaktapur. There, following ancient rituals and on-the-spot omens, they select a tree; offer prayer and blood sacrifice and after felling it, drag it in procession to Hanuman Dhoka, Kathmandu. But, Bhaktapur celebrates *Yama dya: Thanigu din*, the day of the erecting of the *Yama*

God. In many of Bhaktapur's twa:s, tree poles are raised. It is celebrated for an eight-day period. It is thought that helps protect the twa: people from death (Levy, 1992).

In the course of the renovation of *Ta Pukhu* (*Sidha Pokhari*), the biggest pond in Bhaktapur two and half decades ago there found a dugout boat on the bottom of the pond uncovered by mud and grass. There are some people having memoirs of boating in the Sidha Pokhari in their childhood, at least 5 decades ago. There is a hearsay that the then prime minister of Nepal Bhimsen Thapa planned to make the dugout boat after the renovation of the pond at 1883 BS (Rabi, conversation). One can guess that it might be made of *Simal (Bombax ceiba)* wood which is found nearby the Jungle of Bhaktapur as such kinds of dugout boats are generally used by *Majhi*, *Bote* community people for fairing and fishing in Nepali rivers. People could not have made a boat without the knowledge of wood.

Human civilization is said to have begun with the discovery of fire. Fire and firewood is inseparable even today in our Daily life here in Nepal as most of Nepali people live in rural area even today. In Kathmandu valley, people collect firewood for making big feasts and festivals. I remember trimming the branches of *Tisimā* (Bains in Nepali language), *Salix babylonica*, in the winter vacations of the school days, in the months of January for the firewood in the kitchen. We had planted *Tisimā* to reduce the soil erosion and land slide of our cultivating land in the bank of Hanumante River because of the long root of the plant. The leaf falls in December and saps begin in February. We see the full-blossom in March. We used to plant the stem cuttings of *Tisimā* in January too after falling down the old trees. I remember people collecting the leaves and tender shoots for the goats reared in their home. Most of the Newars had at least a goat reared for the sacrifice the Digu dyo, the lineage god in Digu Pujā that falls mostly in the month of May. One can see many *Tisimā* plants in

rivers banks of Kathmandu valley. The then people had the knowledge and experience that *Tisimā* prefers moist environments and it tolerates flooding. It is used in the cremation of dead bodies too. In Newars, there is a common saying '*Gusinyā dene denegu*' or sleeping on the bed of firewood. That means mean death. A baby is oiled keeping him/her by the side of the glaze of fire of woods. It is clear that people have the knowledge of ecological balance and economic value of the plant.

Wooden materials are extensively used in fabricating handlooms, in oil processing machines in the Newars. Musical instruments such as *Madal, Sarangi, Dhime,* or *Dholaks* are all made of a special kind of wood.

Table 6

Knowledge of Woods

Knowledge area	Knowledge	The source that authenticates *Sīkahmi*'s knowledge
Ritual for selection of pine tree	Ritual and wood are merged into one	Indra Jātrā and selection of its pole
Boat Making	Simal wood (Bombax ceiba) is light and can be used to make boat	Hundreds of years old boat in Sidha Pokhari (pond)
Fire wood	*Tisimā* (*Salix babylonica*) helps in reducing soil erosion	The river banks of of the study area are full of Tisima

The carpenter community of the Newars has embedded their knowledge of the selection of wood in the cultural, ritual institutions. Indra Jātrā needs a pine pole to observe it. The elaborate ritual helps sustain the indigenous knowledge in a

completely different form in the Newars. They know the detailed rituals to find, select, and bring the wood. It helps them to use the same knowledge in other domains of social life where such wood becomes very useful.

Wood Science

The experts in wood in *Sīkahmi* check the quality of the tree trunk before using it. They hit the log by the hammer and check a ringing sound. Otherwise, the tree trunk may be damaged in the inner part. Wood can be checked by making a hole in the wood/log by using a drilling machine or Burma. If the wood contains sap, they say *Pyāgu sin* (wet wood) and let the wood dry. *Pulāngu sin* (old timber) is better for construction works and wood crafts as they do not go imbalanced. So, people should store timber for some years on raised foundations in a cool and dry place before making a home for air-dry. They stack the timber allowing proper ventilation. This is very traditional method of wood treatment. Air-dry makes the timber easier to work on and durable. The wet wood would expel moisture and it causes shrinkage in the wood making the structures loose and weak. I have found the equilibrium of the windows and doors of my home just because of the use of wet timber while constructing my home. This means the then *Sīkahmi* may have left the wood for several months to a number of years for air-dry. The paragraph below shows the trees used by the *Sīkahmi* in their carvings, construction works, and furniture works.

Čāsi (Čāp)

A lot of wood carving is done in *Čāsi* (*Čāp*) (*Michelia champaka*). Carvings can be depicted as it is easy to work on *in*. The heat and water can rupture the wood. Kanhaiya says:

> *The wood carvings found in temples are all carved in Čāsi. Čāsi is just like Agrath. It is only affected by rain and heat. Otherwise, the wood carving*

remains just the same. It is said the temple of Duttatrya was made from a single Čāsi tree. There are trees with huge width. Even if four-five people joined hands it would be unable to reach the tree before. It does not *crack or break down easily. Dhusin* (*Agrath*) *can crack while working.*

People made *Sanju* (Sanduk) that of which is found in the Northern Jungle of Changu of Bhaktapur. Changu means Jungle of *Champ* in Nepal Bhasa. Leaves of Čāsin are included in *Pancha Pallav* (five sacred leaves including *Chanp, Aamp, Var, Peeple, and Palans*) (Rajopadhye, conversation). *Michelia* is used in different worships and rituals of Hindu people. The heartwood is strong, durable, and capable of taking a high polish. *Michelia* wood is nicely figured and is used for furniture, cabinetwork, and carvings. It does not split while nailing the thin wood. *Khui*, the tool used in drying grains is also made of *Čāsi*. It is thought to be an alternative of *Sal* which is not easily available in Kathmandu valley.

Dhusin or Sal tree

Dhusin or *Sal* tree (*Shorea robusta*), very hard and durable wood is used for load-bearing and structural components and also for carving. In *Nepal Bhasa* it's called Dhusin which means as strong as a tiger. In Nepali, there a popular saying- *Hajar warsa khada, Hajar worsa lada, hajar worsa pada*. That means the Sal tree can exists for hundreds of years in nature. I have seen people fixing Dhusin kii, pointed peg or pale in the boundary of land in study area because the wood is durable or long lasting.

It is a plant of the tropics. Sal tree is straight and the cylindrical bole can be unbranched. They are also used in making stairs, tool handle like *Hakhī, Mātha*. The local woodcarver tells that *sāl* wood is *Sudra*, the untouchable one, like in the cast

system of Nepal. It is believed that there should be at least a *čukūl* of Sal wood in a building.

The *Sālko pāt* (leaf) is used commercially for making plates. The heartwood is a dark, reddish-brown; the thin band of sapwood whitish. The wood is hard, heavy, very durable, and highly resistant to *sin ki* the termite attack. The wood is easy to saw but it has a tendency to split when nails are driven into a thin piece of the wood. It is used in window frames and floors. Even a piece of finger size *sāl* (*Shorea robusta*) can stand strong.

Susin (katus) or Phalant

Susin, the oak wood is hard-wood which is strong and durable. It is heavy and resistant with a very fine-grained wood of uniform growth. It is difficult to chisel in this type of wood. The handle of a *Ku* or *Kodalī* (spade) and knives is made of *Susin* for being easy to handle. The handle of the tools made of *Susin* is comfortable and local language it is like *Yaunse chon*. The *Susin* is the wood used in the axe. They are mostly used in doors, windows and rarely used in roof rafters. The wooden hammer called *Simuga* is also made from the *Su* wood. *Katus* plant is found in the Suryabinayek Jungle.

Newars used to make *Bajī* (beaten rice) using large wooden made tools like mortar called *Uga* and mallet to pound the rice called *Lusi* and they are made of oak wood. *Maga* (*khatamuga*), a farming tool used to break up the big, *Hijāmuga*, wooden tool used in washing purpose are made up of *su sin* too. Such tools are not used because of the changed life style and means of production of the people.

Goyen Chhāsin (Chilaune)

In the Jungle of Suryavinayak one can find flowering in the month of June, the Goyen *Chhāsin* (*Chilaune*) or *Schima wallichii*. *Goyen* means betel nut Newari. There

are two meanings of *Chhā* in Newari, one is hard and the other one is itching. The bark can cause itching in contact with human skin, so might be called *chilaune* in the Nepali language and *Chhāsin* in Nepal Bhasa. It is an evergreen tree.

Goyen chhasi which are good in strength, termite resistance are suitable for the construction of loadbearing structural elements like beams, columns, bands, and framing of openings.

Goyen Chhāsin is said to be the king of wood which is used for the construction of externally exposed parts of the building because of its strength (Silpakār, 2021). It is commonly used in Plough tools in Nepal. The wood is generally heavy, hard, quite strong, somewhat durable and relatively resistant to termites (Silpakār S., conversation). It is kept in the ridge beam of *Dhurī,* which is the support of the rooftop of the house as it is strong and durable and can be prevented from weathering effect. It is said to be the Minister of the Wood. There is a common belief that the wood should not be *Hāčan gayeke majyū* (should not be stepped on). *Goyen Chhāsin* is used in *Bétashin*, *Kashin*, and the base *Twāka* (support) of the *Bhailakha*. We use *Twākacha,* wooden chopping board that of *Goyen Chhāsin* even today. It is so because of the hard nature of the wood.

Khaibasi (Bakaino)

The wood of *Khaibasi* (*Melia azedarach*) is used in joists in traditional building construction. It is also called Nepali *Agrakh* because of its' strength. The local people believe that the more the smoke gets trapped into the wood, the stronger it becomes. It is also used in making frames of doors and windows. *Khaibasi* wood is strong enough. Kanhaiya says: *It can be as sturdy as Agrath. It should be preserved from water. Doors in this house are all made from Khaibasi wood. Bakaino wood* does not *twist and stoop.*

Khaibasi is used in making wooden bars as its texture is smooth and gives shining light. The older, the *khabasi*, the better in look,

Thasin (salla) or Pine wood

A softwood such as pine (*Salla*) is used for making *Dhalin* (joists), *Khāpā* (door leaves), *Musī* (roof rafters), *Than* (posts), *Tikī Jhyā* (lattice screens). It can be used to make windows and other stuff. It is easily degraded during weathering. *Uli kilan naimakhu* (It is not so damaged by termites). Heartwood is better. Sapwood may be damaged by woodworms. If one can keep the wood away from water by polishing the wood with waterproof material, the window frame can be protected. It is a comparatively cheaper one.

The *Lingo* that is raised in Bisket Jātrā in Bhjaktapur and Indra Jātrā in Kathmandu too is *Thasin.* Thasin is used generally because it's strong and tall without a lot of branches. *Lingo* raised in Bisket Jātrā should be 52 ku (haate) (at least 60 feet tall). It is found nearby the Jungle of Bhaktapur.

Āmli (Lapsi), hog plum

The *Āmli* tree (*Choerospondias axillaris)* is found commonly in Kathmandu valley and is the tall one. The wood is believed to be as strong as steel and used in joists as an alternative because it is easily attacked by termites. The wood is not used in carvings. But, it is used as *Tethā*, a huge hammer to nail the bamboos in making bars. It is because of the high density of the wood and so is heavy in nature. The Newars say it *Tethān tiye then wa wola* (there is heavy rain).

***Bosimā* (*Uttis*)**

It is not used in buildings or monuments because it is very soft and light in character. Nowadays it's widely used for making furniture as it is cheap to buy.

Bosimā wood is used in making photo frames too. It can be damaged by termites and moisture easily. It is not used in carving.

Halusin (Haldup)

In Nepal Bhasa *Halu* means turmeric and *Halusin* is called so because of its color. Polishing is quite effective if the wood is well dried. But there is the possibility of cracking in the wood during the drying process. Wood is used in making furniture like *Sanduk* (wooden box), cabinets, etc. Nowadays curio materials like icons of idols, wooden ties are made as the wood is very soft to make.

Sisau

Sisau is mostly used in furniture. It does not tolerate light and water. It may become twisted as it is wet. There is wild *sisau* and gardening *sisau* as well. Wild or *jangali sisau* is also used for making *Čaukos* (window frame). The windows and its frames should be colored soon. But *jangali sisau* is even better than *sānj* wood. Its finishing is pretty good. I think *jangali* wood comes second after *sāl* wood. Actually, *sisau* wood is found to be very much destroyed by pests. After a period of five months, *sisau* made things are gradually destroyed. *Sisau* is not durable. They easily get broken. They stand on only nails, not made with strong supports. These days, people use any wood available, but they are not durable.

Table 7

Sīkahmi's Knowledge of Woods

Wood	Knowledge	The source that authenticates *Sīkahmi*'s knowledge
Čāp	Resistance to heat and water	Duttatreya temple, Changu temple

Sāl	Durability	Roof of Falčā, Temples, Windows
Phalānt	Hard, strong, and durable	Handles of Knives, windows, doors
Chilāune	Termite resistant, good for load-bearing structure	Agricultural tools like a plough, rooftop
Bakaino	Strong and smooth	Objects inside and away from rain like inside parts of windows and doors
Pine	Tall, Soft, termite resistant	Biskā and Indra Jātrā Pole, Planks of the floor, door
Lapsi	Tall and smooth	Wood carvings
Uttis	Soft, smooth, light	Supporting objects
Haldup	Yellow color, light	Wooden box, cabinet
Sisau	Resistant to light and water	furniture

The carpenters use these trees to make various types of objects as illustrated in the table. Traditionally, they have obtained knowledge about their use. They require no formal training to understand the nature of the wood. The available resources are best used through the application of indigenous knowledge that helps to understand the need and supply each community in that the Newars also use what is available easily to them.

Woods Used in *Bhairav* Chariot

Bhairav is a *Tamas* face of 'lord' Shiva. Tamas is the force of destruction. On the first day of the: sequence, four days before the solar New Year's Day proper,

chariots are used for jātrā procession. There are two of them, one for *Bhairava* and another smaller one, for *Bhadrakali*. *Bhairava* chariot is about twenty-four feet in height. The chariots are completed for the jātrā. An image of *Bhairava's vahana* or vehicle, *Bétadya* (Béta God), is attached to the front of *Bhairava's* chariot.

The longest and largest wooden structure to stretch upward in the front and straight in the back of the *Bhailakha* (chariot) is called *Bétasin*. The two large and long four-sided logs to be placed on the sides of Bétasin are called *Kāsin* (literally means trapping pieces). The two pieces to be inserted in the center hole of the wheel are called *Āsī*. And the wheels are called *čakkaā*. The single piece to be placed on the top for the third tier of the chariot is called *bimancha* (literal meaning plane) as it goes on high on top. And there is *Polan* (flake of roof), *Jhyā pā* (window piece), *tonasin* (supporting slots under the edges of the roofs). *Dhalincha* (beams). *Belanpu, khamucha*, etc.

Talking with Lava Lal revealed a lot about the wood science. Different parts of the *Bhailakha* (chariot of *Bhairav*) are made of different types of wood like *Dhusin, Nasin, Goye Chhāsin, Čāsin, Thasin* on the basis of their characteristics.

Lava Lal elaborately says:

> *Nasin is used for the two Āsī (main supporting beams connecting the wheels on the ends). And, for the Bétasin (the L shaped long frame piece on the top end of which the idol of the deity Bétal is perched in the front of the chariot) gwaye Chhāsin is used. Nasin is collected from the jungle of Chitwan while Goyen Chhāsin from Suryavinayak jungle.*

Nasin is stronger than *Dhusin* (Sal wood) and heavier as well. The unique quality of this wood is that it does not snap even on bearing excessive pressure because it is made up of thick fibers. The edges of the wheels of the *Bhailakha* never

break apart but only wear out. But *agrath* would break apart into pieces at the edges. It only gets worn out at the edges.

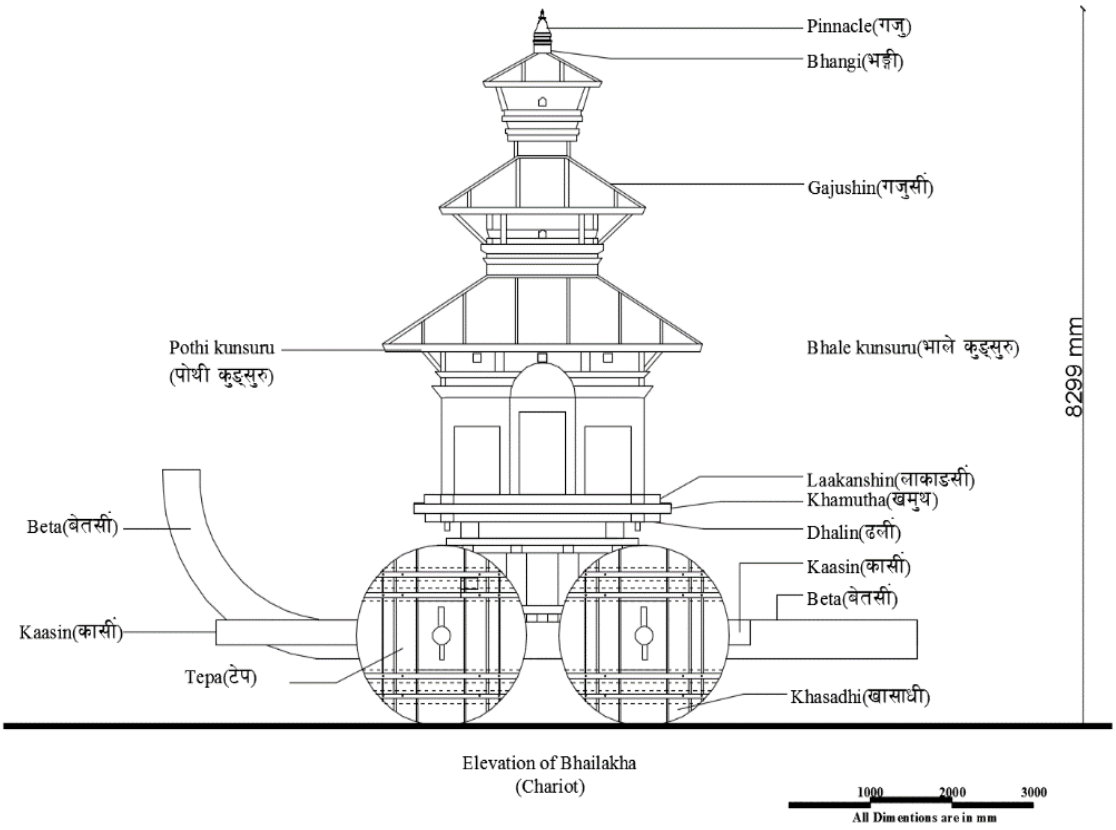
The tree of *Nasin* can also be identified by taking a closer look. There are spots on the bark which look like bites of bears. There is a belief that bears live in the blood of these trees. When one peels, a seemingly bloodlike liquid is released.

There is a custom of ritual worship before felling the tree. The felled tree has a bloodlike stain on the trunk. Lava Lal adds:

> *I have urged the Guthi officials to bring the wood one or two years in advance so that we can work with dried and compressed timber. When we make the wheel out of such fresh wood they lose their shape quite shortly. But never have they provided the wood timely. That's the reason why the wheels of the chariot* are not *so durable.*

For making *Bétasin* from *Goyen Chhāsin* there is a special technique to follow. The L shape of the *Bétasin* is made out of the root trunk. The tree trunk with the underground root part is taken. The area surrounding the tree has to be dug up wide and deep. The rood is not chopped at the bottom of the tree. About six feet deep dig is required. The longer the root part the better. The root trunk of the tree is longer and wider. With the wider circular frame of the root trunk, one can shape the curved end of the Bétasin. This type of tree gets some hair cracks from being exposed to sun and rain.

Figure 2: Elevation of Bhailakha



Source: Pramila Silpakār

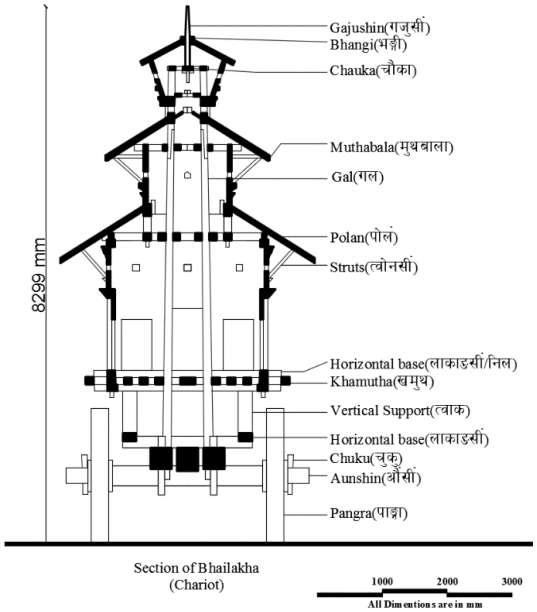
the other species. *Agrath* is also used in making the roof of the *Bhailakha*. Čāsin is also used in making some other parts of *Bhailakha* because it is good for carvings.

Earlier it was not allowed to use the iron nails on *Bhailakha*. Only wooden locks were used to make such enormous wheels. Lava Lal argues:

> *In those days, the wheels were more durable than it is now. The wheels are made with frames of iron flat and knots these days. In spite of that, the wheels lose their shape very shortly. It is because people* would not *pull the chariot very indiscriminately as they do now. Just see, how they are pulling it even over the elevated steps on the street sides, pressing against the structures on the sides. So the wheels even with the iron frames and knot bolt, the wheels get distorted on the very first day.*

The chariot would rarely be damaged during the pull in the earlier years. Not even the roofs were distorted. These days the roofs are modified into smaller sizes, however, the roofs are falling apart very soon.

Figure 3: Section of Bhailakha



Source: Redrawn by Pramila Silpakār from Gushow, 1987

Science of Bhailakha

Bhailakha is 27 feet long wooden chariot. It would be very appropriate and pragmatic to observe and learn the *Biskājātrā* of Bhaktapur when people pull the *Bhailakha* and try to understand the laws of motion discovered by Newton, the theories of force, the center of gravity of the chariot, and so on. It would be linking the age-old tradition and culture with the modern theories of science. It would be helpful to develop new theories of physics too.

Making *Bhailakha* would be impossible to make without measurements and calculations. There are many scientific theories applied to make. Otherwise, it could not have been so strong to pull hundreds of people from opposite directions like the tug of war. When I talked with Lava Lal he said:

It is heard that the wheels used to be fixed in a way they can swing more freely than they do now. These days also the wheels swing on the sides upon spinning. If they swing more freely on the sides it will cause maximum pressure to the Āsī and *beams on which the entire weight of the chariot rests. In order to minimize the pressure, we keep the gap between the center hole of the wheel and the axle end of the beams as narrow as possible. Normally it is ¾" or 1": gap*

The joints between the parts of Bhailakha are loose and flexible. The space between the wheels and *Āsī* have gaps and that helps in steering the chariot.

The makers of the *Bhailakha* have to knowledge to calculate the ratios of different constituent parts. For the pairs, both sides must be exactly equal. If one piece is altered size, the balance is lost. Particularly, keeping the balance of the roofs is very challenging. But sometimes slight imbalance emerges as they cannot find the required size of the timber pieces to exactly fit the size. Then they adjust the level in another part so that the overall balance is maintained.

Shāstra Gopal has opined:

My grand-father also used to calculate by heart even for the construction of temples. There were no exact maps but they constructed the temples such as Ganesh temple and Dhyochhen (Home for the god) of Gomari, and Chandeswori temple of Chasukhel just calculating by heart.

We do not find the makers of the chariot calculating using any modern rules of mathematics. Logic and memory help to do the task.

Kali Bahādur:

No, nothing is written. Things are calculated in mind. There were no engineers in the past. So in most of the places, the carpenters have to begin

> *the work as a head operator. Then there is much possibility of mistakes? No chances of mistakes. It depends on the place. Our calculation gets improvised as we work the spot. It's not like the planning of engineers who observe first then plan.*

Bhilakha might not be made with the experience of a year. I took hundreds of years to develop in today's form. Scientific innovation is a continuous process.

***Sīkahmi*'s Skill in Botta (Carvings)**

A great variety of wooden windows at least twenty different designs are found including the window of a dancing peacock, floating lotus, rising son and the like (there is a list of types of windows in the index). Oreal windows like *Sā Jhyā* and *Biman Jhyā* that sticks out from the main buildings have a lot of beautiful carvings of different shapes. There are over 50 or even 70 different terminologies to describe the designs, meticulously carved to depict deities and demons, animals and birds, lizards and serpents, bees and butterflies, flowers, even human skulls, and skeletons. *Lathyāfo, Palefo, Lumacha, Bhujipa, Sikhabuttā, Gān*, etc. are some examples of the carvings done on the wooden structures (all the details are given in index 2) create *botta. Sīkahmi* have been using the following tools.

Tools Used

There are many kinds of tools in terms of shape and size in woodworks and woodcarving. Different instruments such as *Basilā, barmā, kati, sinmuga, Batān, Hāčā, jhari, dapu, ramo*, etc. are used to working with wood. Usually, *Sīkahmi* do not go to the jungle for fetching wood as there is Pāmi, a cast group.

It was used to mark a straight line before cleaving or sawing wood. *Hakhī* is an instrument to mark lines on wood. There is a thread in the instrument that is

colored with a mixture of *Hākah* (soot) with *Tučikan* (mustard oil). Nowadays it is limited to Pujā on the occasion of *Dasain* and *Biswokarmā*. The Kanhaiya says:

> *Actually, the Hakhī itself is Biswokarmā (God of skills). What we must worship is this very Hakhī. Nowadays, people do not know this. Hakhī is Biswokarmā.*

People do not use *Hakhī* nowadays. But it is used even today to construct a temple. Srasta Gopal says that constructing a temple is not possible without the *Hakhī*. Srasta Gopal Shrestha says:

> *It is necessary at present too. We need to work with long logs in the sites. They are generally curved, not straight. We need to make them correct with the use of this tool.*

The traditional measuring system is based on *Kuchhī* (*haat*), *Mhu Kuchhī, Pākhan (bittā) and Angul* systems in which human hands and fingers are used to measure. Kuchhī means a measure from elbow to the tip of the middle finger that equals to almost 1'-6".

Čeng kathī was used before the modern measuring tapes. *Čeng kathī* is the thin metal measuring unit that was traditionally used measuring exactly 1cmx46cmx1cm. The *dapu* is the foldable Chinese tape that is 2 ft. long in which each foldable scale is 12 inches (Silpakār, 2021).

Even today the woodworkers use *Katī* (hand saw) to cut small and narrow pieces of wood. In the past *Phali Katī* cut big timber that has a blade with the size of 3mm which used to be available in lengths of 36 inches to 6 feet with 5 teeth per inch.

Pān (axe) is used for cutting trees. *Basilā* (modern adze) is used to cut the timber for acquiring the required shape and size. The traditional *khulu* (adze) has a curved handle of animal *Ngakha* (horn) and is used for squaring timbers.

Sinmaga (wooden hammer) is used to hit the chisels. It is also used in assembling and disassembling joints. It is made generally of Susin. *Nyāmaga* (iron hammer) is used for hitting nails. *Jambo* is the tool used for pulling out the nails.

Āikar and *barmā* were used to make holes. They are displaced by modern drilling machines nowadays.

Hāčā (chisel) has cylindrical wooden handle with metal ring and used to bore a hole, dressing, shaping wood. There is chisel of varying sizes. *Lacha* is a chisel without handle and is used in wood carving. Lacha is curved tools. Different sizes of *lacha* are found varying the width and shapes. On the basis of shape and works, there are mainly three types of lacha used in woodcarving. But all of them can be different in size smaller to bigger.

Chisel with straight edge is called *Mātha*, the chisel with a V-shaped edge is *Swasili hā*, and that with a circular shape is called *Čapanchā.*

Randā or *Mātha*, a wood planer is a tool that reduces the thickness levels of all kinds of wood surfaces. There are different types of *Randā* for smoothing and molding in the plain surface to gain concave, convex surface in the wood. A concave plane (*gol kyagu Mātha*) and convex plane (*nago kyagu Mātha*) are the examples.

Haku lohan

Chisels and plane blades are sharpened using natural stones that are found in black texture so it's called *Hāku Lohan* in Nepal Bhasa. *Hāku Lohan* is hard and said to be *Nya naimha* (iron eating). Stone except *Haku lahan* may go off easily. The sharpening stone should be free from sand. They are brought from *Tabya khusi*, the river that flows from Chittapol of Bhaktapur and forms Hanumante River. The stone is also brought from Bhimfedi, Makwanpur. The woodworkers put some water on the stone before sharpening the chisels.

San and čukū, the Joinery system

Why the tallest Pagoda temple *Ngyātāpola* did not fall down in the massive earthquakes in the past centuries? Why does not the Bhairav chariot does not fall apart after pulling from two sides like a tug of war by hundreds of people? What is the secret thing that makes the traditional houses earthquake-proof? It is no other than the joinery system and *čukū* or wooden bolts and pegs.

No nails and glue were used in joints in the past. The joinery system makes the structure stable. It reduces the chance of the separation of the wood pieces. Different types of joinery systems are applied in different parts of a building.

More often the woodworkers do not get timber of enough length and they needed to join the wood pieces like that they keep the roof of a building. Sometimes they need to remove the damaged part of a piece of wood and join with the appropriate piece. Some joinery systems are *Khichagathi San, Chakhun San, Geramo San, Kisi Kwosan, Kunsan, Ma san*.

Wooden čukū (pegs) are used in the wooden beams to connect with the wall and other structures and they play an important role to prevent future separation.

Rabi, an expert on traditional architecture says:

> *It is known as interconnection. It is also called interlock system. So, it is saved our house from the earthquake. Two and half storied house would be resisted by 10 r. scale too. It would not decline because of interlock system.*

Seasoning wood

Pyāgu sin (Fresh timber) is generally not used by the local people for making the windows and doors because it may become a tripod later. So they say the older the timber the better. Seasoning is done for making wooden structures in a traditional way.

In the past, people used to keep wood in a cool place on the ground floor. Otherwise light and water it may damage the timber. *Sīkahmi* pile up the wood for seasoning wood. The workers feel amused when they do not have to do a lot of effort in straight and fine timber. Twisted timber may have a bigger percent of waste while working. *Kali Bahādur* says:

> *Our forefathers would say that wood which is hunted by pests is strong. When we say it is destroyed by pests, they ask us to saw it immediately. The white layer of bark on sāl wood is only destroyed. But the inner red part* is not *damaged. The pests eat up the white layer* called *panās, which looks like muscle flesh.*

Twānasi (Tundāl) or Struts

Struts are one of the indigenous knowledge found in Nepali architecture. Struts are to support the load from roof overhangs. They are simple and plain in the houses of common people in comparison to the struts found in the temples, monasteries, and other public buildings. *Kunsuru* is the struts found in the corner of a temple or other buildings and is generally long and heavy with the decoration of animal features.

Rabi adds: *Europeans have learned it but they have not used it in their country yet. However one of the engineers has constructed a bridge, putting wood carving at the side of it. They just used the theory of our technology*.

Pan Ki

There is no iron nails used in making the *Lukha Khāpā* (Door flaps) but the bamboo nails are called *Pan ki*. *Pan ki* is like the pegs of the Khāpā to join the pieces of wood. Dried Bamboo with the *Kholā* (outer skin) in rectangular shape is cut. The bamboo piece like a nail can hold the pieces tight. Bamboo neither shrinks further in

size nor is it destroyed by any insect. It is preferred to cut the thick basal part of the bamboo plant to make *Pan ki*.

Table 8

*Sīkahmi*s' Knowledge Embedded in Their Skills

Knowledge area	Knowledge	The source that authenticates *Sīkahmi*'s knowledge
Mathematical knowledge	Setting up the pole in Jātrā, Chariot	Bisket Jātrā, Indra Jātrā,
Botanical knowledge	Selection of Pine Pole for Jātrā, Selection of Particular wood for the mast of the chariot, the roof of the temple, window	Bisket Jātrā, Indra Jātrā, Dattātraya, Ngyātāpola
Architectural knowledge	Design of Falčā, Palace, Temple	Falčā, 55-window palace, Ngyātāpola, Dattātraya temple

The Newars have culturally kept the knowledge of trees and wood alive with them. The cultural heritage and the ways of living are evident to them. The mathematical, botanical, and architectural knowledge of the wood is embedded with the heritage, cultural practices like *jātrās*, and the constructions of the whole town. The major sites like the temples and the palaces are erected with the strongest of the wood. It implies the political power of the deities or the rulers as well. Even today, the same wood is used to maintain or repair any damage caused in these sites. The nature of ritual does not permit changes. The chariot cannot entertain any other sort of wood

to use in its construction. In this sense, the traditional body of knowledge helps keep the practice alive in the carpenters.

Specialties of My Old House: A Model of Nepali Architecture

The traditional house in the Kathmandu Valley is generally four-story units. They are normally rectangular in plan with parallel, thick load-bearing walls. Doors, windows, posts, and lintels are made of timber and built-in into brick masonry walls. These timbers are covered with complex carvings that cover magnificence. A small wooden staircase is used to go to the upper storied. The houses are rectangular shaped, made of exposed brick with wooden carvings and tiled roofs.

The roof is pitched with a minimum slope of 35 degrees and roofed with *polan aapa* (*jhingati* in Nepali) (local ceramic tile) because of Nepal's heavy monsoon rainfall. Burnt bricks, sun-dried bricks (in the inner side of the upper walls), timber, *jhingati*, stone, mud mortar, and plasters are the building materials and Timber is the main building material among all. The rooms of the houses are ever low in elevation and small in dimension. My ancestry house had rooms of about six feet high and 7 feet and 6 feet in length and breadth. It has practical causes. The valley is very cold in winter days and it takes much effort to keep rooms warm. Small rooms with low ceilings are warmer in such climates. My grandfather used to smoke and he used to fire on a pot in the room and get warm that we call *Maka pānegu*. That makes our room cozy to sleep on the chilly winter nights. People did not have furniture items like people do have. No, chair, coffee-table or table, sofa and they preferred to sit on *sukul* (straw mat). They dined sitting on the floor. So, they did not require big dining tables and so on. According to Uttam Lochan,

> *The skill of woodcraft artists to create the artistic doors and windows, torans, Tundāls, and traditional houses of common people with artistic wooden*

pattern according to the geographical condition, environmental, and the social condition of this place, is peculiarly specific and original.

When I was a child of 6 or 7 years, we had some buffalos kept in *Chhyelī* (ground floor), and later it was used as a store of potato and other agro-products like wheat and rice straw that were used in cooking meals. The *Chhyelī* is also used to make holes to collect organic waste is called *Nau ga*. All this is because *Chhyelī* is usually moist and cold, and symbolically associated with outsiders, dirt, impurity, and death. There are no windows kept, not enough light, and not enough air circulation. The death rituals are performed on the *Chhyelī* and the so-called untouchables were allowed to enter up to the *Chhyelī*. *Chhyelī* is not used for human occupancy.

Like in most of my locality, the first floor of my old house, the *Mattan* consisted of bedrooms and it was here that the guests would normally be seated. There was a *Dhukū kotha* (a store of grains and pulses) on this floor that was under the control of my grandmother. There was only *Tikī jhyā* (lettice) on the roadside of my house. That might be for safety reason. There was a living room is located on the second floor, we call it *Čotā*. The windows on this level were larger. I find windows on this floor some of my neighbors open outward, being covered with shutters. The floor is generally used as a working place for knitting, weaving, and other purposes. Social gatherings occur on this floor as it is open, well ventilated, and proved with enough light. The *Baiga* (attic floor) in my old house had kitchen and dining space, a roof terrace with a *dhon* (a water outlet pipe made of clay). The terrace had tiles. Making the kitchen area on the top floor is meant for maintaining hygiene. Shoes are not allowed on this floor. We could maintain our privacy in feeding too. The house of a Newar proves not just a place to have a shelter but it fulfills the need and accommodates the Daily activities, and maintains the cultural values of the people.

Once, Kathmandu Valley was full of green fields. A few scant forest patches were seen around the core area of Bhaktapur and they were culturally important. The bank of river and brooks were full of trees. Sleshmantak, Pashupati, Guheswori, Nilbarahi are some of the forests seen even today. The hills around the valley looked green because of trees. Number of trees has been cut down and the agricultural land has been reduced immensely because of the fast urbanization of the valley. Thousands of trees have been cut down in the name of road improvement too.

Today, making houses with brick, soil and wood can be like a "fairy tale". The resources to make houses and buildings are no more available and are very expensive. The high density of the population of Kathmandu valley cannot meet the demand of forest rehouses if tried like that in the past.

The then means of livelihood of the valley was agriculture and hence the culture was developed accordingly. People learned the nature of wood and tried to use them. Different types of wood were used in making houses and public buildings. They hold the knowledge that wood adds the strength to the houses. They also added the carvings to beautify the structure. In course of this process, they have made tools for different purposes with different types of wood. It made the life of the people easier.

Gradually, the art and crafts developed in Kathmandu Valley became the symbol of prosperity that emerged out of the then rich natural environment.

Chapter Summary

The *Sīkahmi* popularized and raised the value towards the skilled people and craftsmen. Silpakār (*Sīkahmi*) has been deployed for making structures and protecting the city. *Kami nāyo* (leader), head of the *Sīkahmi*, and *Awanāyo*, head of the mason are included in the special ceremony in laying foundation even today. *Sīkahmi* were

highly considered because they possessed skills and knowledge related to wood and wood carvings.

San Jhyā, Tikī Jhyā, and other wooden artistic forms do show the economic status of a home-dweller. This competition was found not only between the monarchs but also amongst the craftsmen in the three cities. Such a competitive mindset resulted to make the historical temples and monuments of Nepal.

The ancestors of the *Sīkahmi* have put the proper species of wood in the right place of the building. *Dhusin* and *Gwen Chhāsin* are used for the construction of externally exposed parts of the building because of their strength and resistance. The most commonly used species for carving purposes are *Dhusin* and *Čāsin*.

The *Sīkahmi* have the idea of characteristics of *Susin, Goye Čāsin, Khaibasi, Thasin, Amli, Bosimā, Halusin, Sisau*. Different parts of the *Bhailakha* (chariot of Bhairav) are made of different types of wood like *Dhusin, Nasin, Goye Chhāsin, Čāsin, Thāsi* and they are used on the basis of their characteristics. There are over 50 or even 70 different designs, meticulously carved to depict deities and demons, animals and birds, lizards and serpents, bees and butterflies, flowers, even human skulls, and skeletons. Different instruments such *as Basilā , barmā, karunti,* different types hammers, *Batān, Hāčā, jhari*, measuring tape, *rāmo,* etc. are used working with wood. The joinery system and *čukū* or wooden bolts and pegs of the traditional buildings are the crux of their strength. The traditional houses are habitat on par with the nature and geography of the place.

The Newar carpenters have maintained the living nature of their practice through a variety of cultural and social institutions. Society does not recognize their abilities formally. The canon of knowledge excludes them. They have their own science, social understanding, and living practice of identifying the wood, its

importance, and its use. For instance, the pine trees are tall, soft, and resistant to termites. They are used in *Indra Jātrā* and *Bisket Jātrā* as a pole. Also, the planks are used to make floors and other objects that do not come in direct contact with light and rain. On the other hand, *sāl* tree has special significance in that it is used to make the mast of the chariot or the roof. The durable nature of the tree is completely embedded in their practices. Likewise, a variety of local trees like *lapsi*, *utis* or *chilaune* have found their place in the order of the use in a particular type of Daily life in such carpentry. In this sense, the local knowledge system possesses high significance in that the Daily problems of life are resolved by using local resources and local ways.

CHAPTER V

PRACTICES OF *SĪKAHMI* IN KNOWLEDGE TRANSFER

In the preceding chapter, I have discussed the knowledge of the *Sīkahmi* in terms of woodcarvings and construction techniques. In this chapter, I am answering my second research question that expects their way of transferring knowledge to the trainees/learners.

As I found, the indigenous knowledge of *Sīkahmi* is generally transferred to the new generation through verbal orientation and demonstration. These are the common ways to transfer the knowledge that is created by local people and shared within particular communities (Sillitoe, 1998, as cited in McIlwaine, 2006, p. 17). Knowledge was also transferred through informal meetings and discussions, interactions, and observation. The *Sīkahmi*s have some institutions like *Ag(n) chhen* and family, and cultural practices like *Kaetā Pujā*, taking to help them transferring knowledge and skills. They have *Thyā safū*, the traditional books for studying *Sīkahmi*. In addition to its deity *Viswokarma* and the tools are believed as *Guru* for them. Uttam Lochan says:

> *There might have been some vocational books which helped to educate about different crafts and skills. Both, in Lichchhāvi and Malla period, there were Pathsalas for providing skill training to the caste peoples. The trades include Dhātu Kalā (metal craft), Prastar Kalā (stonecraft), Kāstha Kalā (woodcraft), and so on.*

Both the practice and the quote above show that there are different approaches to transfer *Sīkahmi*'s knowledge. They are as follows:

Viswokarma as 'Guru'

Viswokarma is believed to the craftsman deity and is well-known as the surpassing carpenter. He is said to be a 'divine' engineer, architect, artist, and craftsman. The quote i.e. “Viswokarma, the Lord of the arts, master of a thousand handicrafts, carpenter of the gods and builder of their palaces divine, the fashioner of every jewel, first of craftsmen, by whose art men live, and whom, a great and deathless god, they continually worship.” (*Mahabharata* as mentioned by Nandagopal) is a testimony of it. Bernier (1979, p. 29) explains *Vishwokarma* like this, "A guide for craftsmen employed in building, the *Nanasara* is one of thiry-two *Silpasastras* that were first revealed by *Visvakarma*, Lord of the Arts and Architect of the Gods. He has always been the patron deity of craftsmen in Nepal and the façade of his temple in Patan is completely covered over with the metal repousesé for which his charges are famous".

Mahanavami, the ninth day of Dashain festival, is also considered the day of *Viswokarma*. On the day, special worship of tools, weapons, and vehicles is done. In the worship, *Sīkahmi*s sacrifice chickens, ducks, goats, and they put some blood on the farming tools like *Ku* (spade), *Taaku*, etc. But those who do not want to sacrifice fowls and animals; offer fruits like coconut and the egg of a duck to the vehicles like the motorcycle. Thus, the *Sīkahmi* worship *Viswokarma* as a *Guru* beleaving that they get a blessing for learning carpentry-related knowledge and skills.

Āga (*n*) Chhen as Skill and Knowledge Sharing Center

Āga (*n*) Dyo is a lineage (*Phukī*) deity within the walls inside the town. Whereas another lineage deity the *Digu Dyo* is found in an open sanctuary (pith) outside the town. The high castes (Brahmans, Chathariya, Panchthariya) and four castes of artisans, the Čitrakārs (painters), *Avas* (the brick-makers and masons, the

Sīkahmi and Loha kahmī (Shilākārs) (stone carvers) have temples within the walls, *āga* (*n*) chhe.

The *Sīkahmis* worship *āga* (*n*) or *āgama* as the next *Guru* for them. They say it is the tutor and *lajga chu laka byumha dyo* (God which provides a profession). *Āgam Dyo* is believed to be the director of their life. *Āgama*, (Sanskrit: "tradition" or "received knowledge") post-Vedic scripture conveying ritual knowledge and is considered to have been revealed by a personal divinity. Shaivite scriptures, dating probably to the 8th century, are particularly so designated, in contrast to the Vaishnava Samhitas and the *Shakta Tantras* (Britannica, 2021). The *Āgans* are often in the form of a dialogue between Shiva and his wife Parvati. In Newari the word *āgama* is not used as in Sanskrit to designate the tradition or the texts of a religious tradition but the edifice where worships offered to a deity (*āga-dyo*) in a traditional manner (Vergati, 2002, p.41). In the *āga (n)* chhe, there occurs *nitya Pujā* (Daily worship) and it is done by the male member of the lineage or by a Karmacharya, an officiant employed by the lineage. I met with a Karmacharya who was assigned to worship in the *āga (n) chhe* of Silpakārs at Tekhacho. I do not have the experience of Pujā in *āga (n)* chhe because we do not have such tradition and do not practice the ritual of initiation, the *diksyā*. I could not participate in the Pujā done because no other lineage people are allowed to enter the place where God is kept.

Rasik Raj clarifies:

Āga (n) chhen (the house of tutelary God*) is the place where the Sīkahmi are made aware of their duties and responsibilities.* The objective of the Pujā performance in the Āga (n) chhen is to impart the knowledge of the art of living *so that they can be responsible for their traditions and customs.*

The special celebration takes place in *Āga (n)* Chhen during different festivals like *Mohani, Biskā,* and *Swonti* and on the occasions like birthday, marriage, and *Bratabanda* celebration of any clan member. On the *Maha Nawami* of *Mohani*, people sacrifice rooster in *āgme* and offer Pujā and worship the *Āga (n) dyo*. On the day of Dashami, the *Jyāba* (tools) is kept in the *Āga (n) Chhen* from each of the homes of the clan. They are worshiped there and handed over to respective male family members sequentially by the Nāyo (Head of the clan) in descending order along with the Nalā swān (Jamara) as a sign of blessing. This is also called *Pāyo Nhyākegu*. They eat *Samaye Bajī* in the *Āgme*. The tools are returned to the respective place in the *Āga (n)* house till *Chaturdasi* when there is a celebration of *Kha (n) chi piyegu* and the *Jyāba* are taken to their home. This process signifies that *Sīkahmi* has now permission to work using the tools.

Such practices of worshiping tools of their own by different caste groups are common in Hindu Newar people. I have also the experience of worshiping the farming tools like *ku* (spade), *tāku, kukiča*, sickle, etc. on the day of Nawami in the *Dhukiti* or *Nalaswan* room. There my family used to sacrifice a rooster on Nawami to the tools, too. The ritual signifies the honor given to the tools by the people who use them.

Bir Jagat Acharya, a Nāyo (priest) of the Silpakār says while handing over *Jyāba La Lhayegu*, they wish for good health and prosperity. The prayer goes like this, *Changu Nhyabalen Klayan Dirga Jiwan Jwema (*May you be well and long life). The Nāyo adds the *mantra* (hymn) for the good wishes from the god:

रोगा शनिश्चरण क्षमा शनिश्चरम् देव यादेव तस्वी, श्री पुतामन सर्वदेव विष्णु विश्वरूपतस्वी तम ज्ञानम् नमस्ते सर्वदा कल्याण दीर्घमा स्तुत . *(Roga shanischaran kshama shanishcharam dev*

yadevtasvi, shree putaman sarvadev Vishnu vishwaroop tasvi gyanam namaste sarvada kalian dirgha mastuta)

Nāyo, the leader of the clan, also plays an important role in *Āgme*. He offers blessings to all the people of the clan. Exchanges of greetings take place in such celebrations. Besides this, tools are taken as the tangible *God* that helps them work and earn. Dhyan Prasad clarifies: *Sīkahmi caste groups worship not* God *but their tools as the* God *Vishwokarma. They worship the tools on the ninth day of Dashain (the biggest festival of Nepal) and keep it untouched for almost a week.*

Each home is the center of religious life. At home, I found a *Sīkahmi* starting their day by praying Vishwakarma for better works. They put their tools on their own head to pray. They do the same task to end their day. They always pass their tools on their hands when they need to pass to their mates. Keeping the tools in good condition is a must for quality works, they believe.

Bhupati Raj adds:

> *It is said that they most respectfully appreciate the so-called black string still lies there. They lay the instruments, and worship the saw very much. The black string is supposed to hammer while carving. So it became a guru. They respect it much more than anything other. They keep it inside.*

Āga (n) house can be defined as the traditional learning center where the skilled and elderly *Sīkahmi* gathers and share their experiences with the newcomers and the fellows. There can be a discussion on the problems faced by the new craftsmen. In this process, they get introduced teach other family members of their own clan. This makes it easy to have good communication with other people of the same profession. The discussion method of learning is the most effective way to learn. They also learn socialization with the new adolescent members in *Āga (n)* house.

Female members are not allowed to worship in the *Āga (n)* house. This practice shows that patriarchy is practiced in the clan too. Only the male members of the family go for the woodworks so there is no role to play in the tutorial home.

In the words of Uttam Lochan:

> *Along with it, there was classical (philosophical) knowledge as well as and culture of imparting it. After being an expert on some subject matter, they are known to be graduated. And they can work independently in their respective field. The existing tradition of imparting technical knowledge at Silpakār's house can be taken as proof of this formal method of transferring knowledge.*

Uttam's saying shows that *Sīkahmi* has different celebrations and cultural activities in the name of God. They believe that skill and knowledge are imparted by God. This belief suggests that there is the existence of God. However new generation doubts any kind of supernatural power that helps them in Daily work. Srasta Gopal states:

> *To construct a temple, first, we need to worship* God*. We receive Tika and flowers as blessings. Working together means getting the opportunity to work with* God*. What it meant was getting a chance to learn skills and turning upside down a log after completing a project, it looks beautiful, and meaning* God *himself has been finishing the work. If it was not working with* God*, they said, they would not learn the skills. Old people share like that. Otherwise, how it co*uld be possible to erect such *grand* post*s and fit them, they say. As the old grandparents themselves said so, I believed. It is said. I* do not *know whether it is right.*

Srasta Gopal's saying indicates that he learned skills through God. They handed down their skills through rituals and informal sharing. But, *Kali Bahādur* has

a different opinion. He worships God as a tradition and ritual. The culture of Āga (n) helped to keep up the cohesion among the caste group people. He clarifies:

> *God is nothing but a belief. There is no god as such. My forefathers and seniors become happy* when I *participate in cultural ceremonies. We are happy to stay with the elders and learn something from them. It is like a blind belief that everything is provided by God. Yes, we learn from our father and grandfather. We do have so many artifacts in and around our residence to learn. I* take *Āga (n) chhen* as a school because *there gather so many artists of our clan in some special occasion. We get introduced there.*

Āga (n) chhen is a house to carry celebration of the *Sīkahmi*. They do worship the tools used by them. The celebration means take care of the machines developed by their ancestors. One completes a task with proper handling of the tools and *Sīkahmi* worship the tools as their God.

Question answer is the next approach to pass knowledge and skills to the new generations. Whenever one finds any problem in making wooden structures, one goes to his senior get solved it. One can ask any kind of question when the learned person is in his own workshop. One seeks permission from the senior or the Nāyo (leader) to start a task and such bonding tradition helps to make coordination, cooperation, and ultimately learning.

Teaching Boy Child to be *Sīkahmi* during *Kaetā Pujā* (*Upnayan*)

In Newars, there is a celebration of *Kaetā Pujā* that initiates a boy into his caste group. Mostly it is completed no later than the age of 9 of the boy. One has to follow the family rules and regulations. Levy (1992) says that *Kaetā Pujā* ceremony is associated with the idea of a radical change of status for a boy. After the ceremony, a boy becomes morally responsible for following the family rules and regulations. I

remember the day when I was given the *Kaetā* (Loincloth), a piece of cloth that covers the genital parts, by the family *Ā̆čajū* (priest). After the ceremony I was suggested to wake up early and wash my face with clean water, not to go to the *Bhutū* (kitchen area) without purifying myself. It symbolizes the maturity of a boy who is considered responsible for himself on his deeds. This is psychological preparation for the boy to become a future *Sīkahmi*. In higher caste Newar, the ceremony is a little bit complex and given a *jona* or sacred thread. During the *Kaetā Pujā* boys are told something about their lineage god and are given some mantras to worship (Levy, 1992).

Rasik Raj remembers his Kaetā Pujā like this:

I could not *go outside for three months and* could not *touch anyone. I had to take a meal once a day. I took dinner (rice and plain bread) in the morning and fruits during the day. I had to wake up in time, take bath and learn the lessons. It was a really hard time. After three months, we were released and there was a grand feast that day. That's how we were taught* to be *Sīkahmi.*

Where the novices are given training about art and skill to make them an expert. If they were not *educated, they* do not *be able to run their profession.*

Rasik Raj statement above indicates the things to transfer the skills and knowledge among the *Sīkahmi*s and the youths, who want to be *Sīkahmi* in the future.

(*Dikhā*) or *Diksya* as Way to Transfer Knowledge and Skills

Dikhā is derived from *Diksā* in Sanskrit. *Diksā* is an initiation to the secret things of Tantrism and the ritual is only for the boys after the ceremony of *bartabanda*. One who has *Dikhaā* gets the opportunity to perform *mikhā kānkegū*

ceremony (opening of the eyes of the image of God). Liveliness in any type of craft image is done by the person with *Didkhā*. So, people with have honor in society.

Srasta Gopal said:

> *It is said that while making the open eyes on the idol, we need to stay towards its head side. This curve (of the eyes) is to be made staying towards its head side. It is said that that should not be done by staying just in front of the idol*. *Pujā* is necessary for *offering an apology if there is any mistake during making the open eyes.*

Srasta Gopal's saying indicates that there is a ritual process of graduation in the Newars. *Dikhā* is one of them. It is a type of education given by the priest in a secret room to perform various ritual activities. It is conducted by the family's Brahman guru, the same Brahman who is also the family's *purohit*, or family priest. In the course of each initiate, certain information is passed on by the guru to the learner (*sikshyā* in Sanskrit) (Levy, 1992). *Tanra-Mantra* (hymn) knowledge is given in the ceremony of *Dikhā*. One is told the name of the god and its proper mantra. People with can see the Āga (n) God wrapped and hidden in cloths. The same mantra is repeated for some given number of times. The initiate (student) is also told something about meditation practices. One should, Rasik Raj elaborated:

> *We need to understand that vedas are deeply rooted in tantras and tantras are embedded in vedas. For instance, out of the four sacred canonical texts of Hindus, in Rigveda, there are historical facts and mantras; in Yajurveda, there are karmakandas; Sam Veda is about Musīc and Atharvaveda is about art and skills*.

Male members of Silpakār community had to take from the Karmacharya Priest associated with Taleju of Bhaktapur. Only the people with could go the Āgame

to perform *Pujā* and other rituals. Nowadays it is not in practice. The *diksā* ritual of initiation is not obligatory: more and more young boys refuse to be initiated because those who have been initiated must respect the very strict dietary prohibitions and worship the deity every day (Vergati, 2002, p.44). Certain harsh and holy courses are required to undergo to get the opportunity to be designated with so *Sīkahmi* of today isnot ready to take. One has time-consuming obligations in the ceremonies for the worship of the *Āga (n)* God after taking. I could not find anybody with in the caste group of Silpakār. The Silpakār has to call a person from Shilākār caste group to perform ritual works and *mikhā kānkegū* ceremony while making the *Bhailakha* today.

Kanhaiya (82) further said:

> *Dikhā used to be performed before. But since it is difficult to perform it has been excluded now. There* is not *enough time. There is not even time to wash face. The work process is too long. It was compulsory before. Is it practical enough to perform the ritual now? The Sīkahmi were given a higher rank than the Jusi's if they are acquainted with Tantrik knowledge. It is said Sīkahmi*s *have to control a lot in eating habit once you are influenced with godly power. They cannot eat chicken and cannot drink alcoholic beverages.*

Srasta and Kanhaiya sayings give a clue that some restrictions on food habits should be followed. The people with have to get up early in the morning and perform some rituals of pray. Every people are busy from morning to evening nowadays. So, they do not have enough time to perform the rituals demanded. The Silpakār community people have adopted different professions other than wood carvings too.

During the giving ceremony, one is told not to tell the secret of the family to the others. Such activities helped to regulate the family business or professions within

the family lineage. This means the Silpakārs gave the ancestral ways to learn skills partly because it turned out to be difficult for them to go through the traditional rituals. Secondly, they changed the traditional occupation. Thirdly, those who are *Sīkahmi* now can get training in the training centers as well.

Thyā-safū **(Learning Books) as a way to Transfer Knowledge and Skills**

Thyā-safū (Folded book) consists of the sketches and designs of the monuments and woodcarvings but it was not available to many people. *Thyā-safūs* are *Vāstu-Shāstra* which simply means ancient Sanskrit manuals of architecture for building residential buildings, temples, palaces, *maths*, towns, and cities (Silpakār, 2021).

I went to Kabi Prasad who has the experience of making *Bhailakha* knowing that he has preserved a *Thyā-safū*. He showed me the ancient and written book of architecture that has been preserved by his ancestor for many generations without any dillydally. There were sketches of different deities and their *Bāhān* (vehicles) like a lion, peacock, mouse, owl, etc., and tools they use like an axe, *Khadga* (knife), *Sankha* (conch).

Figure 4: Pictures of thy Safū




(Photo Source: Pramila Silpakār)

In relation to Thyā-safũ Uttam Lochan says:

> *There were traditional books on technical education. They were books on every subject matter, the only problem was they cannot be printed in large quantities during that time. Rarely do they rewrite to make more copies. If you go to Sīkahmis', you can definitely find the handwritten books kept safe by their ancestors. Such book is called 'Thyā Saphu'. Nowadays, we call it syllabus. Thyā saphu was the syllabus of that time. Since there was no Press during that time, such books were in handwritten form.*

For making Five-storied temple, Sīkahmi first sketched different images. Based on those images, they built the temple. In woodcraft, too first images and outlines of Toran are made. They have their own technical aspects. And the book with the collection of such images and outlines proved to be a good syllabus for learning ancient technical knowledge of woodcraft.

Leading *Sīkahmi* of the past can be called "illiterate artists or designers" but they were the wonderful professionals with quality of their work. Here are some of the designs of so-called illiterate people:

Figure 5: Some Arts carved by Artists

1. Photo : Fifty-five window Palace Mandap

2. Photo: Chyasin

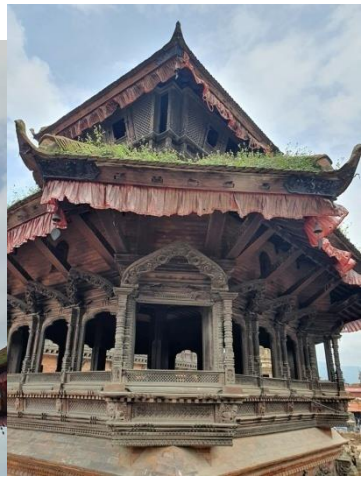


Photo 3 : Kun Jhyā of Bholachhen

Photo source: Bipul Kisi

Some of them must have acquired a working knowledge of Sanskrit or Nepal *Lipī* (script) before beginning to wield the chisel and hammer.

Sīkahmi involved in making buildings, temples or any monasteries do know about Vāstu Shāstra though they might not have read the science of architecture (Vāstu Shastra) formally. All the woodworkers followed certain design concepts either in constructing buildings or carving the statues (Silpakār, 2021).

If one has to build a house, he/she goes to Joshi, a scholar of *Vāstu Shāstra* to consult whether the place is suitable or not, which direction the house should face, etc. The Joshi advises them according to the science of architecture. The practice is very common even today in my study area.

Parents as the First Teacher

In the early history of Nepal, there were no schools or educational institutions as such were evolved to impart knowledge and skills to the new generation. Though there were Gurukul to teach the students to read and write the working-class people did not have that kind of opportunity. There was a compulsion to run the family profession whether one likes or not. Skill and knowledge related to production or industry predominantly belonged to non-Brahman classes. Brahman and Chhetri are defined to be traditionally classified as priestly or warriors. Various rituals are performed under the guidance of a Brahman even today. Silpakārs lie in Baishya vernāshram. Vernāshram is a division of the people based on their aptitude which later on changed into caste business. Silpakārs' caste business is to make buildings and monuments.

Uttam Lochan reiterated the description in the following words:

> *According to the Hindu Vernashram system, there were four groups of people – Brahamin, Chhetri, Baishya and Sudra. And Baishya means such a group*

> *who does farming and trade along with professional craftwork. So we can place Sīkahmis in baishya group if we consider the then social situation as well.*

Professions were usually hereditary in ancient Nepal and woodcraft was limited to the Silpakārs caste group in the past. So in the majority of cases, the boy was instructed by his father, uncle, or guardian, who as himself an experienced carpenter. From his very childhood, the boy lived and breathed the atmosphere of the carpenter's workshop, unconsciously picking up a number of *Jyāba* (tools). What education was needed was imparted in the home or the field and the workplace. The *Sīkahmi* normally had their working place on the ground floor of their houses. That's why the following generations grew up within an environment of woodworks. Craftsmanship is developed in such an environment. Prithivi shared his experience like this:

> *In our society, we have the concept that the children of carpenters and farmers should be carpenters and farmers respectively. Since I am from Silpakār family, I have been following this work since my childhood. I learned this skill through my parents. There was our workshop in my own home and while playing inside or outside the home, I happened to observe the job. So it cannot be taken as the formal beginning of the work. Our neighboring friends also do have the same kind of workshops that we do have.*

Like Narayan, born a boy of a farmer, I too have the experience of learning some skills of farming. I remember learning to use *ku* (spade) to dig land with my grandfather during my teenage. I learned how to hold the *ku* in an easy way, what is the angle of the spade to dig, etc. I even learned to weave cloth at home with my mother too. It was very fun to learn to do any kind of work in childhood.

My experience as a farmer's boy and Narayan's experience as a carpenter's boy resembles in many ways as it is situated learning or peripheral. A boy of a Silpakār family learns mostly from his grandfather or other seniors as they are the experienced people in a family. The *Nāyo* (male leader) of the family had the most power over the other members of the family. The *Nakin* (female leader), wife or mother, held a high place in the home and the training of the children.

In those days there was not so huge an age gap between father and son because child marriage was common. So, the fathers were not so much experienced in skill works. *Kali Bahādur* remembers learning carpentry at the tender age of 9 with his grandfather at home. His maternal grandfather too allowed him to work on different tools. Tools and natural materials at home are the toys of the children. They learn the smell and feel the wood. The sounds of hammering and sawing at home encourage the children to try on their own. It might develop the coordination between the hands and the eye. The artworks and the use of tools help the children in developing imagination and solving problems. The muscles strength of the children is extended. Unknowingly the children develop an interest in family works. Narayan adds:

> *I remember trying on useless and broken wooden materials. It was comfortable and easy for me to learn due to easy availability of tools and materials at our own factory at home. I was taught special skills and ideas like how to handle the tools and use them fast and easily by my father.*

Children try the tools in presence of their parents. The controlled environment may encourage the children to learn without fear of any mistakes. Children become assured that there is somebody to help if any unwanted incident happens. Besides, children get some instructions or warnings while using any sharp tools. In a family,

one can interact in his/her mother tongue. The social context is also favorable for the children. As Vygotsky referred by Mangal and Mangal (2019):

> *Knowledge building or acquisition on the part of an individual is helped much if it involves his interaction with two or more people, his elders or peers, by making use of the social interaction tools like language discourse and social context.*

Family creates the most authentic and important social environment for children. Children know the needs of the family by doing interactions within the family. Even the child knows the way how the parents become happy and sad. The social process helps the children learn a lot.

The *Newar* society practiced gendered lines what is known as patriarchy because the female members do have some leading roles in various cultural ceremonies. There is no discrimination between boys and girls as such but there was a division of work between male and female members of the family. The *Nāyo* or the father trains the son for the practical duties of a man whereas the mother trains the daughter to become a good housekeeper, wife, and mother. As the boy grew older he follows his father of grandfather in the fields, workplaces, and public places. Traditionally, only the male members of the family work on woods and carvings. Nowadays female members are also involved in making woodcrafts. One follows their elders and there were no other options too. There was a common concept that the children of carpenter should be the carpenter.

Most of my informants started trying woodworks at 9 years of age that is later childhood. They started to work taking some responsible tasks like making holes on wood, polishing wooden structures, supporting using a planer, etc. at age beginning of

adolescence. They showed the development of a sense of belonging to one's social group, culture, and community.

Kali Bahādur says:

I was at the age of 9 when I started to use tools of the woodwork. We the brothers have been used to handling tools since our childhood because my father engaged himself at home and my grandfather at maternal uncles'. Seeing them at work we felt amused. The very sound produced while carving really attracts us to do anything. Then we started learning the skills by doing.

Kali Bahādur experience helped me recall my experience as a child and relate it with the process of knowledge and skill transfer among *Sīkahmi*. During my childhood, there was the workshop of a carpenter in my residential area. I feel distracted when the sound levels during the work in the carpentry rise up to levels. But, I find the children of the carpenter playing with fun inside the workshop. Perhaps they are habituated and they do not seek they take the sound of the hammer and the chisel of their father as Music. I do remember my late childhood being eager to try digging the field with spade imitating my parents. I tried to weave cloth in the loom, the *Deshi Tān* used by my mother and elder sister. It was fun to spin cotton thread using a *Nyā* (charkha), a hand-operated spinning wheel for a child. A pleasant sound is produced when a shuttle with the skeins carries the weft-threads back and forth across the loom. A feeling of the satisfaction arises while weaving cloth as a teenage boy too.

Though some schools were opened in Bhaktapur about half a decade ago, many of the children did not go to the school. Poor people did not send their children to school thinking that it was mare loss of time. It was difficult to eke out their life

without working Daily. So, parents used to have the plan to involve the children in their family profession from the beginning.

Mahadev mentioned:

> *We had not another work in the past, either playing marble or doing the parental work. My grandfather and father used to work together and we were inspired by that. People do not go abroad in the past. We stayed at home doing this ancestor work. We were not pressed to go for education but pressed to do work. But now parents press their children for education, not for work.*

Like Mahadev's experience, I recall my mother often said that a parent should be habituated by saying *Bani Chhela Taayema (One should be habituated).* She used to say –*Jya dhayegu chhyo then geligu* (One can learn if he/she practices). Practice and interest help to learn anybody. So my mother usually said that *Māka tā yān syonsā sai dhasā manuna masailā* (A monkey can be trained, why not a human). There were some important tasks that were easy to do for the children. For example, on rice planting days we used to clean the soil *Puwāčā* (saplings of rice) and fetch them to the planters. That was a good help to the parents. We used to be special and important in that case. In the case of harvesting the rice we the children had to give the *wāmhu*, a bundle of paddy because we were not able to handle the manual feeding-type thresher. We the children could be equivalent to the adult in terms of workforce. In our absence, our parents had to manage somebody else that could be a high payable worker. In this way, a child participates in the division of work in the family business.

Lava Lal remembers his childhood and says:

> *In the beginning, I helped in minor tasks just doing run errand duties like getting the smoking pipe ready for grandfathers and other senior masters. As I*

> *was a young boy, I would do minor things like standing the logs upright for others to work on, filling up the tobacco (typically prepared by pickling) in the smoking pipe, etc. It was the duty of the children to fill the smoking pipe with the tobacco and get it ready.*

Like that of the Lava Lal I remember that my maternal grandfather used Hookah, water pipes that are used to smoke tobacco, and my grandmother prepared charcoal to heat the tobacco. The smoking was done in groups, with the same mouthpiece passed from person to person. My grandmother had developed to smoke Hookah but she did not put her mouth on the pipe directly except my grandfather. That showed the social stratification. The juniors were used to make the Hookah in the workplace of the *Sīkahmi* too. That satisfies the seniors and the novices get knowledge and skill.

Srasta Gopal also recalled his olden days and mentioned, – "*In the beginning, we just used to rub the woods down with sandpapers and to prepare a Hookah for the grandparents. And only we were gradually taught various skills."* Lava Lal, Srasta Gopal, and I were in the same though we were of different age groups. I noted that in most of the cases, we started our skill-oriented job as a helper. We were unpaid family workers for the task completed by the parents. At the same time, we were put in an environment to learn from the senior or the experienced with or without knowing parental intent.

Guru Lal also shared the same destiny. He said,

> *I also learned to work with wood by beginning as a helper and working step by step. At first, I learned it by doing the assistant's jobs, for example, plying the plane, or cutting a hole across. Also, two people sitting on two sides of the saw and cutting it. This is how we did.*

Lava Lal too had almost the same kind of experience. He said:

At first, I was handed a saw to saw a piece of log. I sawed it as I was instructed. That's all I did that day. *In my starting years of working life, I was not paid anything at all. In the name of payment, we would get just some leftovers of the woodwork for firewood.*

From Lava Lal and Srasta Gopal I knew that good beginning is said to be half done in learning family-inherited skills unknowingly. I also learned that our motives and needs demand patience. I also know to strive for satisfaction. Our satisfaction led us in learning family inherited skills and repeats them as an occupation for today.

I also learned that one may go wrong in course of learning. While working with the parents the beginner is not so much worried to start to use the tools. In case we spoiled it, the father or the grandfather would be there to repair it. That sort of senses of supports a novice.

Leaving School to Learn and Reached to Carpentry

Some of my informants have experience of formal education and they used to go to school but they were dropouts from the primary level. One of the major causes was their poor economic background. They were not good in their studies either. They were compelled by the seniors to join the family work. Children were thought to be spoilt if they did not learn the family task. As woodwork is productive work and that encourages the children to focus on the family chores. Srasta Gopal says:

The problem was when I was a child, the environment was not favorable. If one does not become studious he lags behind. And interest in study decreases. So I left school. Then my parents also said me to involve in this wood carving which they were doing. And I started it. I used to go roam around my locality with friends leaving school. After killing my time this way for a year, my

parents became worried about my career. Then I started going with them to work. It was from 9 am to 4 pm. We used to reach at home at around 4:30. Again I used to do some trivial works at home from 5. And my parents also used to ask me to do this and that giving me pieces of wood. Thus, I gradually learned carving skills. Another thing was, my parents used to scold me too if I went out just to play. I used to play sometimes but playing for the whole day was bad either. Sometimes my parents also wooed me with buying the things I liked. At the same time, there were lots of children in the workplace. We used to get wages too, NRs 4.50/- per day. It was a lot to me, the beginner.

Srasta Gopal's experience tells that childhood is a very susceptible, sensitive, and vulnerable period. Capitalizing on these qualities, parents knowingly or unknowingly find their children in carpentry.

Observational Learning in Carpentry

The social learning theory says that one learns through observations by integrating and emulating the behaviors of others. Most of what we learn is acquired through simply watching and listening to other people. Bandura says that children from the very beginning keenly observe the behavior of the older members of society. It is often said that a house is the first school of a child. A child learns a lot from their parents and elders. I do remember my father shaving his beard when I was a child and I believe that it stayed in my long-term memory. A girl child puts lipsticks on her lip imitating her mother. The children try to reproduce the elders. My son (9) says that he likes to be like me. He takes me as his model. The children of *Sīkahmi* won't be different.

Once I met a senior foreign scholar who had done many types of research on the Newar architecture. I told him about my research. He put his right pointing finger

on his lower eyelid and pressed it down to make the eye looking bigger to say that *Sīkahmi*s learn by observation. Srasta Gopal says -"*We learned just observing others working. They used to prepare a sketch and give some instructions and, we used to follow them."*

Lava Lal adds:

> *I got to learn more by practice than by listening to instructions. When they instructed me to saw a log of timber at a certain length, I followed it carefully. But, to learn better and faster one has to keenly observe the work of seniors instead of waiting for orders and instructions.*

Lava Lal's saying shows that first a beginner observes and learns. Then he/she tries to do accordingly and experiences. Watching and listening help a lot to the learner. Sense of touch of the wood and the tools encourage the person to learn. Gurulal aptly says:

> *Keen observation helped me a lot. I liked the touch of the wood very much. There was not any manual lesson for me. I do not need it either. I mean I knew them as I regularly watched the seniors do it. The workplace itself used to be my usual play spot too. Of course, I grew eager. I began to try for myself whatever my father was spotted to be doing. That was how ancestral learning took place in me. Nothing special as such was required. Not even a teacher. Going for a play, for me, meant going to the workshop downstairs. It was just in the courtyard in front of my house.*

Gurulal's experience tells that child observes and remembers them and tries to imitate the action. Finally, the learning is reinforced by the parents to their children who like to work.

Kanhaiya clearly remembers his old days like this:

They do not teach me. I had to look at how they do the work and then learn. They would never teach to do this and that. My father used to work for them since childhood. They would only let us do the Kora work. All the wood carvings were solely done by them.

Carvings the wood requires very fine skills and only the experiences are assigned for it. But, *Kora* works, woodworks other than carvings are given to beginners or unskilled persons. The beginners observe the work of the seniors carving the wood while working side by side.

Experiential Learning in Carpentry

I remember learning cycling when I was 11 years old. Initially, it was difficult to balance myself. I would not succeed in riding my balance just getting the explanation I needed to take care. I had to practice on and on. Once, I did not stop the bicycle in time and crashed into a pole of electricity. Just taking theoretical knowledge and 'know-how' of riding a bicycle is not enough. I knew that one should have the practical knowledge whatsoever.

In my school days too, there were not any practical classes and I had to stay in the classroom for almost 6 hours in a day. Even there was no science practical laboratory-made. The teacher had to demonstrate filtering water with filter paper making drawing on the blackboard like drawing the funnel, folding the filter paper and putting the water, etc. That made me very difficult to understand science lectures. Students like me had to rote the passages or the question answers and write in the examination to get success.

Knowledge of carpentry is obtained by day-to-day hands-on experiences. It is gained through doing things and is based on real-life endeavors and tasks. One does

not learn just by giving the knowledge of reasoning, techniques, and theory of knowledge. Guidelines and manuals are not enough to learn a skill, one need to do it.

In the same vein, I found that my informants learned carpentry by working directly on the wood. Just getting the theoretical knowledge was not enough for them. Most of my informants learned the theoretical matters while working. Learning wood crafts too was based on observation and practice. It was of a very simple type. Kali Bahādur says: "*Carpentry is practical whereas the school education is more theoretical. I did very well in skill as a vocational and practical subject*."

Kali Bahādur's process of learning shows that it is a process of experience. It asserts that one does not experience without doing. The more one tries in a new way, one learns a new thing. It also indicates that creativity lies in thinking in a new way of doing a task. If one opens the different doors of the mind, he/she finds new better options to find the solutions. One faces different challenges or problems while working; he/she tries to solve the problem and goes ahead. Thus challenges become opportunities to learn. The pain one faces in the interval period between success and try, converts into gain. The only necessity is not to give up.

Mahadev shared his experiential learning in the following words:

> *Yes, like in the school. Teachers teach the children to catch the child's hand. In the same way, when I went to do work, then the carpenters told me the way or process of controlling and using tools. I was told to use on the correct way. Of course, it was new for me. They drew lines on wood and told me what to do? I did as per their orders.*

Like that of Mahadev's experience Mangal and Mangal (2019 quoted in Carl Roger) experiential learning is learner-centered. In this type of learning, one cannot learn without personal involvement. Roger enumerated experiential learning as self-

initiated. It is characterized by self-evaluation. A woodworker also gets his/her result immediately after the work and evaluates himself. He/she learns from the mistakes too.

Srasta Gopal explains his experience as an experiential learner in the following words:

> *Learning without mistakes is not possible. Yes, that is to be kept in mind. I got lots of experience constructing temples from the Chandeswori temple of Banepa. I realized that it was necessary to keep and join different woods (posts and beams) in different ways in that temple. I can see lots of heavy and old-style works in that temple. I learned lots of things after working in that temple.*
>
> *Later, a map is prepared and I was asked to construct a temple anywhere on the basis of that map. They (engineers) do not need to come on the site either. Without experience, we do not know where to keep a certain wood.*

The experiential learning that Srasta Gopal obtained from Chandeswori temple helped him to be an advisor in the Department of Archeology. The department then deployed him in different places, sometimes even in rural areas too, and sometimes in Kathmandu.

Srasta Gopal's experiential learning tells that working on old ones is more challenging than on the new ones because it is reconstruction. First, the learners need deconstruction and again reconstruction in the same way as the old one, it is v very difficult. He says one can construct a new temple in any way s/he likes. In the case of old ones, one needs to measure everything such as *Tundāl*, and the way they are kept. Besides, the carpenter needs to reuse the same old things as far as possible. The Department of Archeology does not allow carpenters to use new things. It's really

difficult handling the reconstruction works. In the new construction, differences are not seen generally and they can construct just following the maps.

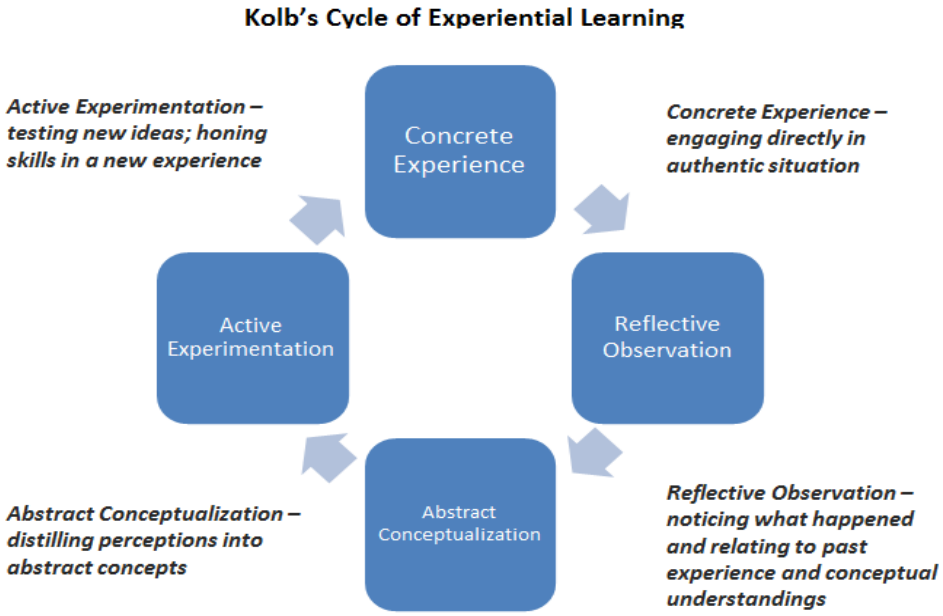
Srasta Gopal's experience reminds the old maxim that the wearer knows where the shoe pinches. New insights are developed in trying new things. When one moves one step ahead, he/she is encouraged to go further. Kali Bahādur says more to it:

> *I was being given instructions to do things in a proper way. While pulling the planer, I have to do it fast and while leaving I will do it lightly. I was being trained like this. I was instructed to do different things like this and that. I have to learn myself.*
>
> *It's not like that. The carpenters used to teach me practically. They do not say how to push and pull the razor. If I fall asleep, that would badly strike me. Then I learned to pay attention. I remembered that people in the past would be taught by showing fear so they learn faster. I also belonged to the batch.*
>
> *Yes, one's position must be in balance. The very object between chisel and mallet must be properly arranged. The striking and taking out of the piece of wood must be done at the same time. If the timing is not appropriate, it may hit the hand. Is not it called practical in English? A carpentry job requires a lot of practice. There is a combination of both theory and practical. The theory comes to measure the size of supporting materials and decide it. But for piercing a hole, much practice is required.*

Kali Bahadur's experience as a carpentry learner gave knowledge that (a) attentiveness is essential in learning (b) respect to the experienced people is also required (c) theoretical and practical work should go together. His learning as an experiential learner echoes the importance of 'learn by doing and by reflecting on the experience. Kolb’s (1984) cycle of learning depicts the experiential learning process

(see figure below). This process includes the integration of knowledge - the concepts, facts, and information acquired through formal learning and past experience; activity - the application of knowledge to a "real world" setting; and reflection - the analysis and synthesis of knowledge and activity to create new knowledge" (Indiana University, 2006, n.p.).

Figure 6: Kolb's Cycle Experiential Learning



Reflection on learning during and after one's experiences is an integral component of the learning process. This reflection leads to analysis, critical thinking, and synthesis (Schon, 1983). Mental, emotional, social, and/or physical involvement of the learners produces a perception that the learning task is authentic.

The learning process starts from simple and ends to be complex in carpentry

Learning starts with the fundamentals. One starts to learn the basics while learning a new thing. There is a proverb Newari *Nyāsī wāne masa mhāsyā boye* hathāye (One should not try flying without learning to walk). Woodcarving and carpentry is a highly complex profession and it is started with simple things. Simple

carvings are assigned to the beginners by the seniors. In the beginning, some sections of the carvings like making some carvings of flowers like *palefo* (lotus), *lunmača* (necklaces) are taught by the parents and the carpenters. Srasta Gopal reflects:

> *In the beginning, the carving lotus was taught. Like this one. At least for two to three months, I was taught only carving lotus. Getting the job of making idols is followed by good experience in carving. In the beginning, I learned these types of Lun: ma: cha (necklace), lotus carving, etc. I learned these within a couple of months. For example, if learned one thing but was asked to do other things. This made me be careful as well. There used to be a model too. In the same way, there used too many other completed similar works. So I used to compare my works with others as well to check whether they were correct. I used to keep a completed work in front and follow the same. My seniors used to instruct me like that*.

Different informants have different experiences of early days of learning. Some started to use the tools to cut the wood and some used a planer to make the wood smooth and balanced. Guru Lal says:

> *Usually, the saw would be the first tool to use. Learning would begin with learning to cut the wood with that of cutting wood. It used to be the saw at first then only other tools. Drilling by using mungro (hammer) comes a bit later. After the saw, generally, it is the time to learn to use the plane. Nowadays, a single person can pull the plainer. In the past, it took two persons. On the pushing side, an expert one holds it. On the opposite edge, the novice one works as an assistant. Even drilling is allowed to be done only on broad parts such as doorway frames, then drilling for the landings of the ladder, that is, those which did not require fine finishing. Then, the one trained enough would maintain.*

> *For instance, drilling on the main doors would not be entrusted to the novice one. That was how the method of teaching would go on in those days. After that, I learned to cut the wood pieces to the measurement in degrees given by the master carpenter.*

Kali Bahādur has a little bit different experience to share. He said:

> *I went to work with my grandfather. He let me pull the razor the whole day. This is how I learned well later. For some months I robbed with the razor and sharpened the iron stripe. Then I was offered the job of Basilā. I was to carve the wood. Plainer pulling can be called the nursery. While pulling the razor the whole day, I even fell asleep and left the razor one, two times as a punishment. Here I learned that I need to care for myself while doing work well. When the razor was left from another side it hit my chest. Sometimes, it hit vulnerable parts of the body*

Guru Lal and Kali Bahādur's approach to learning and the teaching of their "masters" gave the ways that (a) learner gets individual assignment (b) the master gives freedom to work but at the same time, he keeps eye on the novice learner (c) each master is different to teach the novice learner.

Learning is Fun in Carpentry

A son of *Sīkahmi* could not select the profession on the basis of his interest or he could not change the profession of his ancestor on his own wish. He develops interests in any skill or profession which he can do well. The upbringing and obligation push the person to do work that helps to solve the problem of hand to mouth.

The success in an activity tempts *Sīkahmi* to repeat the activity. This excitement to do the activity, again and again, develops an interest in a person.

Interest is the foundation of better performance. The success in work depends upon the ability to perform it and the rewards out of the work stimulate his interest. Interest generates fun and working becomes fun. Fun in working accelerates the learning process. Lava Lal says – "*One cannot learn just by doing what they are told to do, keen interest is a must."*

Success makes a person encouraged to endeavor more. One forgets all the miseries and hurdles faced when he/she get success. That encourages a person to learn more. *Kali Bahādur* says:

> *As my idea works, I do feel proud. As far as TV cupboard is made even without hinge, by cutting from three sides a mirror is placed, all look open. After finishing I do feel good about it. I do feel much happy. It is because my creation was always distinct from others in vocational subjects. When the seniors are pleased with my work, then my pleasure goes no bound.*

Lava Lal and Kali Bahādur's experience shows that carpentry was fun for them. The reason was that it was situated in them and with them. In that situatation, they played as other people play. While learning at home they got compliments like “Oh, excellent work!” The learner got filled with some kind of self-satisfaction for the task done. That encouraged a lot to do better later.

Mangal and Mangal (2019) quoted McClelland by saying- "human beings are characterized with the need for being affiliated with their fellow human beings at the individual and social levels. As a result, they have a burning desire for maintaining friendly relationships and social interaction by being 'liked' and 'accepted' by others."

Going through the fresh information and the literature, I came up with the understanding that lived situation is important for the child. In this lived situation

children learn to get fun. The fun gradually creates interest and the interest leads to occupations. *Sīkahmi*'s carpentry can be one of the testimonies.

Demonstration for Better Learning

It is generally said that a picture says thousands of words. A demonstration way of teaching is far more than a picture. It helps in visualizing the matter and makes the concept clear. When I teach the nervous system of a prawn, first I demonstrate myself dissecting the creature. The students could not dissect properly just by listening to my guidelines or they missed the steps. In carpentry and wood carving to performing the work to the novice helps a lot to make the concept clear. Demonstration helps in connecting theories to actual practice. In this method of teaching, the tutor does the performance first and it is observed by the learner. The tutor and the novice stay together, almost in the same position. There is no language barrier as they have the same communicating language. There are very close observations by the learner. Then the learner practices or follows the tutor. The tutor may have to perform again sometimes. Lava Lal made it clear like this:

> *No there was no much guiding. Just they demonstrate the right posture or the sitting position. Sitting position means taking the right posture facing the base frame of the wood to work on. Well, first the seniors told us what to do. Then I would take the position holding the tool and ask about the measurement in detail. Then, I sawed the log in the best possible way. In the beginning, I attempted cutting out the general outlines. I did not start with carvings.*

Lava Lal's quote clarifies that woodcarvings are learned easily. One needs to learn very simple tasks like handling the tools. The novice learners do the work as assigned by the seniors. Physical posture is very important for efficient work.

Earning in Learning is the Intrinsic Force for Knowledge Transfer

Woodcarvings have become an integral part of learning by doing and earning by learning. People become self-employed by learning woodcarving. The work has been socially useful productive work. One becomes independent and does not need to be a parasite of anybody else. Education should be related to the need of the people. Ozturk (2008) states - "Education enriches people's understanding of themselves and the world. It improves the quality of their lives and leads to broad social benefits to individuals and society. Education raises people's productivity and creativity and promotes entrepreneurship and technological advances." Learning woodworks develops the human capital, too. It too develops entrepreneurship in humans. Lava Lal reflects: *"In fact, when the festival approaches, people would need money to afford the festival expenses like at least a cock for the ritual sacrifice. So at that time workers were easily available".*

The persons who have better experience and who can work on very complex structures in woodcarving were highly paid. They were included in the category of skilled laborers and do get more wages than the *Jyami* (laborers). The practitioners did get some money in some projects. Srasta Gopal remembers the beginning days:

> *Krishna Shyam Dāi used to get NRs 35/-. He was a young expert in those days. A cup of tea cost 25 paisa at that time, I think. The wage NRs. 4.50/- per day also encouraged me to continue the profession. I used to get advance too if I needed. Earning 80/90 rupees per day was a very attractive ransom for me to do carpentry, and none of the children wanted to stay at home idle. Thus, I started my work to be a carpenter.*
>
> *If I did not have this occupation, I would be finished. I am also fulfilling the needs of my family through this very job. I do not have any other occupation.*

> *So, from early in the morning I had to labor hard to feed and fulfill all the needs of my family. For this, sometimes I had to complete the work earlier and sometimes I spent longer time, like two days for a work of a single day, to get more wages. I am just earning enough to join hands to mouth. I do not have farms. If I had, I would earn some from the farms too. Had I some farms, my family would not have to stay hungry.*

Srasta Gopal's saying shows that his *Sīkahmi* fellows had some land but it would not be enough to feed on themselves. Their family size would be bigger to sustain. Most of the production of the field was taken by the landowner. The land tillers were always in problem in feeding the family. There were two clear strata of the poor working class and the upper class. There was no alternative to carry on the family occupation for the landless persons like Srasta Gopal. They had to go to different places to work and also paid separately. Yes, Srasta Gopal's needs were also fulfilled along with the work. Working in different conditions gave the opportunity to him to learn too. In this way, he was encouraged to be a carpenter. *Kali Bahādur* also shares his story by saying:

> *As far as my family is concerned, I do not have to worry for food. When I was young, I felt a little problem with clothing and paying the school fee. I had to solve such problems. My other friends usually came to school in Chinese shoes whereas I went to school in sandals. My father's earnings were spent on vegetables, oil, and salt. It was hard enough to buy dresses for me. In order to buy such shoes, I also had to work hard. When other students carried bags, I used to carry books binding in a rubber. For buying a new bag, I also intended to go to work during winter vacation. I had to go to work to fulfill similar desires. I think people would not continue such difficult work if there was no scarcity.*

Kali Bahādur's saying gives a knowledge that poor children are compelled to earn and thereby they end up being a carpenter. This echoes that necessity is the mother of invention. The poor family economy pushes the creativity of the children. It is like the theory of survival of the fittest by the scientist Charles Darwin. Guru Lal says:

> *I am the kind of individual who learned to earn, save and self-pay the school education since my childhood, that is, while at 5/6 grade. To cover my expenses, I used to build kite spools and make a sale of them during the paddy-harvesting season.*

Guru Lal's experience also tells that he was compelled to earn while going to school. In this compulsion, he learned to make kite spools and carpentry skills. The first skill solved his school expenses and the second skill gave him food for his family today. Earning helps in learning.

Family Legacy, Responsibility and Pride together a Way to Transfer Knowledge

After the completion of the construction of the home, the *Kami Nāyo* (head of the carpenter) is thanked by gifting them a *Bétali* and *dakshinā* (perks with good blessings). Considering these aspects, they are well respected and are well paid than people of other professions. Not only this, the then Kings used to gift them with land to show happiness on their work (Dhyan Prasad, in a conversation dated 2013 September).

Sīkahmi works as a timber constructor as well as woodcarvers in making any buildings. However, the *Awa nāyo* (chief of the mason) has a very important role in building houses. The Kami nāyo and Awa nāyo too estimate and make a map of the particular building in their mind (there was no written map in the past). Handover of the building takes place only after the completion.

A *Kami nāyo* is given new costly clothes after the completion of the building. He has to participate in the worship of the house after the completion of it called '*Thāmā Pujā'* as well. It means the *Sīkahmi* is given utmost priority. Lava Lal opines:

> *I would go to work together so as to acquire family expertise; it's not just a matter of money. I, as the young ones, was to accompany elders to work with the motif of continuing the family legacy over generations. Apparently, others do not take interest in this. As it's a risky job, the family started putting pressure on them to take their hands off the project. If my grandfathers also had not continued this tradition, there would have been none left with this expertise at the present or it would have been assigned to some qualified engineers already. There are thousands of Silpakār families. On behalf of the entire Silpakār community persons like me have to sustain this family legacy. We are morally obliged to stick to this project as it is a matter of our prestige. Even in our community, the ones having acquired this expertise arrear. Similarly, only the descendants of my family line are admitted to Taleju clan. No new families can be admitted by their choice.*

Lava Lal's saying shows that Sīkahmi washighly respected in the past because they possessed skill and knowledge related to wood and wood carvings. They were paid well and appreciated high. In every task, the leader of the *Sīkahmi* team was placed in a good position in all kinds of religious activities. The then Kings and administrations treated *Sīkahmi* very well. The chariot of Bhairabnath during Bisket Jātrā is completely made of wood, constructed by *Sīkahmi*. Since they are the constructors of the chariot, they are positioned inside the four corners of the chariot with respect to their skill and knowledge. They are also permitted to lead the chariot

pulling procession. It is really a matter of great pride to be included in a chariot where kings and their kiths and kins stay in.

Lava Lal adds:

While making the Bhailakha, other people come and talk respectfully to us. They would say we are fortunate to do such noble service, which is not possible from any others. I find this encouraging. It's not only a matter of money. Money will come tomorrow if not today. This way I convince myself.

Lava Lal's saying shows that *'Kami yā swonha bhwātha'* means '*Sīkahmi*'s ladder is wretched'. This saying does not depict poor economic conditions but shows the dedication and busy condition of *Sīkahmi*. They are always busy constructing homes of laymen to palaces of kings so they find no time to mend their ladders or repair the loose wooden parts of their homes. Actually, it also shows the confidence to work on the loose or degraded parts in no time because they are skilled and knowledgeable people. In addition, they are so good at making the best out of parts of wooden works that a simple lock can run the house for years.

Prithivi says more on it:

I was approximately 15/16 years old at that time. Whenever I made the new product for the first time, I felt proud in the sense that I could also do such things and earn money. Since I am from a working class family and having own factory at home, I got engaged in this field. On the other hand, the formal education that I took did not help me to sustain my life. I felt the necessity of anyone occupation and I found that this profession would be better to learn and follow in my life as it has been followed and handed over by my forefather. In the same way, I thought that I could run this profession in less

investment and I could the necessary ideas from my parents as well. So I did not go to search for another job outside and I did progress in this field.

Prithivi gave a clue that a person feels responsibility when the head or the elder members of the family pass away. In Newari, the local people say *–Kāpale lātakin si:* (one understands when compelled to take responsibility). Sometimes the children are taken as free until the parents remain and so there is a common proverb like *–Abjuyā Kāpale chhusyā mushyā siye datale thathe he kha* (one gets freedom till the parents are alive). This implies that necessity is one of the factors that encourage learning and acting accordingly. Lava Lal further says:

Yes. Working under my own grandfather's direction, I was never serious in my duty. Although I used to attend the duty at noon instead of 10 am, none even asked why. Nobody was there to reprimand me for my irregularity. And again, I would claim full payment in spite of my frequent absence. I would even threaten the officials. Only when my father passed away in 2058 BS and all the responsibilities came to my shoulders, I became seriously focused on the work. As long as my father was there to handle everything, I just playfully depended upon him. After he passed away, the officials from Guthi Corporation picked me and employed me as the head of the team to undertake the project. Then, I had no escape. Anyhow, I had to learn. And I started working seriously. Till grandfather was there, he would teach me some simple steps. After that, father made us do different things like fetching the pieces of timber sawing it into different sizes. Only such piecemeal orders. Nothing in detail. So I could not learn many things from him as well.

Lava Lal's case gives room to think that learning demands a compelling environment where the learner feels his/her responsibility. It also shows that the

protection of the elders makes the child undisciplined. The third thing that his case shows, every carpenter/teacher is not good at dealing with the children.

Raj Kaji says:

The most honorable part of the wood carving artists working in the renovation of the heritage sites is that it remains for a long time. I feel so proud to see my forefather's work in the temples in Bhaktapur. I am sure that my coming generations will also be proud of my work.

Mental peace and feeling of pride are developed through his/her own deeds. It develops love and care for human beings too. Creativity flourishes in such an environment.

Creative Learning has a Chance to be transferred

Whenever one gets the basic instruction then he/she can develop new creation himself/herself as art is related to creativity. After the concept and imagination developed in his/her mind, that is used to create a new thing as s/he has already got the basic instruction. *Kali Bahādur* says his experience in the following words:

Yes, creativity is very much important. None push up the man who cannot be thoughtful. I would not get an order if I cannot use my knowledge and modify the work according to the thought of the people who let us handle this job. If my work is not durable and reliable, none offer me any job. If made good furniture, people who would see them may demand it. Then I will get work.

Kali Bahādur's creativity gave him the chance to retain in carpentry. This means creativity is equally important to transfer the knowledge and skills related to carpentry. He also gave a clue that one needs to plan in mind and make sketches using a pencil or chalk. People demand different designs of crafts on their choice and their necessity. One should materialize the demand of the clients. There arise different

problems in making buildings or making crafts and one should solve them quickly. Creativity helps the *Sīkahmi* in performing different works. Highly experienced people can solve even complex problems. The confidence level of the *Sīkahmi* increases on basis of experience. Creative people can take a risk too. Srasta Gopal says:

> *In this work, sketching is also required. So, if one has to make an idol (wooden), one should learn how to sketch too. If the sketching is correct, only then carpenters like me can start making idols. This means one needs to draw sketches. Before making the idol, sketching is necessary. Now, I need to draw a sketch even though I have to carve just a flower.*

Srasta Gopal echoes that usually, the senior or the experienced one makes the draft of the sketch of the craft to be made. One should be very careful in doing so because one cannot remake the wood once it is cut. Guru Lal says – "One thing in woodcraft is that once you do the cutting, it is finished. No chance to restore it. You use your thinking beforehand is another thing. But once you cut it, it's over. So it is said that you should think twice before cutting wood."

For creating a new art one should have a creative mind. Concentration helps in creative works. If one is distracted by any external factors he/she cannot work. Krishna Shyam says: "So concentration is a must. We cannot do anything if our mind is disturbed. We do not do work when we feel bored."

Nowadays woodcrafts are made as a copy image to sell in the market. One cannot copy the original image exactly but can have some creative addition in the woodcraft sold as a memento to the tourists. Jouvan clarifies it:

> *In our wood carving; we have to show ourselves by doing. This is not technology. This is an only skill but people cannot copy as it is. When you*

compare the original, you can easily see the difference. If you keep them at two different places and see them you may feel the same.

Today's wood crafts in the market are the only replica of the old. Some people have made their own creations. They, of course, copied some bases from the past they tried to copy the old as much as they could. Now, taking the base of the old they try to create something new. Today's people have developed a new design of peacock window making some changes in the old model. Many tourists like this kind of new invention. The woodcraft is copied creatively according to the need and demands of the market. Creativity is the soul of the learning and development of woodworks.

Guru Lal and Krishna Shyam's experience tells that as old people said, they used to keep a pot filled with water near to their working place and they used to keep on looking at the pot so that they could see the reflection of gods and birds flying in the sky. Then they used to carve the reflected image and thus there would have been created and varieties as well. They also realized that if we look in the sky, we can see the strange images of animals and objects made by the clouds, and they are tried to make as new creations in woodcarving. Their experience tells that children need to be imaginative: the imagination comes through concentration. The concentration can be ensured while seeing in water pot, pond, or sky. The seers can see the images of their assigned tasks.

Fear, Challenge and Punishment Help Transfer Learning

Certain qualities were demanded like determination, caution, faithfulness, courage, sincerity, and regard for duty. Such characters are not developed in a day. It is a continuous process. To train the children, the elder like to apply different measures like fear and punishment.

*Sīkahmi*s used to threaten their children to do works. The reason was that their children did not like to focus on family work for long hours and they used to go away for swimming, killing birds and playing cards, etc. On the other hand, the parents would be busy completing their job. Children would be helpful in the work. So, there would be some kind of conflict between the two generations. Scolding the children to make do the job is a very easy way to tame them and is also common even today. Children were scolded when there is less concentration in the works too. Sometimes, the elders strike with the objects or tools in their hands. Such punishments could have opposite results too.

Lava Lal reflects upon the punishment that he got while learning carpentry:

When I happened to make some mistake, my father would lose his temper and throw any tools that come in handy at us. Sometimes, he hit me, sometimes not. So, I could not learn from him. Because of such a way of punishing, I could not learn. As I was always nervous in front of him, I could not make any progress. If he had taught me gently by encouraging and giving stepwise instructions, I would have learned very quickly. Yes to make me learn and be responsible. But I do not think his style is right. He would not talk much. Also, a bit impaired in hearing. So, he would not share ideas even with my mother.

The threat given by the elders would be like a challenge to the youngsters and would be implying some creativity too. They would show their work in response to the bad words they get. Srasta Gopal says:*"In the beginning, if there was any mistake, my father used to scold me. If I kept on committing mistakes, he asked me to make sketches and do accordingly. Thus, I used to learn by doing in my own way".*

Lava Lal and Srasta Gopal's experience in learning carpentry gave different views. Lava Lal said that threat and punishment do not help transfer knowledge and

skills. Srasta Gopal's experience says that engage a child in his/her own drawing transfers knowledge and skills. It also gives the knowledge that the seniors would be checking the patience of the youngsters by giving works other than the woodworks. They let the novice workers making *Hookā* smoking. They let the youngster cook rice and wash utensils. They did such works though they did not like to. Kali Bahādur says:

> *At the very first time, my father used to let me prepare hookah. When the German project was there at Dattatraya, I also went there. I was not let even touch mallet and chisel. I had to prepare 4-5 hookahs the whole day. My eyes turned red when I blew the fire for long. I would blow the fire with mucus in my eyes. After a month, I was ordered to make a hole. This way, I learned carpentry step by step. Though we think it was straight, it happened not like that. In lack of idea, I used to pierce the wood while making a hole. Then I was threatened not to be paid my wages. Sometimes I was to clean up the wood dust or the wooden pieces to cover my payment. But things go wrong as I worked with my willpower and confidence. In the past, I was obliged to do carpentry. Silpakārs must do it. People belonging to Silpakār community might hardly think of other jobs.*

Two things came up with Kali Bahādur's saying. One, punishment also helps transfer learning. Two, trainers like his father apply different *hathkandā* (ways) to tame the child. This experience does not fit with that of Lava Lal. It means learners are motivated to transfer carpentry skills and knowledge in different ways. One fits well does not work. Even illiterate carpenters know it through their experience.

The cases above gave the idea that it is common to have minor mistakes. One learns from the mistakes. The seniors or the parents help in correcting mistakes. The

juniors may get some harsh treatment for big mistakes. Such treatment make them remind them not to make mistakes or focus on the work. Actually one cannot handle the tools and make different structures and carvings without full concentration. One interesting thing is that the learner thinks that *Bobigu* (scolding) is for their benefit. '*Bānlaka jyā yo, natra bo faye mali sā'* (Do good or you will be scolded) is a common saying in Newars. The novice keeps quiet when the seniors become fury. Mahadev remembers it:

> *Sometimes mistakes occur because of a lack of idea. The quality of wood becomes different. In some wood, works go smoothly and in some it's complex. Complex means damage and hard in some parts. We could not make correct in complex wood. My grandfather would find out the mistakes. I too realize the mistake. In that time, I learned from my grandfather.*

The experience of the carpenters above made me recall my past. Obviously, it was so difficult for me to learn how to handle spade in the beginning. I got wounds in my hands. I do remember when I handled spade tilling the land and other farm works. Small pockets of fluid called *Fotā* were developed in the upper layers of the skin because of the constant rubbing of the handle of the spade. The skin becomes flushed and hot. If the blister breaks, there release fluid and it hurt a lot. The skin becomes thickened because of the scar the friction blisters called *Khwon* (*Thelā*) after regular and continuous use of such tools.

While rubbing with sandpapers on the wood structures one may get pain in the thumb. It would be difficult to eat with hand. There may result in even holes in the palm. *Guru Lal* says his experience as I had when he was doing carpentry:

> *One does get injuries. It is almost normal - even today. My hands have been roughened with wounds. Pricks by pointed ends, cuts by the saw, and bruises*

with the plane. We in Nepal bhāsā say it 'sin kān' (wooden thorn). Pricks and pokes are experienced the most. Sometimes, the saw skids off on the hands.

Social Constructivism is a Way to Transfer Knowledge and Skills

Vygotsky said that learning is a social process and it can be carried out best in a social environment. Mangal and Mangal elaborate on the theory of Vygotsky - "Knowledge building or acquisition on the part of an individual is helped much if it involves his interaction with two or more people, his elders or peers, by making use of the social interaction tools like language discourse and social context." In the same line, Krishna Shyam shares his experience in the following words:

Someone is necessary to discuss with. I remember that we learn from each other. Gossiping is also necessary along with working otherwise we get bored. Without a company, it is very difficult to enhance this occupation. In the absence of a company, I used to listen to songs on the radio. With this, it is easier to pass time. Working alone is really very difficult. Concentrating on work is difficult while working alone. So I used to go outside to meet with friends leaving work for the day. Today too, if I'm alone, I'm distracted.

The woodcarvers occasionally work to make public buildings, temples, and monuments in the group. They should have a feeling of social responsibility. They do not work just for money but work as one of the contributors to society and the country. An artist is honored by the society itself by putting *tikā* and *Bétāli*, a white cloth on the forehead after completion of the building. Some of the *Sīkahmi* were prized with gold after the completion of Ngyātāpola by the state. The *Sīkahmi* feels it as a prestige. Berneir (1979, p. 25) says "During *Kharu Pujā* the door is worshipped. This occurs after the ground floor has been completed, involving the sacrifice of a goat and the worship of the *Sīkahmi*s, carpenters. Specific parts of the goat's head are

then eaten by the builder, the carpenter, and the house owner, with the parts of the head being distributed according to the occupation or status of the participants." ``

Kanhaiya remembers the days of renovations in the 50s of Bikram Sambat (era) with feelings of pride like this:

> *There is a story behind the renovation of the Ngyātāpola. After the start of the wood carving training, the temple of Bhairavnath broke down. I think they had some discussion and then came up to us and asked, "Can you repair the temple of Bhairavnath?" We replied we will do what is best for us. After all, we are guided by the Bishwakrama. So they told us to repair the temple. At first, they decided to renovate the Bhairavnath first so, they called me there. I was at first to climb the Kha that was made to repair the temple. They were very huge and scared me out. Yet we completed the work at the Bhairavnath. After that, we were made in charge of the repairing. Following the completion of the repair of the Bhairavnath we were assigned to repair the Ngyātāpola as well. We were determined not to be afraid this time and so the repairing of the Ngyātāpola was also started. Soon after the completion of refurbishing the temple, we started to renovate the 55 Windows Palace.*

The feelings of social responsibility encouraged the *Sīkahmi* people to be devoted in the renovation project. They feel proud when the local people, relatives, and near and dears praise their devotion, skill, and labor. The feelings of ownership in the renovation works make them more responsible. The interactions with the local people observing do help them to improve in their works.

Pedagogical Implications of Sīkahmis' Approach to Teaching

Based on the analysis above, I have drawn Sīkahmi's teaching approach that can be used for school education or for teacher training. They are as follows:

1. Individual assignment to the learner: As a Sīkahmi does, the learners can be given individual assignment to learn by doing. The tutor can give freedom to work but at the same time, he/she keeps eye on the novice learner. The trainer/teacher/tutor may be different to teach the novice learner on different topics. Sometimes, a single person can teach different subjects like that are practiced in Grade teaching in primary classes.
2. 2. Linkage between theory and practice: Demonstration helps in connecting theories to actual practice. In this method of teaching, the tutor does the performance first and it is observed by the learner. Skill based learning is not possible without the demonstration method. After the observing the way of the task doing, the learner tries himself/herself.
3. Blending of learning and earning: Learning by earning is just not a slogan but the matter of motivation. Earning helps in learning. Sīkahmi works and earns, while working he/she earns too. Such practice can be applied in schools by including the students in productive works.
4. Creation of compelling environment to learn: Sīkahmi's pedagogy highlights the popular saying that necessity is the mother of education. Learning demands a compelling environment where the learner feels his/her responsibility. The students in the schools and colleges can be made clear about the objectives and necessity of the education to create compelling environment to learn.
5. Development of creative environment: What one sows, so is ripes. Mental peace and feeling of pride are developed through his/her own deeds. Creativity flourishes in such an environment. If one does not feel proud in his/her own deeds, s/he can be motivated to continue his/her process of learning.

6. Introduce *dhyan* approach to teaching: Concentration helps in creative works. If one is distracted by any external factors he/she cannot work. So, the children should be taught to have concentrated in learning as Sīkahmi asks for new learner. The challenges and threat given by the elders would be like a challenge to the youngsters and would be implying some creativity too.
7. Introduce immediate incentives: Reward and punishments do motivate in learning. Sīkahmi use the method of punishment while motivating the children learning. They believe that one learns from the mistakes. The seniors or the parents help in correcting mistakes. They too use verbal reward as thank you; wonderfully done etc. which can be transferred to the school education.
8. Make learners socially responsible: Sīkahmi believes that a feeling of social responsibility helps in learning. Leaning is a social process. A person is always responsible to the society and he/she learns to serve the society. The honor given by the society to the person is motivating factor in learning too.

Chapter Summary

Sīkahmi are Hindu and they strongly believe in Hindu myths and mythologies. *Āga* (*n*) *chhen* is the house where the ancestral deity i.e. *Āga* (*n*) *dyo* is worshiped by the *Sīkahmi*. *Kaetā Pujā* initiates a boy into his caste group. This is psychological preparation for the boy to become adulthood. Male members of Silpakār community had to take from the Karmacharya Priest associated with Taleju of Bhaktapur. *Dikhā* is a type of education given by the priest in a secret room to perform various ritual activities. There was Thyā-safũ (Folded book) with the sketches and designs of the monuments and woodcarvings on the basis of Vāstu-shaastra. *Sīkahmi* involved in making buildings, temples or any monasteries do have knowledge of Vāstu Shastra

Traditionally, carpentry and wood carving were limited to the male members of the *Sīkahmi*. In the majority of cases, the boy was instructed by his father, uncle or guardian. The social environment encourages the children to focus on woodcarving.

The people who could not perform well proved to be better in woodworks. One of the major causes in leaving the school was their poor economic background. They were not good in their studies either. They were compelled by the seniors to join the family work. The family works help in developing life skills. A woodcarver learns through observations by integrating and emulating the behaviors of others. It is gained through doing things and is based on real-life endeavors and tasks. Just getting theoretical knowledge is not enough. One starts to learn the basics while learning a new thing. Learning transfer is a continuous process. Success in a work rewards a person and that stimulates in developing interest in the person. Fun in working accelerates the learning process.

People become self-employed by learning woodcarving. *Sīkahmi* were highly respected because they possessed skills and knowledge related to wood and wood carvings. Creativity helps the *Sīkahmi* in performing different works. One learns from the mistakes. The seniors or the parents help in correcting mistakes. They do not work just for money but work as one of the contributors to society and the country. This is how they transfer their knowledge and skills to the new generations.

CHAPTER VI

OPPORTUNITIES AND CHALLENGES IN WOODCARVINGS

In the previous chapter, there was discussion about the process of knowledge transfer in *Sīkahmi*. The opportunities and challenges in today's context are discussed in this chapter. First there is the discussion on opportunities in woodcarvings.

Renovation and Conservation Work as an Opportunity

In the past, efforts to build such artworks used to be initiated by the state itself as during the Malla period but the indifference of the state affected the scene in the ensuing period. Common people were poor in the Shaha Regime and people could not make artistic buildings with fine carvings. So, it would be hard to continue the woodcarving as in the past. It was poverty why the artwork could not be preserved. By the year 2032 BS, the profession of skilled wood artists must have lagged much behind. German government-supported Bhaktapur Development Project to restore the old town and its glorious architectural heritage in1974. Many historic temples were renovated.

Woodcarving and woodcraft making has increased since the last four decades in Bhaktapur with the start of renovations of the ancient monuments and buildings in Bhaktapur in the 1970s and the number of tourists coming in the city is increasing year by year. Guru Lal adds: *"In the context before 2032 BS, it was collapsing due to a lack of opportunity to carry out the woodcraft. However, in the early 30s of the Bikram Era, the German Project created an opportunity to work".*

Bhaktapur Development Project was the milestone in the development of woodcarving as it started the conservation and renovation speeded up. People started sharpening their chisel, saw, *Basilā* and so on that was rusted for decades. There were

very few *Sīkahmi* left who had the knowledge and skill of their tradition. Many *Sīkahmi* people joined the project making much woodwork to renovate the temples and monuments in hundreds of years. It was a good opportunity for the people to get work and earn money. It was like work from home because the *Sīkahmi* had to go to very far in search of work or they had to stay away from home for months to complete houses. Some of the *Sīkahmi* had reached to Dhulekhel, Panauti, Kathmandu to make public houses and temples. Guru Lal assumes:

> *I do not think there were more than 10-12 people who had expertise in woodcarvings in Bhaktapur in those days. Those people led about 50 to 60 artisans who worked here at Dattātraya while the German Project was going on. It was going to work rather than a matter of learning. You get money. The workers were mostly Silpakārs. Some others joined only after the German project was launched.*

The *Sīkahmi* got employment in the BDP and the community people were encouraged to continue their family tradition of woodcarvings. The workplace made by the German Project was like the vocational training institute where the newcomers learn from the elders. But, teaching and learning practices were limited to their own lineage. Others did not bother either as all have to do their own task as a family tradition. Jouvan adds:

> *There was a lack of woodworks. The workers were not good enough either. Some were very bad. After the German project came, it gave high importance to it. Many people learned the skill in the period. The enthusiastic youth learned it and the German project encouraged them.*

The challenge faced by the ancestors of the *Sīkahmi* was converted into an opportunity because the harsh condition make the people labor harder. It was like the

survival of the fittest and the survived people gave birth to the new artists in a favorable time.

Knowledge of *Sīkahmi* is related to earnings too. Learned people got job or employment in woodcarving workshops and that encouraged to learn more. The German project used to pay more money than the local people while making a home. The payment was on the basis of the level of the skill of the people too. It motivated me to learn harder. It paved the path of opportunity further.

The preservation of the ancient monuments and buildings with elaborate wood carvings is labor intensive and expensive. Bhaktapur Municipality has renovated almost all the monuments and buildings in the past three decades. Ngyātāpola and Bhairav temple at Taumadhi square have been renovated two times during this time. The municipality has encouraged to local people to learn and earn the skill too.

Kanhaiya has an almost the same line to say:

> *There was no practice of teaching wood carving like today. Only the people who knew woodcarving would be involved in it and they were very few. Whenever I see broken windows while going out, I used to worry about who would renovate them. My core concern was always this. There have been so many windows with a lot of wood carvings and I was not sure who would repair them if gets broken. And all the works are done were only Kora.*

The falling pieces of the bricks that bind the beautiful wooden structures might have stricken the traditional architects like Kanhaiya. The artists know the value of art. There had to take a step of action in making the city intact in its beauty. So, the learned people accepted immediately in the project of conservation. It gave them money and mental peace.

The recent trend of making houses and buildings of the traditional style of architectural design has boosted the woodcarving industry as well. Traditional woodcarvings are being incorporated in the buildings made these days. Bhaktapur municipality provides 35 percent of wood required to make the front part and the roof of a house in the core area of the city. This has encouraged the local people to make houses in the traditional Newar style. Such provision can be included in the opportunity of the people engaged in the woodcarving profession.

Covid-19 has some slackness on the woodcarving industry. But most of the workshops were run during the pandemic because one can work in his own home or workshop in his own locality maintaining social distance and using some other safety measures. I went to one of the workshops in Bhaktapur where a dozen of carvers were working during the pandemic. Bishnu, the proprietor of the workshop said that we had already enough orders to make the wood carvings on the struts, doors, windows, etc. He said that the transaction of wood carvings reduced by a quarter in comparison to the normal period.

Opportunity to Other Caste Groups

In 2052 BS, the Bhaktapur Municipality authority took an initiative to rebuild and renovate the age-old temples like Ngyātāpola, Bhairabnath, etc. and there was a demand of the carvers a lot. The local government organized some training of woodcarvings to the other caste group people to fulfill the demand of the workers. Thus, the other caste group people too started the profession independently. The *Sīkahmi* helped to train the other caste group. Kanhaiya, one of the tutors who trained the other caste group people remembers:

> *Luckily, I heard that the municipality is planning to teach wood carving. I was also informed by a person working in the municipality.*

> *He even asked me if I was interested in teaching. I was to be accompanied by Tulshikumar of Golmadhi. So we both started teaching everything we knew. It is very difficult to start wood carving to the other caste groups. So, I had to teach step by step. At first, I was taught to carve Pale fwo then we started to teach making Kalash. It later followed with Nāg Pās, Pale Swān, and several other methods of wood carving.*

Some of the people of the *Sīkahmi* caste group were not happy in teaching wood carving to the other caste group because they had the tradition of transferring the skill to their clan only. Their culture and belief system had forbidden them to teach the skill to another caste group. However, it was the demand of time and space. Kanhaiya remembers those hustle-bustle days.

> *Many told me not to go. They even called me in clan meetings but I did not go. If I had gone, I would have to leave teaching wood carving. I was even threatened to be outcasted by my own people. Since I was backed by the municipality, I had the courage to take the challenge. Also, we did not go in haste; we were called for it. They might be afraid that more people will learn the art. But they do not realize that if people do not learn then there would not be any to continue the work. After we started teaching there has been immense growth in the work. People who used to stay idle before are also getting jobs today. They used to sit idly and gamble around the whole day. Now they are all busy in the work.*

Some of the *Sīkahmi* people had the doubt that they would be out of work if one. Because of the continuous renovations, works, and the demand for wood crafts in the tourism market and the international market people became even busier then.

The furniture industry is flourishing in Bhaktapur. There is high demand for different furniture. But most of the workshops are run by people other than the Silpakār caste group. Chandra Sundar says:

> *There are about 7-8 thousand workers in 25 hundred workshops working as a carpenter making different furniture like kitchen racks, bed, table, chair, etc. in Bhaktapur and most of them are other than the Silpakār community. It is because of the high demand in the valley and other cities of the country.*

The population of Kathmandu valley is increasing day by day because of the increase of migratory people and there is a high demand for furniture for the people. A good number of youth is involved in fulfilling the demand of the market. These youths have noted the fact that most of the furniture found in the market is not so much durable and are very cheap. They say them '*bajāriya sāmān*' that means ‘use and through a type of furniture. This gave them the new opportunity to work for durable traditional artwork.

Opportunity Created by Tourism

Nepal was open for foreign tourists after the end of the Rana autocratic regime and the tourism industry started to flourish. Designing and producing woodcrafts in Bhaktapur started to cater to the needs of tourists and export overseas in the past some decades ago. There has been the relation between the tourism industry and the woodcraft industry too. The market of Nepali woodcraft is widening in the past decades because of the development of the tourism industry in the past decades and it is encouraging to produce the woodcraft to meet the demand.

Tourism has suffered an unprecedented setback and its effect can be seen on the global economy due to the Covid-19 pandemic. It has rendered thousands of people unemployed so the woodcraft industry has also been affected seriously. All the

handicraft shops were closed for months because of the lockdown ordered by the government to control the pandemic. However, people are making woodcrafts in their workshops though in smaller quantity hoping the situation is normal. They were puzzled when the lockdown was announced by the government to control the Covid-19 pandemic and could not decide what to do in the initial days. Rajkaji says that they accepted the situation and started making sculptures.

In recent years Chinese tourists are added to the Nepali tourism industry and they prefer to buy Nepali woodcraft. Unskilled and semi-skilled people got scope to widen their works because of the growing demand fora variety of woodcrafts in the past. If we evaluate the time before the Covid-19 pandemic, the scene was different. Jouvan explains like this:

> *The wood carving business is getting better as the Chinese are coming. So, it's a good opportunity to produce real workers/artisans. Yes, if the condition goes on getting better, the living standard of the workers will develop to a great extent, they have gained financial development to some extent in the last 4 -5 years. Those who work and produce themselves paying attention can earn about 50,000 rupees easily. And if they can carve images of gods and goddesses, they can earn up to 100,000 and 150,000 rupees.*

About 15 years ago the workers got that money only after delivery of their products, now they get money in advance. This scene changed only after the Chinese came.

Some tourists looked for very good crafts, that encouraged people to make good products that gave them good earning. Today's crafts are no less in value than those which are exposed in the temples. Chandra Sundar informs:

There are 30 workshops of woodcarvings registered in the government office and 5 of them have a license of exporting woodcrafts. Each gets enough income. I think more than 2 crores of net profit. One had the sale about 15-16 crore in the expo held in China some years ago. They sale statue of Budha, Tara, windows, etc. mostly. Sometimes they get 1000 percent of profit.

Most of the workers in the woodcarving workshops face language problems while selling the crafts to tourists from different countries and they are dependent on the tourist guides for it. The workers cannot explain the quality of the wood, history, and cultural value of the image or the craft they make. The workers have to give commission to the tourist guide for it.

Opportunity to the Female Workers

Once there was a taboo that other caste groups of people did not bother to do the woodwork. Time has come that women are attracted to this profession. There are many females at present doing this occupation. The then women of the Silpakār did not show interest in such works. That might be because that there were no enough works either. But now things are changed: women are there in this occupation.

Srasta Gopal says:

It might be a kind of awkwardness working together with males and females in this sector. Women needed to stay separate. Some of the males did not like allowing females in this occupation. They get angry. We needed to leave the family for days. Leaving the family in this way was unusual for the women.

Family size is smaller today and one gives birth to not more than two children. The women are free. There is less land to do farming too. The income of only one (male) is not enough to feed the family nowadays. So, women have come out of the house to support the family.

In the past one had a number of children and the women had to take care of the children. Srasta Gopal adds:

> *If children come there, they may get injured. Again, if the children are kept in the upper floor without being watched, they may fall down. This is also another reason why females are not encouraged. It is not that they are not allowed to touch this or that but necessity of looking after the children is the main cause.*

The future of the woodcarving looks bright as the women are introduced in the artworks. Women's economic empowerment helps in closing gender gaps. Economies grow when more women work. It boosts the productivity of the society too. The occupation of wood carving can be a base of social transformation.

Hence I have concluded the opportunities of woodcarvings. I have discussed on the challenges of woodcarvings in the following paragraphs.

Introduction of Western-style Architecture: Fall of Traditional Knowledge

Woodcarving and wooden architecture grew in prominence during the Licchavi period (from 400 to 750 CE) and The Malla period (10th–18th centuries). Unfortunately, during the period of the Shaha (1768 – 2008) and Rana Administration (1846–1951), this tradition was greatly discouraged (Uttam Lochan, conversation).

In the 1850s, British historian Ambrose Oldfield visited Nepal. A description of Oldfield of Kathmandu streets in the 1800s reads (cited in Poudel, 2010):

> *The houses are of brick and tile, wit-pitched or pen-roof; towards the street, they have frequently enclosed wooden balconies of open carved work, and of a singular fashion, the front piece instead of rising perpendicularly, projecting in a sloping direction towards the eaves of the roof. They are of two, three,*

and four stories, and almost without a single exception, of a mean appearance; even the Raja's house is but a stories building and claiming no particular notice. The streets are excessively narrow and nearly as filthy as those of Benaras.

Oldfied has described the Newar architecture plainly. The buildings are not more than four stories, the face of the buildings clearly shows the bricks, the windows often have carvings, and the roofs are supported by the struts. Jung Bahādur Rana, the first Prime minister of Rana regime, established the Rana oligarchy in Nepal. During his regime, he discouraged traditional architecture by introducing and promoting western-style architecture after his return from Europe visit in 1850 AD. His successors also continued the same policy, as they imported the European design and/or appreciated British India's nobility design (Bernier, 1979, p. 27).

In this connection, Uttam Lochan says:

The Ranas were inspired by the British culture and the new palaces and buildings made by them were more inclined towards European designs and elements. Perish of the Nepali art started. The artists were diverted and discouraged. They changed their occupations. The traditional art and techniques were just simply forgotten.

Uttam's arguments can be taken as a proof in Rana palaces like Simha Darwar, Thapathali Darbar, Babar Mahal, and Keshar Mahal. All of these palaces were made in neoclassical architectural style. The Ranas also changed the conventional Newari pattern of building palaces inside the city. Erection of white plastered palaces and absence of traditional style artistic wooden window, struts, and roofs are some of the examples.

One can see such example in Bhaktapur Darbar Square as well, there is an 'odd one out' building called Lal Baithak. This Baithak was made by the Rana regime after the massive earth quack in 1890 BS. Before the demolition of the building in the earthquakes, there was Simha Dwaka Darbar (Lion Gate Darbar). It was also called *Nhekan Jhyā* Darbar (Mirror Window Darbar). The mirror was added in the Malla Period. The Rana rule lasted for 104 years and during that time a number of grand royal residences were built in Kathmandu but only a few are in Bhaktapur. Among them is the building of Shree Padma Secondary School, established in 1980 B.S. (56/8/14 ahead of the gregarian calander) in the Darbar Area of Bhaktapur. This building was also built in a western model. Even the residential building at Thalechhe in made in western style. This building was also collapsed in the 2015 earthquake.

Attraction towards White-Color Job as a Challenge

White color is meant to go to the office wearing a neat and clean dress and respected everywhere whereas the working people are not respected. People give respect to those who have a tendency to work in an office, but ignore those who work physically hard, dirty and heavy. The children of Silapakars do not seem to be interested in this occupation nowadays. The first thing is that they've developed their economic status higher in the last few decades. In the past, Silpakārs focused on their children's (sons) education rather than on woodcarving. Now they are training their women and daughters to carve wood. But the women and daughters are not being able to give enough time for the work because they have their own family responsibilities. Jouvan tries to supplement:

> *In the past, they (Sīkahmi) did not value school education. The reason was that Silpakārs did not have enough land for farming. They had to survive on*

their labor. So, they focused on work than study and they trained their children from the age of 8-11 years, the school age.

Now the situation has been changed. The children do not pay attention as it is physical work. Besides, it's believed that they should be educated first, some of the children study in boarding school, that makes them too busy after passing SEE (grade ten), they need to go to college, after that they make their own destinations as they are learned.

In terms of earning, a wood carving artist can earn a good sum of money. But, the children prefer to have a white-color job. Jouvan's statement clarifies it this way:

I've told you. Today an engineer or a doctor hardly earns 20-25 thousand rupees being employed as government works (officials). Maximum they earn up to 40,000 rupees. No more than that. On the other hand, the good wood carving man earns 40-50 thousand rupees easily in a month. You do not need a big investment whereas you need 30/40 lakhs to pass MBBS and some 15 lakhs to pass engineering.

While visiting the people for data generation, I have heard about an incident regarding the interest of people in this work. There was a father who earned about 50/60 thousand rupees a month doing this carving job. He did not let his son do this job. He made the son an engineer. Now the son's income is only 20/30 thousand rupees whereas his own income is 50 thousand rupees a month. However, the father encouraged the son to be in the academic field itself. Jouvan adds:

People do not see/ think that this is a well-paid job. They think there's no future scope of this job. It's thought that there is no future in this kind of job. It's thought that you can earn only as long as you can work. They work for jobs that pay them life long, who knows what will happen tomorrow?

Silpakārs' common understanding is that there's no security in this occupation from the side of the nation. They say that the nation is not responsible to the citizens, the industry owners themselves should manage for the security of the workers. The workers feel they are not secured. They do feel a lack of respect and honor by the authorities and the officers of the in comparison to an engineer, doctor, and lawyer or like that. *Kali Bahādur* opines- "This is not a reliable job. When people get older, they cannot earn well so there is a tendency that they let their children see other jobs and study well."

Some people are forcefully engaged in this job. Normally we do say that different people have different skills, interests, and abilities. But, when a father asks all four of his sons to engage in the same work, that does not bring a good result. There is a great difference between working with interest and working under someone's pressure. When a father sees some potential in his son, he forcefully tries to make his son work for him. He thinks he gets some support in his work but the result becomes negative in many of the cases. Jouvan adds:

> *In our society, working-class people are a bit neglected. People think that they cannot even survive as they do not work. On the other hand, a shopkeeper thinks he's an investor and that he's superior to the worker. He thinks that the worker cannot get anything to eat if he's not there. In this way, the worker is oppressed and that's why they get depressed.*

As a researcher, my argument is that we can respect them as an artist with educational degrees like a bachelor, master, and Ph.D. They deserve it. They are greater architects than engineers; researchers have also shown that they (Silpakārs) are real architects.

Kali Bahādur has a different observation in this issue. He says that the changing family structure and the job relations have caused the gap between the parents and the children. He says:

> *I have got a son, but he does not show interest in carpentry. It might be so because the workplace and he stay apart. I go to work outside. It's not like the furniture in one's own home. It would be good if there is a small workplace within one's home. But people have to shift to another place for work now as big places is necessary. Nowadays people get irritated because of sound pollution!*

In those days, people did not have many options in an occupation like today. Today, people can select their own occupations according to their interests and scope. The parent cannot compel their children to do the family works too. They like to enjoy their personal or private life. They have become more individualistic. It is because individualism has become predominant. There is a lack of collective feelings.

Guru Lal says- "*In the past, most of the people were very poor and were compelled to do the physical works. In the past, we had to look forward to Dashain or Bisket to enjoy the taste of some beaten rice."*

It seems that the tradition of transferring the knowledge that one has inherited from his ancestors to the younger generation, from one generation to the next, might be broken or discontinued.

Escalating Cost: Another Challenge

The main hindrance to the use of wood on the wide-ranging scale for the building is its escalating cost. In earlier days, there was enough timber from the Kathmandu valley itself or in the surrounding hills. The growth of population and the

following demand for timber resulted in the shortage of timber. Now Kathmandu valley is mostly dependent on Terai Jungle or the woods from abroad.

People have begun to put doors and windows on aluminum just because of their cost-effectiveness. Many Silpakārs are also invested in aluminum works. Some of them have left the woodworks on changing course of time and demand. They say that in terms of building the demand for aluminum or steel structures is greater so they cannot be confined to the wooden window and door.

Almost all buildings are concrete nowadays because wood is more costly. Even quality wood is not easily available in Nepal. Those who make the traditional style of houses in the core area make all the structures concrete except the doors and windows. Some make roofs with struts and tiles. Woodworks are slower because wooden structures are made manually. *Kali Bahādur* elaborates -

> *In the past, Silpakārs are kept for three-four months to build a home. Nowadays, Silpakārs are called just to make windows and doors and some furniture pieces. If the house is constructed traditionally, carpenters come first. They get paid from the very beginning. If a policy to make a traditional style of load-bearing masonry houses is made compulsory at least in the core area of the city, woodcarving occupation would be better.*

Newar style of architecture is unique and can be developed supporting the people in making traditional style of houses. The knowledge may be lost when such structures are destroyed completely.

In the past, the carpenter was considered to be a higher-level engineer because he is given an important place before the start of construction and the end of it. Now everyone looks for the money. The carpenters have become a contractor. With the introduction of modern technology, people with traditional skills have to live in crisis.

Wooden structure buildings are nature friendly and are reusable. Nepali geography is suitable to produce enough wood for Nepali people. The cost of timber can be reduced by planting extensive trees in the barren land of the country. This is how the challenge of the *Sīkahmi* converts into opportunity.

Value Becomes a Challenge

Without hard work and time, no woodcraft can be made. Some customers do not understand the labor of the workers and might underestimate the time and again that makes the artists disheartened. Raj Kaji says that some people understand the time-consuming hard work to make artistic crafts but most think that they are overcharging them. It is good that people have started showing more interest in wood carving these days. There is the demand for new designs or replicas of temples and palaces to decorate their living rooms, balconies, courtyards, and walls.

Chapter Summary

Woodcarving and woodcraft making has increased since the last four decades in Bhaktapur with the start of renovations of the ancient monuments and buildings. The recent trend of making houses and buildings of the traditional style of architectural design has boosted the woodcarving industry as well. Traditional woodcarvings are being incorporated in the buildings made these days. The local government organized some training of woodcarvings to the other caste group people to fulfill the demand of the workers. Thus, the other caste group people too started the occupation independently. The market of Nepali woodcraft is widening in the past decades because of the development of the tourism industry in the past decades and it is encouraging to produce the woodcraft to meet the demand. The future of the woodcarving looks bright as the women are introduced in the artworks.

The children of Silapakars do not seem to be interested in this occupation nowadays. With the introduction of modern technology, people with traditional skills might have to live in crisis. Some of them have left the woodworks on changing course of time and demand. The artists are the pride of the nation and should be honored accordingly.

CHAPTER VII

FINDINGS AND DISCUSSIONS

I have discussed the opportunities and challenges of *Sīkahmi* in Bhaktapur in the sixth chapter. I have outlined the findings and discussions of the research in this chapter.

Integrated Knowledge of *Sīkahmi*

The first finding that I came up with was that *Sīkahmi* has botanical, architectural engineering and sociological knowledge in an integrated way. For example, they know the quality of the woods; the place where such woods are available; the design to make doors and windows; and the feelings of the people of a given culture.

This knowledge of the *Sīkahmi* can be explained from Vergati (2002, p. 4) who has mentioned Sylavian Levi, the first Western scholar to draw attention to it and compare Newar houses with those of Parisians, wrote:

> *The outstanding trait in the character of the Newar is his liking for society. A Newar never lives in isolation whether in town or village; he likes to lodge, somewhat in the manner of the Parisian, in several-storied houses, even if this means living in cramped conditions. He knows how to enjoy all the pleasures which nature offers; he sings, he chants, he laughs, he is a shrewd judge of the country; he likes to picnic in the gay company in some in some shady spot near a spring or a stream, in the shadow of an aged sanctuary facing a friendly or a grandiose landscape.*

The quote says a lot about the indigenous Newar people.

Indigenous peoples have their own way of knowing things. Their knowledge is more related to the nature they live with. The knowledge system is developed in the course of adaptation in their habitat. Their knowledge is related to their survival and also comparable with that of the other civilizations. These peoples see life as a symbiotic and spiritual relationship with the environment (Cajete, 1994, as mentioned by Leik, 1992). Their worldview is developed within nature, and it focuses on existing in harmony with the environment. They remain close to nature and worship nature too.

Wood is the best product of nature and is still essential to human life. Humans survived thousands of years in the jungle and it is the foundation of the development of human civilization. Wood has been used by humans before the development of human civilization to meet a varying array of human needs. People gradually came to understand the unique properties of wood. Experience and observation helped to develop the knowledge. We may use wood with intelligence only if we understand wood (Wright, 1928 as mentioned by Panshin and Zweeuw, 1980). Wood has been one of our most important building materials from the earliest times of human civilization and is used for the making of tools, weapons, and furniture. Wooden ancient monuments of Kathmandu valley including that of Bhaktapur using wooden structures like windows, doors, roofs, struts are themselves the books for the readers.

Most of the designs of windows and struts and the carvings on them seem to be unique. They are found in public places as world masterpieces. The *San Jhyā*, *Tikī Jhyā* and other wooden artistic forms have glorified the Bhaktapur city to entitle as the capital of wood art. The artistic structures of the wood show the prosperity in the knowledge bank and economic status of the Bhaktapur city. The competition in

developing artistic monuments and temples enhanced the research and innovation in woodcarvings and wood structures.

The erotic art made by *Sīkahmi* in the *Twāna si (n)* (struts) imparts the youths for healthy sexual life. There are several legends and elaborations on the erotic art in the temples. The erotic carvings show the reality of nature because animals and plants are the products of the reproductive behavior of their like. Without sexual behavior, no offspring is produced, even the 'incarnated god'. It tries to depict the power of nature rejecting the supernatural power.

I remember an encounter in the month of June with a person with his family members when I was wandering in the Jungle of Suryavinayak. I had a conversation with a person of 70s in his age. He showed the tree of *chilaune* with some small white flowers and said that the wood is used to make the plough. It is because that the wood is hard and strong and available in the hilly region of Nepal where tilling of land is done by ploughing. *Goyen Chhāsin* (*Chilāune)* is said to be the king of wood and put in the Dhurī, the topmost beam of a traditional house. It shows the importance of the wood, it signifies the property of the wood.

I used to wonder why *Susin* is used in *kuču*, the handle of *ku* (spade). The *čhu* (handle) looked so smooth that it reflected some light. We had to work for some weeks to till land using ku but I always felt comfortable to handle. Actually, the *susin* is said to be *Younse* (comfortable) who handles it. The handle of sickle, hammer, saw, etc. is also made up of *Susin*. It is proof that the indigenous people had the idea of properties of wood in proper.

The finding also helped me reflect on some big trees of *Khaibasi* (*Melia azedarach and agrakh in the Nepali language*) in our field planted by my father in my childhood. They became big in my thirteen in age and fell down for making my new

home. The timber was cut in proper shapes and stored in the cool and dry place of Badri uncle, a carpenter friend of my father for future use. Unfortunately, my old house was demolished and I had to make a new house. I used the timber of *Khaibasi* after a decade. I made the windows and doors with the timber of *Khaibasi*. I remember my carpenter uncle saying that *Khaibasi* is used to make frames of doors and windows and is used as beams in traditional houses. It's just because of its availability and bearing capacity to make houses.

The finding also reminded me of ancient technologies *Bhailakha* which has been transferring generation to generation since the mid-15th century through the traditional festival- Biskājātrā. The technology could be one of the prominent examples for a new generation to learn physics by enjoying the thrilling festival from our ancestors. *Bhailakha* technology is very old. It is sure that it could not be made if our ancestors did not have scientific technology. They knowingly or unknowingly applied the theories of science. I have seen Biskā Jātrā pulling the *Bhailakha* and tried to reflect whether they can be examples to explain the scientific theories included in the curriculum of school science. I have talked with two teachers of Physics to be sure to elaborate on these issues.

I have gone through the textbooks of secondary level developed under the Curriculum Development Centre (CDC) as the reference. In the beginning, there is the topic of Measurement. There are hundreds of pieces of wooden structures joined to make the *Bhailakha* and it would be impossible to make it without the measurement of them. The construction begins through the precious measurement of the various geometrical shapes and structures according to the well definite structural designs of *Bhailakha*. They do not use an international system of measurement units instead; they follow the traditional primitive measurement units such as *langu* (thickness of a

finger), *Pākhan* (a palm span), *Kuchhī* (a hand span), etc. for the length measurement. People used the arm, foot, or hand span of a particular person which can but it does vary from person to person and hence cannot be reliable while applying the standard methods. To increase the precision level, they do of course follow the measurement of the single person named *Sīkahminā*yo. The *Sīkahminā*yo is a leader of the whole project of *Bhailakha* to whom other *Sīkahmi*s have to follow without any reservation.

I resemble these measurements with my grandfather's method of measuring the size of *pu* (earthing up) with the help of roughly a meter-long stick for vegetable cultivation such as potatoes, onion, garlic, and gingers. Making a stick cut to make an equal size of the *pu* to grow potato, ginger, onion, etc. I do remember my mother cutting slicing the *Hāku Prasi* (black sari) and *Jani* (sash for waist) just by measuring using her own hand while she prepared for the dispatch in a market of her hand-weaved cotton. One important thing is that they used to measure with reference to only one person and it reduces the errors. However, there was a measuring tape called *dapu*. My mother used an iron *gaj* to measure the length of cloth she weaved to submit to the *Kāpa Thākimhā Sāhu* (person who provides the material to weave cloth). The traditional measurement units are given in the following table:

Chhālāngu (1 angul) = approx. 0.75 inch

Pe lāngu (4 angul) = 3 in

Chya lāngu (8 angul) = 6 in

Hin nelāngu (12 angul) = 9 in

Ni Pākhan (2 vittaa or cubit) = 18 in

Chha Kuchhī (1 haath) = 1.5 ft.

Chha gaj (1 gaj) = 0.9144 m = 1 yard

Bhailakha is constructed by fixing several geometrical shapes. Many geometric shapes can be seen in *Bhailakha* like the circular-shaped *Pāngrā* (wheel), curved of *Béta Sin* (elongated curved wood), cylinder-shaped *Aan sin* (axel), rectangular *Kāsin* (base of the chariot), etc. in a proper manner. Amazingly, all of them are made of wood with minimum or no use of metal or nail supports. Almost no metallic nail and screw are used for fixing the entire *Bhailakha*. This makes the *Bhailakha* elastic and magic synergy of the several parts that robustly function well though several hundreds of people play tug-of-war to it.

Bhailakha is pulled by hundreds of people that applied the use of tons of force on it applied by hundreds of people. Force is the push or pulls on an object that changes the motion and shape of an object. The force of the people can move the *Bhailakha*, which is said to be changed in inertia; the force changes the direction of motion, said to be changed in momentum; the force increases the speed of Bhailakh, said to be acceleration, the force displaces it, said to be work done in physics. Although it travels several distances, finally the festival ends by bringing the *Bhailakha* to the original place-making the zero displacements. *Bhailakha* is pulled horizontally while *Pāngrās* have to rotate in their own axis and *Bhailakha* travels in linear distance. This shows a good example of the transformation of force from linear to rotational and vice versa during the *Bhailakha* festival. It is certainly required a large force to bring the *Bhailakha* in motion at the beginning because of huge inertia owing to the several tons of *Bhailakha*.

During the motion state, people enjoy minimum force that is required to work against the frictional force between the edges of wheels on the ground. This is a practical realization of Newton's first law of motion.

Mass, the total amount of matter contained in the *Bhailakha* is very much important while calculating the force required pulling it. The more the mass, the larger force is necessary to pull.

I realized that students can learn Newton's Laws of Motion by observing the pull of *Bhailakha*. Newton's first law of motion states that everybody continues to be in a state of rest or of uniform motion in a straight line unless an external force is applied to it (Adhikari, 2075). While the *Bhailakha* moves suddenly by the pull of the people, the top parts of the *Bhailakha* and as well as the people are thrown backward. It is one of the thrilling moments for spectators because the *Bhailakha* bends backward. This phenomenon happens because the lower part of the *Bhailakha* comes into motion along with the wheels but the upper part of the *Bhailakha* and the people on it remain in the state of rest due to inertia of rest. As a result, the people fall backward. A similar thrilling phenomenon happens, when the moving Bhailakah gets collide with some sort of obstacle like a wall or house and it is suddenly stopped, the upper part of the *Bhailakha* and the people on it fall forward. It is due to the inertia of motion of the upper part of *Bhailakha* as well as the riders which try to remain in motion though the bottom parts come in rest.

We can easily understand the further laws of Newton just being a curiosity on why too low acceleration is generated in *Bhailakha* even though hundreds of people pull it. Because *Bhailakha* is too heavy, and hence acceleration is inversely proportional to the mass as stated by Newton's second law of motion. Further, the *Bhailakha* usually damages brick-paved roads but not a stone paved road. Anybody may quickly guess that brick is weaker than stone which hardly resists the huge impulse exerted by *Bhailakha*. The action of being pressed by Bhailakha should be

equal and opposite to the reaction of brick to the *Bhailakha* as stated by the third law of motion.

Newton's Second Law of Motion describes that force is the multiplication of acceleration of an object. The more the force is applied to the *Bhailakha*, the more the acceleration is seen. One can imagine that the more acceleration generated in the Bhailakha, the more it inserts force.

There are linear, circular, simple harmonic and rotational motions at once while *Bhailakha* is in motion. It is found while the *Bhailakha* is pulled. There is a linear motion when the chariot moves toward the direction of force applied, whereas the wheels show circular motion when the chariot moves. It is a festival of tug of war among the hundreds of people who pull the *Bhailakha* from both the opposite directions that make the marvelous motion of *Bhailakha* as a harmonic oscillation. It continues till one side (*Thane* or *Kone*) finally succeeds in overcoming the opponent's force.

One may find several simple machines in true action when the *Sīkahmi*s use their tools for slicing, splitting, drilling, lifting, and fixing the parts during the construction of the *Bhailakha*. Besides the availability of several modern machines and tools, they prefer their own traditional tools like chisel, axe, sickle, etc. that make their tools as simple as a simple machine. No matter how heavy the parts of *Bhailakha*, they never use a crane to lift them up, instead, they use inclined plane, pulley, and wheel and axle. Hence, students can learn the simple machines in action for building the robust mega chariot.

The frictional force is important to bring the chariot slow and steady motion otherwise it may roll out of control on the street. Hence no lubrication and bearing are applied on the wheels as well as no braking system is there too, instead, natural

friction is used to control its motion. The frictional force depends on the size and nature of the surface. Rough surface provides more friction; the rubber sole is more preventive than plastic or metallic sole for walking; rough rubber tire is used in vehicles. Rough wooden wheels are used in *Bhailakha* to roll on the rough brick-paved road in Bhaktapur to gain the high friction that naturally controls the motion of the heavy chariot

The amount of friction depends on the materials from which the two surfaces are made. The rougher the surface, the more friction is produced. Friction also produces heat so one feels his/her hand so hot pulling the *Bhailakha* through the jute rope attached with it. It is a conversion of frictional force (mechanical energy) to heat energy when a person's hands work against the frictional force on the rope.

The rolling *Bhailakha* vibrates the ground that could travel several miles as sound travel faster in solid with little attenuation. One may feel the *Bhailakha* jātrā even he/she is a mile away from the festival spot because of the large amplitude of sound produced by it. It is easy to distinguish whether the chariot is moving towards or away from the person by hearing the pitch variation. One may hear a higher pitch if the chariot is moving towards the person, otherwise lower pitch if it is moving away from the person. This phenomenon is well known as Doppler's effect.

Sociologically speaking, the rhythmic sound choir of *Hasé* and *Hainsé* made produced by the hundreds of people while pulling the chariot adds excitement to the mass along with spectacular thrilling moments of the festival. It adds excitement to the people. One can enjoy the beats of Bhilakha and the monochromatic uni-sound in the *jātrā*. In this sense, *Bhailakha jātrā* is not only a festival of tradition and religion, in fact it is a festival to learn science, mathematics, engineering, and sociology where

a person can enjoy the thrilling moments of the festival with the real and simple application of science.

Family Specialization of Vocational Knowledge

My second finding was related to the vocational education that the *Sīkahmi* hold for generations. As I found, the *Sīkahmi*s have a family specialization of vocational knowledge. I noted that *Sīkahmi* has plentiful knowledge of art and craft, science and technology, and architecture. Referring to the ancient period of Kirat and Lichhvi, Joshi (2003, p.2) says, "There was *ilam shiksha* (trade skill education) which was provided by the family to their wards in their trades. It was informal patriarchal education. Occupational skills such as woodwork, painting, sculptor, architecture, smothery jobs, metal works, etc., were taught".

Widespread development of art and architecture took place in the Malla period. But, there were no formal institutes for technical education in those days. Children learned knowledge and skills in the family environment, in the family workplaces. The knowledge and skills of woodworks were transferred to the new generation in informal ways.

People of different caste groups have different occupations in those days. They could be said as the division of work in society. Different caste groups were assigned to different professions by the state and it was mandatory. Nobody can change their occupation freely in those days. Joshi (2003, p. 6) mentions:

> *Following the socio-economic reforms of King Jayasthiti Mall (1380-1395 A.D.) certain castes were developed on the basis of the occupations and vocational skills they pursued. This further gave support to the development of technical and vocational education. These occupational caste groups trained their children in their own trades, which developed specialized manpower.*

According to oral tradition, it was during the reign of Jayasthiti Malla that is to say at the end of the 14th century, that a legal code established the hierarchy of the castes (Vergatti, 2003, pp. 33-34).

Asante, 2017 mentions Plato, "Plato advocates for efficiency in labor: each person must “contribute his [or her] own work for the common use of all” so that instead of a farmer spending, say, twelve hours in producing food, building a house, producing textile, and making footwear, he or she would concentrate on using the twelve hours in only producing food for all. This is necessary because (1) naturally, we are different people and each person is best suited to particular tasks, and (2) an expert in a particular field does a better job than a jack of all trades. An economic effect of this is that more plentiful and better-quality goods and services are produced. Engaging in two or more kinds of work decreases any chance of being best in any of the trades, but specialization creates the process for one to be best at his or her trade: “...each individual would do a fine job of one occupation, not of many, and ... if he [or she] ... dabbled in many things, he’d surely fail to achieve distinction in any of them”. This shows that the specialization of vocational learning was advocated by Plato. He had a firm belief that division of work increases the efficiency of the person. We find family specialization of work because of the division of work among the caste groups. This too created the monopoly of knowledge. For the specialization of the skill, there was the system of holding the knowledge and skill in a certain family. This helped to develop entrepreneurship in the people.

God as the First Teacher

The third finding is related to the pedagogical source of the *Sīkahmi*. As I found, *Sīkahmi* believed in god as their first teacher to teach skills for them. To my astonishment, *Sīkahmi*s put their working tools over the head and pray to god to hand

down them the craft skills. They also worship *Āga(n) dyo***.** Vishwokarma is the teacher of art and crafts for *Sīkahmi*. Thus the belief of the *Sīkahmi* indicates that one should study and learn daily.

Worship of the lineage deity, the *digu dyo* takes place once a year, in the *Agama Chhen*, worship takes place daily (*nitya-Pujā*). *Diksa* is a teaching of secret formula (*mantra sastra*) transmitted from master to disciple, is secret, and is always held in the *Āga(n) Chhen*. Normally, *diksā* is given to boys and takes place after the ceremony of *vratabandha*. This shows the patriarchal nature of society. The women do not the right to see the image of the *Āga(n) dyo* which is veiled.

Sīkahmi brings the tools used in woodworks by the family in the *Āga(n) Chen* and keeps in order in front of the Āga(n) *dyo*. The family priest or the senior of the lineage worships the tools as the deity. They think that the tools are the great innovation of their ancestors and they give homage to the ancestors, they become thankful to them too. This encourages the *Sīkahmi* to be innovative and creative. On the day of *Dasami (Vijaya Dashain*), the tenth day of the festival, there is a celebration of handover of the tools to the lineage people by the *nāyo* (leader) to all other members. The practice helps in continuing the relationship of exchanging knowledge and skills.

The *Thyā-safū*, Reference Book

The third finding is that ancient *Thyā-safū* (Folded book) is the Veda for the *Sīkahmi*. It has sketches and designs of the monuments and woodcarvings of many generations. No one can say the exact date of the writing of the *Thyā-safū* shown by one of my informants but it looked very old. It was kept safe by the ancestors of Kabi Prasad.

Thyā-safūs are made on the basis of *Vāstu-shastra*, the traditional science of architecture subordinated to the Veda. In those days, no printing press was invented and each book was written by a person with pen and ink. It might have taken a long time to complete a book. All books of the past are not well preserved, some were damaged by water, worms, fire, etc. *Bhajan* (devotional song) books are printed modern press but they had been made in the form of *Thyā-safū* till some decade ago in the Kathmandu valley.

Situated and Peripheral Learning Environment at Home

The fourth finding is that *Sīkahmi*s have a situated and peripheral environment to learn woodworks at home. The first toys of the children are small pieces of wood. They put the round piece of wood removed while using plainer around the ears or took the sawdust of wood in their hands to feel the difference. They knew the harmonic sound of the hammer and chisel used by the seniors. They try to derive the meaning of using tools unknowingly. They might be amazed to see their father or grandfather making different flowers and animals on wood. They learn the different icons of Gods from childhood. Sometimes, the father puts a child on his lap and makes a try on a hammer using maximum effort by him; the child becomes happy because he thinks that it was done by him.

A child of *Sīkahmi* dreams to be an artist like his father or grandfather because he knows that the seniors earn money to run his family making carvings on wood. He takes his senior male members as his role model (many of the children do so). Slowly the child becomes habituated to listen to the sound of saw, hammer, and chisel, and so on.

The findings above show that learning not only takes place inside schools and colleges, it also takes place in communities, workplaces, and families, (Bentley,

1998). It is evident that most of the learning takes place in communities, workplaces, and families at any time. In 1971, Illich published *Deschooling Society*, a critical look at the troubles of modern schooling. His controversial book advocated radical changes in the education system, including the disestablishment of traditional schools and the development of more informal "learning webs." Illich claimed that most learning happens informally, institutionalized schooling hinders true learning and the ideal education "system" allows people to choose what they learn and when they learn.

Neither learning nor justice is promoted by schooling because educators insist on package instruction with certification. Learning and the assignment of social roles are melted into schooling, (Illich, 1970). Generally, the educated people are so much enthralled by the traditional and prescriptive teaching that they are not ready to think beyond that. It is the high time they were disenthralled and made to understand the process of learning in a new light.

*Sīkahmi*s learned the artistic works beyond the school. They left the school because they did not enjoy the classes there. They could learn and earn in a family run business and were attracted to the ancestral profession. Their family members suggested leaving the school. The learning of *Sīkahmi* indicates that most learning happens casually, and even most intentional learning is not the result of programmed instruction.

More Opportunities and Less Challenge in *Sīkahmi*'s Life

This study found that there are more opportunities for the *Sīkahmi*s than the challenges. Renovation works and interest of the people to retain ancestral arts gave opportunities to the *Sīkahmi*s. Besides, girls, women, and people of other caste got the opportunity to come into this occupation. But the challenge they faced is to retain the ancestral ways of learning the skills. The second challenge is to retain the

children of the *Sīkahmi*s in their parental occupation as they are giving up this occupation thinking that it is a *dukhiya* business. The third challenge is the raised price of the woods.

Theoretical Discussions

Reflecting on the theories that I mentioned in my theoretical and conceptual framework, I have discussed the findings in the following paragraphs. In these paragraphs, I have tried to show the compliance and the differences of the theories against my findings. Let me begin with them.

Tri- Theories in Sīkahmi's Learning

Three theories were found applicable in *Sīkahmi*'s work. They are the social learning theory of Bandura; the experiential learning theory of Carl Roger; and the social constructivism of Vygotsky. As I found, Bandura is applied in the learning process of *Sīkahmi*. They have used observational learning meaning that learning through indirect experiences. A boy of *Sīkahmi* simply watches and listens to other people and acquires knowledge. He keenly observes the behavior of the older members of society, tries to imitate and follows what he observed.

I also noted that *Sīkahmi*'s have used Carl Roger's experiential learning. This learning says that learning takes place in a socio-cultural environment. Self-initiated efforts are required. He emphasizes the application of the acquired knowledge. *Sīkahmi* learns woodworks by practice and hence it can be recognized as learner-centered learning. Without the self-initiation of a person, he does not learn. The *Sīkahmi* evaluates himself and tries to do better. Whatever learned is applied where he needs. Throughout the experiential learning process, the learner is actively engaged in discussion, practicing, solving problems, make decisions and be accountable for results.

While learning I found that *Sīkahmi*s have followed a saying in *Nepal Bhasa– Nyaye masa mha syā boye hathāye* (One should learn step by step). Learning for them starts from the basic things of the chapter. Initially one solves the simple problems and complexity grows in the course of time and his/her practice. It may be said as known to unknown or one develops knowledge on the basis of already learned things. On this ground, I claim that Roger's theory is totally applied in the learning process of *Sīkahmi*.

As Vygotsky said, a child of *Sīkahmi* encounters spontaneously in his day-to-day life, social interaction and cultural exchanges help him in constructing knowledge involving essential simple spontaneous concepts. Knowledge construction takes place by reflecting his own everyday experiences. Higher-order concepts and knowledge is developed by the *Sīkahmi* on the basis of pre-existing conceptions. Adult or experienced peers help to construct knowledge. In the beginning, one gets help from others to acquire knowledge and later tries to do by him to complete the task.

Use of Theory of Fear in Sīkahmi's Learning

Scolding the children pronouncing different names like *gadha* (donkey), *khun* (thief), *dhogimha* (rotten) by the *Sīkahmi*'s parents is very common. It is quite different from western parenting where parents think twice or thrice to save the self-esteem of the children. In this regard, Chau (2011) says,

> *If a child comes home with an A-minus on a test, a Western parent will most likely praise the child. The Chinese mother will gasp in horror and ask what went wrong. If the child comes home with a B on the test, some Western parents will still praise the child. Other Western parents will sit their child down and express disapproval, but they will be careful not to make their child feel inadequate or insecure, and they will not call their child 'stupid,'*

> *'worthless' or 'a disgrace.' If a Chinese child gets a B – which would never, happen – there would first be a screaming, hair-tearing explosion. The devastated Chinese mother would then get dozens, maybe hundreds of practice tests and work through them with her child for as long as it takes to get the grade up to an A.*

In the case of *Sīkahmi*'s parents, the children do not mind the bad words used by the parents and they believe that they are for the betterment of themselves. *Thakāli pīnsa dhāla jaka tan čāye majyū* (No worry if the elders are rude in correcting you) is commonly pronounced by the Newars. Even corporal punishment was applied to the children in homes for their wrongs. Many of the children correct their mistakes because their *abwa* (father) gets furious.

Knowledge Transfer among the *Sīkahmi*s in Bhaktapur

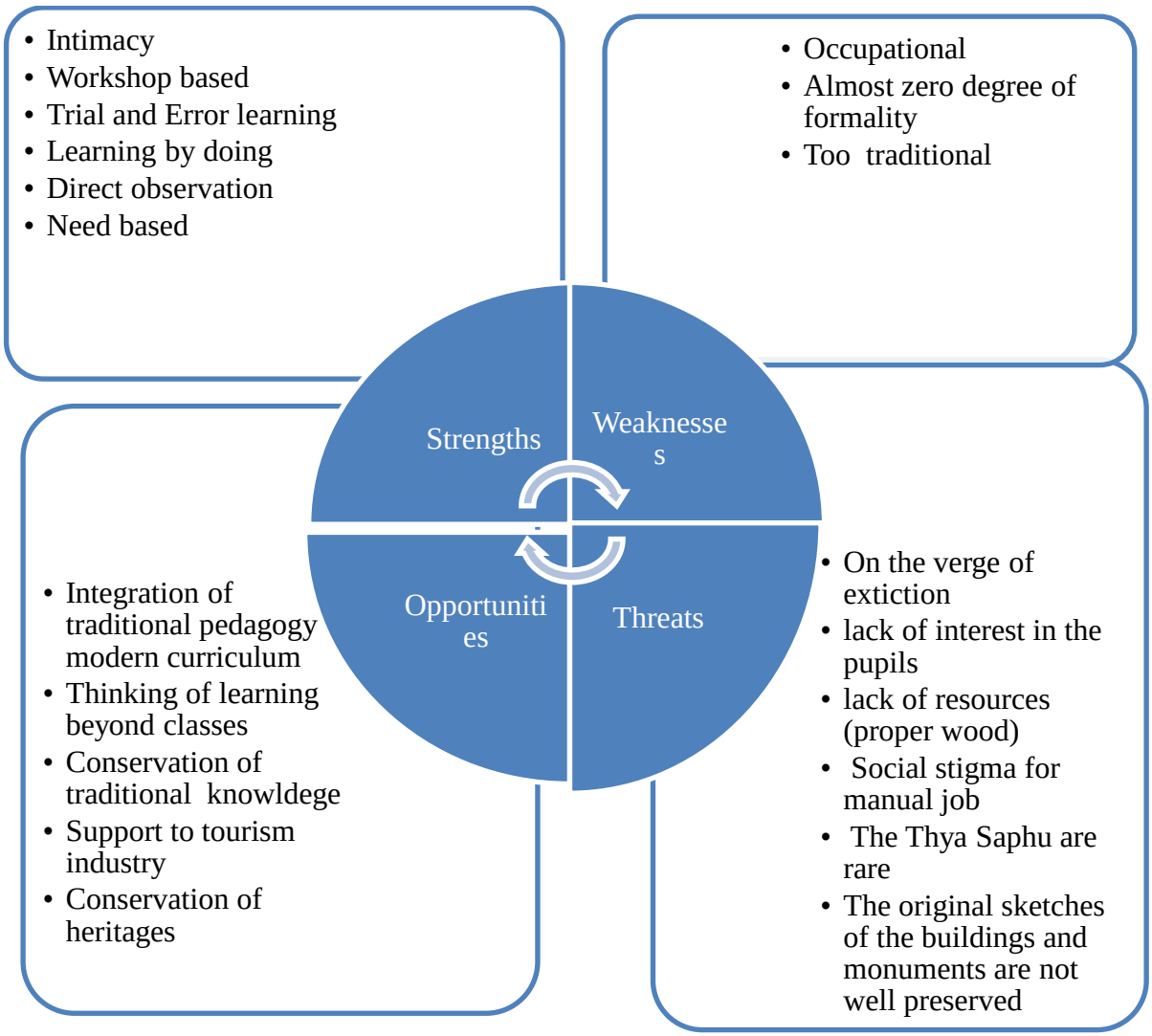
The traditional ways of learning connect the people with the necessities of life. The case of *Sīkahmi*s in Bhaktapur also displays that the knowledge they practice becomes the means of subsistence in their life. For a meaningful and successful living, they require the skills: in the traditional set-up, the parents use particular words to convince the children to master the art. Actually, the parent-child intimacy places them in a position in which they do not mind or feel hurt for what their parents have spoken to them.

The fundamental aspect of indigenous knowledge transfer lies in establishing intimacy with each other. The learners are adequately treated as the necessary part of the organic whole of the knowledge system into which they are supposed to enter. This intimacy connects the skills and ability to conceptualize the wooden works with life as such. The pupils realize the importance of their heritage that resides only

within practice of their family only. In this sense, the learners feel special as they are obtaining a unique and special knowledge not available elsewhere.

Table 9

Implications: SWOT Analysis



Reflections, Conclusion and Implications

In the following sub-section, I have discussed reflections, conclusions, and implications.

Reflections

In the beginning, one of my friends from *Sīkahmi* group helped me by giving basic information about the cultural practices of *Sīkahmi*. He was ready to help me to

make me find the informants. It was not difficult to build trust with the *Sīkahmi* people. I got a publication of an institute of *Sīkahmi* of Bhaktapur. Being an ethnographer, I know I have to do intensive fieldwork. However, the secondary information helped me to explore more.

I tried to build a sound relationship with *Sīkahmi* people of Bhaktapur. I started the clear objectives of my visit and requested to provide the necessary data. I never felt any difficulty and problem in building trust with my informants.

I was expecting that I can extract some new ideas and knowledge stored in the *Sīkahmi*. My hope was that I can contribute to developing the age-old knowledge and skill at least a step ahead.

I found that it is new ground for researchers in a perspective to tie up the knowledge of our ancestors with the present knowledge of science and technology. Many have written on the history of woodworks in Nepal but very few scholars have raised the issue of the knowledge of the *Sīkahmi* and their way of knowledge transfer. So, I was very much excited to proceed ahead. I delved into the study of *Sīkahmi* as it could be a new issue to innovate knowledge.

I managed time to meet my informants in time. I did not need to labor hard to hang around the informants. I had to meet some historians, experts of Newar culture, scholars of science and technology too. It was very easy to reach any of my informants because all of them stay in my own city. I used to stay with the respondent for hours to interview. They were happy to halt their work to talk with me. Sometimes the informants talk with me while using the hammer and chisel.

I know that everyone has their own experience and knowledge to share. Every person has different views and understandings in their field of experience. I was not

totally new for the context of my research. However, I had to find something new from my city's people.

I know that qualitative research is like a desire to find the endpoint of the universe. I had to delimit my research. I know that different people have perspectives to perceive things. I took consultations from my supervisor and my friends to make my research with a standard.

I found that research is not an easy-going business and it demands determination and confidence in the researcher. One should be sure that each person has their own knowledge derived from their life experience.

The indigenous people have developed their unique local knowledge to run their life in the proper natural habitat. The knowledge of the local people is not well recognized by the authorities and the people are not taken as learned people. Local knowledge is nature friendly and it can help the sustainable development of our nation.

It is sure that this research cannot be complete as it cannot cover all the aspects of the Newar people of Bhaktapur. I could find new knowledge and ideas when I met a new person. Initially, I thought to bring many aspects of the *Sīkahmi* in terms of knowledge and culture but I had to limit myself just finding out the knowledge on Wood. So I can say that it is a never-ending process. I agree with the delimitations of research.

Of course, my research was a rigorous process. I had to give a clear picture of a research product with my research issues, theories I had applied, mythologies I undertook, and analysis. Initially, I was confused to write the discussion and meaning-making part. But my supervisor provided enough time to make me clear on the way to write the final part of my dissertation.

Conclusion

In conclusion, I can say that the past of any society or country is a storehouse whence researchers like me can get a lot of knowledge and transfer that knowledge through booklets or books to students. It will be a new knowledge for students. The photo-books or picture books inspire the students to know about the age old craft.

Through this study, I have cleared that Newar ancestors had been using laws of Physics without knowing that it was Physics they were using in their work or crafts.

The Newar community has many artistic things and precious woodcraft and wooden architecture which even the best of the engineers is amazed to see, obviously thinking that how they could have done that with their extreme illiteracy.

Now, in the modern scientific world, we have many means to preserve our ancient knowledge for the use of the future generation. Woodcraft and wooden structure found in the areas where Newar live in Nepal are the living museums in themselves, challenging the best of the architect and scientists to keep thinking about how they could have erected so beautiful and strong structures without using the modern machines, without which our carpenters, architects, masons, found themselves handicapped.

I know that the younger generation is only interested in machine-made sophisticated things, and it is because they do not think that the ancient items or a house which they live in if built-in Newari style can make them modern. There is no doubt that the younger generation is gradually drifting away from our ancient art and culture. They seem to literally detest the old style of things so how can we expect them to explore the science that was used in old art and architecture.

For our ancestors, the use of wood was a kind of worship and before starting their work they used to perform several rituals, which undoubtedly bore our youngsters. The craftsmen used to be patient and they would leave no stone unturned in making their craft presentable to society and the world.

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youngsters. The craftsmen used to be patient and they would leave no stone unturned in making their craft presentable to society and the world.

Implications

The discussion above implies that:

(a) Government of the time should take a step to introduce ancient art and craft in the curriculum made for the students of middle school so that they can be a little interested in our old art and culture.

(b) Illustrated books and booklets with a lengthy description of the process which the ancestors used in creating things out of wood can very easily impact the minds of the people living in modern society.

(c) The understanding of the local knowledge system helps to understand the power of rationalization embedded in the practices of a culture.

(d) Indigenous knowledge system puts the policymakers in a position from which to appreciate the inner strengths of the people and practices.

(e) It helps people to identify their own ways and integrate them in the curriculum to prepare a whole lot of new generation that can understand the problems in native ways and address them with the local tools.

This study presents that the traditional art and cultural achievements can be preserved, taken care of, and bequeathed to the posterity only if the local and national governments are really interested in doing something to help the artisan and the traditional industry, spreading the knowledge through several meetings, programs, and educational classes with the help of both local and public school. The elders and educated people of the society must instill a sense of pride among those youngsters who are going away from their ancestors' age-old profession.

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APPENDIXES

Appendix 1: Some Caste Groups and Their Profession[i]

Kulu: Hair cut, Shave the head, Make skin pocket, fitting the Haima hide on the drum

Pode: Shave head and cut nail of their own caste group, clean the temple area, fishing and hunting birds and sale, collecting the clothes of the dead one

Dom: Playing Dholak, Beg money-making dance wife

Tati: Making katro

Kusale: Playing Damaru and beg

Kasai: Butchering, playing Musīc in death procession

Narijat: Cutting nail

SAwāl (Dum): Carrying people, tilling field

Gathu: Collecting flowers from the jungle

Mali: Floriculture

Chhipā: Coloring cloths

Dewakar (Pulupulu): Candaling light (Arati) and playing Musīc in the death procession

Nakarmi: Making iron tools

Pichhini (Katacha): Cutting the umbilical cord of the newborn baby

Sanghat: Washing cloths

Nau: Shaving head, cutting nails, coloring nails

Bha: Coloring Pakhi-Patuka

Chitrakāri (Pun): Making the figure of deities, artworks, making beverages.

Sālmī: Making oil

Mosat: Packeting the meat in butcher house

Tepoch: Growing spiNāch

Khusal: Caring people

Lunkami (Sunar): Goldsmith

Gwala: Cow farming

Kumhal (Prajapati): Pottery

Udas: Prostitution in Lhasa

Tati Pabatu: Making sacred thread (Janai)

Tamot (Tāmrākār): Coppersmith

Gulmi Shrestha: Taking care of the queen

Jyāpū (Kisan): Farming

Baidya: Medication

Lohankarmi: Stonecarving

Sīkahmi: Woodcarving, woodworks in making houses and monuments, making spinning wheel (Charkha), making dhup

Halwai: Making different sweets

GuwalBisuwada: Making Cholo

Banda: Goldsmith, Making utensils of bronze

Bajracharya: Teaching Mantra to Shrestha, Jhyā pu, *Sīkahmi*, Lohankarmi, Chitrakār, etc.

Shivacharya: Worshiping Shiva

Gurwacharya: Teaching Shrestha Mantra, Doing rituals.

Karmacharya: Doing rituals like Kayeta Pujā including in Taleju temple.

Pithacharya: Doing rituals in Pith, Rituals of sacrificing animals.

Dewacharya: Doing Hom in the Jajamas

Rajlawat: Serving the king.

Thakkur: Serving the king.

Amatya: Office secretary of the palace.

Kayastha: Keepers of public records and accounts

Joshi: Study, Teaching, and practicing Astrology

Raj-Brahman: Royal priest

Deb-Brahman: Doing Jajmani up to Shrestha

Source: Lila Bhakta Munankarmi, 2041 BS.

NepalkoSanskritiktathaEitihasikDigdarsan. Srimati Bhawani KesariMunankarmi, Bhaktapur.

Appendix 2: Some Common Carvings in Artistic Windows[ii]

A. *Chakhun-Bakhun* (Birds)

Common name	Nepali	English
Garuda	Garuda	uEagle like bird
Chakhuncha	Bhangera	Sparrow
Bhatu	Dhukūr	Dove
Mhayekha	Mayur	Peacock

B. *Janawar* (Animals)

Common name	Nepali	English
Khicha	Kukur	Dog
Kun sala	Kunghoda	Horse carved at the corners
Nag	Naag	Holy serpentine
Bayel	Bayel	Boar
Mala	Chirka	Thunder
Sala	Ghoda	Horse
Sinha	Sinha	Lion
Hiti manga	Makar	Hiti manga

C. *Devi-devataharu* (Deities)

Common name	Nepali	English
Asta mangal	Asta mangal	Eight holy items
Usha-pratyusha	Usha pratyusha	Sun and moon
Gopi-krishna	Gopi Krishna	Gopi-krishna

Gandharba	Gandharba	Devine male singer
Nag kanya	Nag kanya	Serpent virgin
Nag pas	Nag pas	A sort of magical noose used in the battle to etangle an enemy
Pari	Pari	Fairy
Pushpa ballari	Pushpa ballari	Pushpa ballari
Barahi	Barahi	Boar faced goddess
Buddha dharmaya dyota	Buddha dharma kadevataharu	Buddhist gods
Surdyo	Surya	Sun god
Hindu dharmaya dyota	Hindu dharmakadev-devataharu	Hindu gods

D. *Puspaharu* (Flowers)

Common name	Nepali	English
Pale	Kamal	Lotus
Sethwaye	Pagleko manila bistarai panima khanyawuda banne golakaar butta	Floral scroll
Swaa ya lahara	Phoolko lahara	vine

Common name	Nepali	English
Kharkas	Kharkas	Panel gauge
Kharāj	Kharaj	Lathe
Khulu	Khulu	Adze like tool
Khulu Twāka	Achano	A block of K-shaped wood cuttings things
Chin kathī	Foot	Ruler
Pārkar	Pharma	Compass
Watān	Watan	Try square
nowatān		Sliding bevel
Kacha	Reta	File
Kan wo: cha	Kandha bhayeko reta	Thorned bevel
Go wo:cha	Golo reta	Round file
Pha wo:cha	Chyepto reta	Flat file
Waga wo:cha	Ardha golakarko reta	Semi circular file
Swasali wo:cha	Teenpatereta	Triangular file
Wakayegu jyawo	DaantkatnejyAwāl	Groove cutting tool
Salān	Khari	Marking pen
sinmuga	Kathkomungro	Mallet
Hān	Ramo	Chisel
Kuke hān	Kharaj garne ramo	Carving chisel
Chapa Hāčā	Dhaar sidha bhayeko butta katne ramo	Carving chisel with straight edge

Chen Hāčā	Sanghuro dhaar bhayeko ardha golakar butta katne ramo	Wood carving chisel with narrow and semi-circular edge
Ta dhahān	Sadha kamko lagi upayog garine thulo ramo	Carving chisel with wide edge generally used for rough work
Tun Hāčā	Butta katne ramo	Carving chisel
Phahān	Kaath chirne ramo	Chisel used for splitting timber
Watahān	Sadha kamko lagi upayog garine sano ramo	Carving chisel with narrow edge generally used for rough work

E. *Bhibhid* (Miscellaneous)

Common name	Nepali	English
Amosa	Supari aakarko butta	Betel nut pattern
Kalash	Kalash	Special type of religious jar
Kawakhwā	Asthi panjaarko anuhar– aakar	Fore-head of skeleton
Dhalin khwā	Dalinko ekchewuko sataha ma rahane janawarko anuhar	Face of living creature craved in at the plane surface of the end of a celling
Pānas	Panas	Standing oil lamp
Sinha-khwā	Sinhako anuhar	Face of a lion
Supayen	Badal akkarko butta	Pattern of cloud formation

6. KalatmakJhyā lharubanawunaupayoggarinepramukhjyAwālharu (Major tools used in wood-carvings)

A. Prachin

B. Aadhunik Jyawāl (Modern tools)

Common name	Nepali	English
Kati	Karauti	Saw
Chipu kati	Sano karauti	Hand saw
Tanwal kati	Aara	Framed saw
Kokka kati	Buttakatnekarauti	Bow saw
Kharicha	Kharicha	Sand paper
Jhari	Jhari	Groove cutting tool
Barmā	Barmā	Drill
Basilā	Basilā	Adze
Buskha	Buskha	Rebate plane
Khaal buskha	Khaal buskha	Rebate plane made especially for concaved surface
Math buskha	Maath buskha	Rebate plane made especially for planning corners
Mārtol	Martol	Screw driver
Mugu	Mungro	Hammer
Na mugu	Falamemungro	Steel hammer
Randhā	Randha	Jack plane
Khalsuigu randhā	Golakar thauma prayoggarine randha	Spoke shave
Yaka randhā	Sano randha	Pencil
Han: khi	Kalo Dhago	Marking thread

[i]Source:Newar Towns and Building, an illustrated Dictionary (Newari-English) by Biels Gutschow, Bernhard **Kolver and Ishwaranand Shresthacharya**