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Integrating Folktales in Archaeological Investigations: A Study from Sikkim-Darjeeling Himalayas

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Abstract

The study probes into archaeological exploration carried out in two places — Daramdin and Samanden in the Sikkim-Darjeeling Himalayas. The site of exploration is selected based on place names mentioned in the folktales of the Lepchas. In this regard, two folktales are considered – Rumlyang Tungrong, which is premised in Daramdin, Sikkim and the legend of Sokpa Dhunga in Samanden, Darjeeling. Investigations evinced finds of potsherds strewn across the terraces of Daramdin and an erected stone in Samanden. As for the analysis of pottery sherds, the data set collected exhibited limitations in strength, due to which scientific analytical techniques like XRD and EDX were employed to understand the provenance and pottery production methods. Meanwhile, for the erected stone in Samanden, the material manifestation of the folktale allowed us to discuss the efficacy of the folktales in aiding investigations in finding potential archaeological sites.

Keywords: Lepcha Folktales; Archaeological Exploration; XRD; EDX; Sikkim-Darjeeling Himalayas; India

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Introduction

Sikkim's 'past' is much 'recent'. Written records talk about it as beginning in the 17th Century C.E. with the establishment of the Namgyal Dynasty (Risley 1928/2020). However, British political agents and anthropologists (Risley, 1928/2020; Stocks, 1925/2001; Nebesky-Wojkowitz, 1957) reported findings of stone tools and remnants of pottery. To understand the occurrences of this evidence, explorations were conducted in parts of Sikkim by the Archaeological Survey of India and independent archaeologists from Nepal (Banerjee & Sharma, 1969; Banerjee, 1983; Mishra, 2008; Tiwari, 2016a; Tiwari, 2016b). These explorations were mainly directed towards finding stone tools from across the explored regions, which resulted in the discovery of several sites from all districts, especially North and East Sikkim (see Figure 1 for the geographical location of Sikkim). The exploration yielded a variety of stone tools like axes, adzes, harvesters, perforated celts, polishers and knives (Bannerjee & Sharma, 1969; Banerjee, 1983; Sharma, 1996; Mishra, 2008; Tiwari, 2016a; Tiwari, 2016b). The tools typologically belong to the Neolithic period, whereas the potsherds have no 'identifiable signature'. The 'megaliths' belong to a tradition, which commemorated the dead in 'stone' but has also been known to commemorate other events. The megalithic period in India, however, goes back to the 2nd millennium B.C.E. (Mohanty & Selvakumar 2002, p. 320). For rigorous exploration, folktales extant in the area are used as a source for locating sites. The sites reported are finely distributed across the landscape. This study attempts to identify and relocate the site using local legends and stories. The use of folktales becomes important in light of the fact that the hilly terrain with high rainfall sites are covered with vegetation in a short period of time, thereby obscuring the remnants present on the surface (Butzer, 1982; Kumar & Sharma, 2019).

Folklore and Archaeology have intertwined yet shifting trajectories. It started with their association with antiquarian studies, where 'folk' played a significant role in the imagination of the past and as a source of the past (Paphitis, 2019, p. 143). In the context of European Archaeology, since the 16th Century C.E., antiquarians have been documenting tangible remnants in the landscapes alongside the associated folklore (Paphitis, 2013, p. 4; Trigger, 2006, p. 81). However, the two disciplines came to be disassociated when New Archaeology or Processualism emerged in the mid-20th Century C.E after World War II, which largely advocated for objective, empirical and scientific studies of the material cultures (see Paphitis, 2013; Paphitis, 2019). In the 1980s, the development of Post-Processualism or interpretive archaeology sought to contextualise archaeological studies within the cultural and historical frameworks in which they were carried out. Therefore, there was what Tina Paphitis (2019) asserts is a "reconciliation" of the disciplines (p. 146), where the 'whys' and 'hows' of meaning-making and public engagement found significance. Scholars like Glassie (1977), Grinsell (1976; 1979), Gazin-Schwartz and Holtorf (1999) have highlighted the intersection of these two disciplines by asserting that both encompass traces of the past and are thus amenable to a collaborative investigation. Folklore can provide insights into how people have interacted with the environment or the surrounding landscape. This does not require considering or believing these stories as precise accounts of historical events or as direct representations of earlier periods either; rather, it can be understood to embody the life histories of a material (Paphitis, 2013, p. 14; Bender, 1993; Holtorf, 2005). Scholars (like Clark, 1994; and Brown and Bowen, 1999) have also emphasised the role of folklore as a locational source for archaeological sites as well as how material remnants have given rise to the creation of folktales.

The term "folklore" broadly refers to the elements shared by a group of people, which include myths, folktales, fairytales, names of the places, ceremonial chants, customs, and artistic expressions (Gazin-Schwartz & Holtorf, 1999, pp.

4-5). Out of the various elements that comprise folklore, this study will focus on folktales only.

There have been numerous studies which corroborate oral narratives of community unity to aid archaeological investigations. In North East India, the study of Naga ancestral sites, which started from the late 20th Century onwards (Walling, 2023, p. 192), has juxtaposed archaeological investigations fueled by the information from the oral narratives of different Naga tribes. Several ancestral sites were discovered, reported, and an in-depth investigation were carried out since 1970s by Vikousa Nienu and T.C Sharma in sites like Chungliyimti, Khusomi, Khazekeno among a host of other sites (Walling, 2023, pp. 192-93; Aier, 2014, pp. 228-230) which talk about the origin of different Naga tribes and their migration across the region. This approach was taken forward by Tiatoshi Jamir (2014a; 2014b; 2014c, pp. 264-273) where he incorporated oral narratives, archaeological investigations along with different scientific analytical techniques to understand the nature of the artefacts and the chronology of the sites in Nagaland while also placing considerable focus on community archaeology, where the involvement of local community members is paramount to the investigations.

The integration of the oral aspect of the past with archaeology, however, provides a socio-cultural context for the unearthed artefacts to a greater extent which would not have been possible only with material evidence (Wickler, 2002, p. 42). While artefacts represent material markers of the past, oral traditions are referred to as "human documents" (Aier, 2014, p. 231) of the past. Although oral information was relied on for archaeological studies, at present, it is looked at with scepticism as a reliable source of the past owing to the narratives and memories being overshadowed by scientific explanations deemed quintessential markers of rationality and research (Jones & Russell, 2012, p. 271). Christer Westerdahl (1980), while studying place names and the associated information regarding shipwrecks in the Scandinavian countries of Sweden and Finland critiques that these kinds of sources are regarded as 'too simple' or 'too unscientific' as opposed to sophisticated technology. However, as Jamir (2014c, pp. 473-487) points out this "unscientific view of the past" is just another way of knowing the past and should not necessarily be obliterated from the discourses that concern them. Moreover, Vansina (1985, p. 196) asserts oral aspects of the past to be a potent reserve of the sources of the past which have to be corroborated by evidence unwrapped by archaeological investigations. Mirroring Jamir and Vansina, Aier (2014, pp. 227-235) while talking about Phor and Laruri villages, highlights that oral elements and archaeology when considered independently may not adequately and accurately represent the past, but a "collaborative dialogue" between the two disciplines is perhaps better able to unveil the historical narratives. Legends and stories have been the mainstay of people to commemorate events, places, objects and their significance in the cultural formation process. From dissemination of information and knowledge spatially and temporally to indulgence in ingenious activities, the communication and exchange of folktales and beliefs have held a position of importance in any society since every community remembers its past in the form of myths and fables, thereby creating a unique but collective identity for themselves (Tilley, 1994, p. 67). It provides a linkage between locales, landscapes, events and experiences of the members of a society creating a nexus between humans and their environment which prove to be a vantage point in finding material remains in the landscape (Tilley, 1994; Aier, 2014; Wickler, 2002 p. 45).

Wendy Beck & Margaret Somerville (2005), while investigating Yarrawarra in the State of New South Wales in Australia, talk about the explicit nature of the inter-relationship between archaeology and other sub-disciplines like Historical archaeology, Indigenous archaeology and oral traditions, which emphasise the 'conversation' to bridge the gap between these disciplines. Stephen Wickler (2002) examines the interplay of oral traditions and archaeology on the Island of West Micronesia from the point of view of models for traditional village

development. It highlights that narratives containing place names, physical features and structural remains have been influential in looking into the concepts of time and space in an environmental context. Kevin James Grant (2014) strived to uncover the intangible aspects of landscape, memory, and culture and reconstruct the past by studying Gaelic oral traditions in the Scottish Highlands, where archaeological and historical data have silenced the voices of diversity.

Building on this scholarly framework, the following sections will explore the relationship between folktales and the material remnants on the landscape of Sikkim and North Bengal, India.

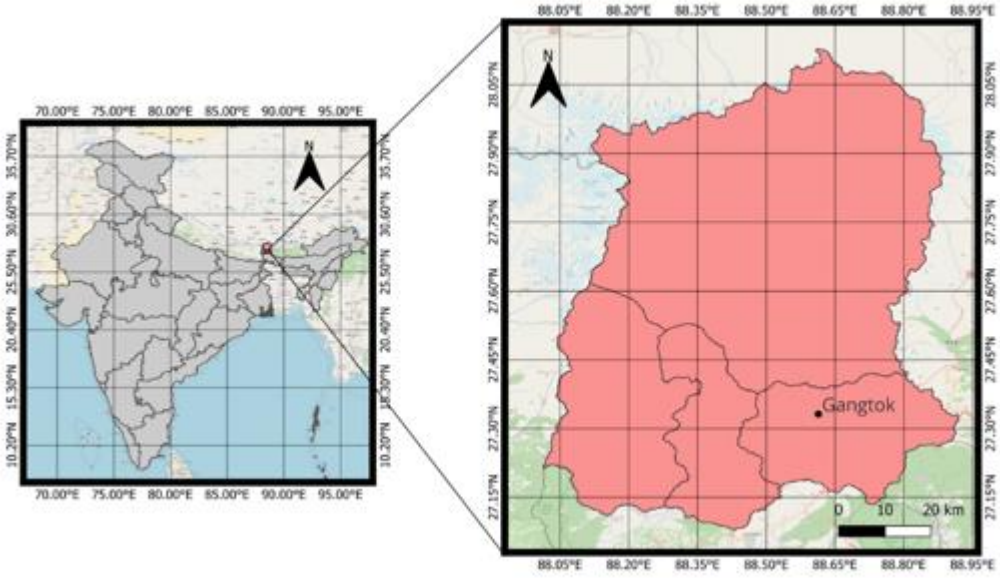

Figure 1: The Location of Sikkim, India
Source: Authors

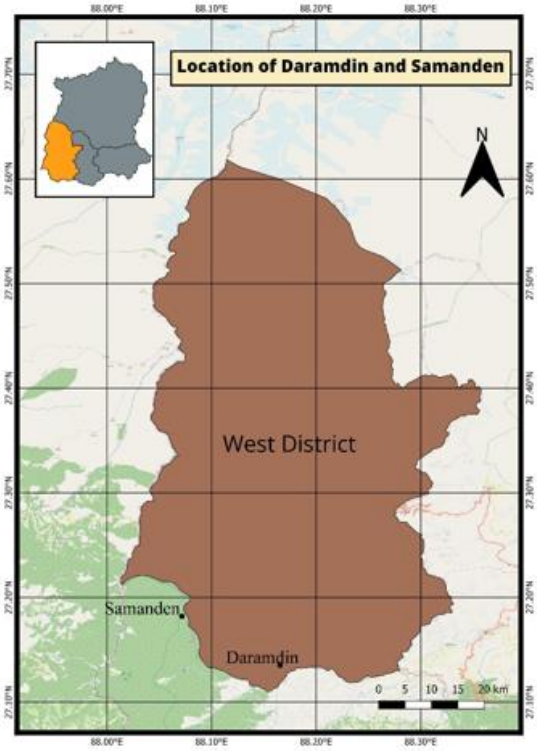

Figure 2: Location of Samanden and Daramdin
Source: Authors

Folktales and Remains

The Legend of *Sokpa Dhunga*

The legend of the Yeti, colloquially and popularly known as *Sokpa*, is well-received in Samanden (see Figure 2 for its geospatial location). The term "*Sok-po*" is of Lepcha origin and means guardians (Siiger, 1978, p. 426). As the story goes, once upon a time, there was a Lepcha hunter who was proficient with his game. He was also a Shaman lauded for his superhuman endeavours. The Lepchas would come about hunting in *Lek* (High, cold altitude places) from *Aul* (Warm places which are at a lower altitude). When they reached Samanden, they would have considerable bounty collected along the way. It is believed that in Samanden, there were twin lakes where the hunters rested for respite and water. That is how, as the belief goes, the place acquired the name 'Samalden', which was later altered to Samanden. The Lepcha Hunter-Shaman would come weaving his munitions to gather food, which the Yeti, or *Sokpa,* would grab and take away. This way, the *Sokpa* troubled the Lepchas who came to Samanden to hunt and forage in the forest. Annoyed and frustrated with the scourge, the Hunter-Shaman finally devised a plan to get rid of the *Sokpas*. Since he was aware that they were giant beasts with whom a physical confrontation would be a strategically foolish endeavour, he intended to win over them using his intellect. The Hunter-Shaman decided to befriend them and proposed that when they meet next time, he would bring fruits and vegetables from *Aul* and that he should bring herbs, medicines and fruits from the alpine region as a mark of friendship. Both agreed upon the truce and started exchanging their bounties the next time they met. In the backdrop, the *Sokpa* was oblivious to the Hunter-Shaman's intentions to eliminate him. Meanwhile, the Hunter-Shaman had been heating a round stone ball in the fire to make it red hot. While exchanging their goods, the Hunter-Shaman insisted that for this particular exchange, the *Sokpa* was required to close his eyes, as this is the tastiest and most extravagant produce of *the Aul* region. The *Sokpa* complied while he promptly placed the red hot burning stone inside *Sokpa's* mouth. The *Sokpa* jumped in pain and resistance but eventually died. After that, a longish stone was erected at the end of the settlement in Samanden to demarcate each other's territories. At present, the stone is known by the name *Sokpa Dhunga*, where the word *Dhunga* translates to 'stone'. A promise was thus made that both parties would not cross this boundary, come what may.

The erected stone mentioned in the folktale can still be seen in Samanden (Figure 3). It is located amidst pine trees (GPS coordinates: 27°10'39.924" N and 88°4'28.698" E, Altitude: 2361 MSL) and adorned with *Khada* or Tibetan silk scarfs. Occasionally, some adoration is discernible from scattered coins, incense sticks, and images of Hindu Goddess Lakshmi and Lord Ganesh. The *Sokpa Dhunga* tapers towards the top but is not finely pointed. It has a flat top. The stone's length is 50 cm, its breadth is 28 cm, and its width is 6 cm. The breadth of the flat top is 10 cm.

The place is a flat land surrounded by pine forests on all sides. The writings mentioning their sightings in the alpine region of the Himalayas are umpteen with many beliefs, myths and folktales related to their appearance and activities (Balikci, 2008; Little, 2007; Sawerthal & Torri, 2017; Siiger, 1978; Snellgrove, 1957). However, we rarely find material remains attributed to the Yeti, like in this case in Samanden, in the form of a boundary marker. Moreover, the adoration of the stones using *Khadas*, along with the image of Goddess Lakshmi and Lord Ganesh of the Brahmanical pantheon, suggests that anything unsure and unestablished, which is not naturally occurring in the landscape, is assigned to the supernatural and hence propitiated for fear of the unknown as mentioned by Little (2007).

Figure 3: Sokpa Dhunga in Samanden
Source: Authors

The Legend of *Rumlyang Tungrong*

This story is about a demon named Laso who tormented the inhabitants of *Mayel Lyang* (Lepcha village on the foothills of Mount Kanchenjunga). They eventually decided to go to heaven and live up there. Another version of the story states that they were going up to heaven to complain to the Gods about Laso's torture. In the process, they fled south to *Toonoo Tungshi*, the source of River Rammam and from there, following the course of the river, arrived at *Da Raom Dyen* or present-day Daramdin (see, Figure 2 for its geospatial location) (Tamsang, 1983; Tamsang, 2008). The stairway that would lead them to heaven was made by piling up earthen pots, one on top of the other, at *Tal-Laom Purtam*. One by one, the men climbed the stairway, and when the man on top reached a considerable height, he wanted to gauge how far above *Rumlyang* or heaven was. He asked for a hooked stick from the people standing below and shouted, '*Kok vim yang ta*', which means 'Pass me a hooked stick' and the people below heard '*chyak ta*', which translates to 'smash it down'. The people below asked again if the instruction was to smash down the entire edifice, and those on top nodded with *'ak ak'*,

which means 'yes'. The next moment, the stairway crumbled to the ground, claiming many lives. The place's name was changed from *Tal-Laom Purtam* to *Da Raom Dyen*, meaning 'we ourselves smashed it down' (Dolma, 2010, p. 49).

The hamlet of Daramdin is famous for this celebrated Lepcha folktale. It is located in the district of Soreng, approximately 120 kilometres west of the capital city of Sikkim- Gangtok. The name Daramdin has varied interpretations. The Lepchas believe the word is made up of '*Da*', which means a lake, *Raom*, and *Dyen* means to demolish (Tamsang, 2008, p. 14). Nevertheless, other interpretations ascribe Tal-Laom Purtam as the original name of Daramdin (Tamsang, 1983, p. 5). Moreover, a village named Dhallam, which in all probability is a corrupted form of *Tal-Laom*, still exists in Daramdin. True to its name, '*Tal-Laom Purtam*', the village rests on flat land surrounded by hills on three sides and bounded in the south by River Rammam and south-east by a tributary of Rammam called Ringyang. River Rammam forms a natural boundary between present-day Sikkim and West Bengal. The place is well suited for agriculture, and most of the land is terraced for cultivation throughout the year (Figure 4). The Limboos, another group of people inhabiting the region, called a certain place *Fugamten*, which is now known as Chyandara. The general belief among the Limboos is that the word *Daramdin* is an altered version of the term *Fugamten*. The etymology of *Fugamten* comprises *Fu*, which means pottery; game, which means to manufacture; and *ten*, which means a place. Hence, the term *Fugamten* translates to 'a place where pottery is manufactured' (Figure 5). The Nepali term Chyandaara comprises *chyan*, which means graves and *daara*, a hill. Therefore, Chyandaara means a graveyard on a hill containing numerous old and new graves. A notable fact would be the Limboo and Lepcha connotation of the place concerning the manufacture and use of pottery in the same spot.

Figure 4: Agricultural Fields of Daramdin
Source: Authors

Figure 5: Pottery sherds strewn on the surface of Chyandaara
Source: Authors

The first mention of the presence of pottery sherds in Daramdin was made by C. De Beauvoir Stocks (1925/2001, p. 360). K.P Tamsang (1983) also mentions the abundance of fragments of earthen pottery in Daramdin and the neighbouring regions. Giuseppe Tucci (2011) quoted René von Nebesky-Wojkowitz to describe the pottery sherds the latter had seen ex-situ. However, Tucci acknowledges that neither Nebesky-Wojkowitz nor he had found any ceramics in the region and the ceramics are described as small sherds with smooth and round edges where the clay had been mixed with mica and showed a considerable variation in colours ranging from reddish-brown to blackish grey which he mentions was a result of firing (Tucci, 2011, p. 58). The shapes of the vessels also varied. While some were thin-walled, others were several centimetres thick, including bowls with everted rims and jars. These jars lacked decoration; some sherds had three dark horizontal stripes around the vessel, and one fragment bore an incision mark resembling a dogtooth pattern (Tucci, 2011, p. 58).

At present, no pottery is manufactured in Sikkim. However, there are memories of potters (*Kumale*) from Nepal who were seasonal potters. They came to Daramdin previously with their tool kit and required raw materials to manufacture pottery for 3-4 dry months of the year. Furthermore, the inhabitants of the place remember the pottery sherds of 'red and black colour' and thickness ranging from '0.5 – 1 inch'. Unfortunately, the case is no longer the same despite the constant ploughing of the land for agriculture.

To corroborate the folktale, the records of the scholars and the memory of the inhabitants, an archaeological exploration was undertaken in Daramdin. It yielded surface finds of pottery on an agricultural terrace on the spot colloquially called Chyaandara, a kilometre ahead of Daramdin Bazaar on the Budang-Sombaria highway. The investigation was an intersection of ethnography and archaeological exploration in Daramdin and Gorkhey-Samanden, which included unstructured and casual conversations to reveal the details and nuances of the folktales mentioned above. It was also done to seek out more stories and cultural memories that could lead to tangible and intangible evidence in the region. The participants interviewed comprised mainly elderly people of the village since the researcher assumed they would best be able to talk about the beliefs, practices, folktales and the material evidence in question. However,

respondents of different age groups were approached with the same conversations to avoid errors (Hammersley & Atkinson, 2007, p. 106). Thus, it was seen that children and teenagers were unaware of the pottery. Those respondents, who were approximately between the age of 20-40, knew about the folktale and had heard stories about the presence of potsherds in the region but could hardly recount anything other than that. The elderly respondents were thus able to talk about the folktale, its details and variation, the spot where the potsherds were visible, and sometimes their encounters. The participants, though connected by age, were divided by occupation. Though most of them were farmers, the narratives also belonged to teachers, daily wage labourers, contractors, businesspeople and those in various government services. Out of these occupations, the farmers, daily wage labourers working on construction sites and contractors who were directly associated with 'land' in the form of ploughing, digging and moving about the region for different works had valuable information to divulge regarding the pots, potsherds and bones found in the vicinity. However, most of the female participants sought to redirect the question to the male members of the family.

Following the interaction, the residents of the place are unanimous in saying that in the 'days of yore', the region's surface was abundantly strewn with pottery sherds, which have ceased to be visible at present. A resident narrated that about 20 years ago, when the foundation for a Temple, known as Sri Sathya Sai Sarva Dharma Kendra, Daramdin was being laid, an intact pot, along with small broken pottery pieces, was recovered from the site. Similarly, in Mathilo Tar in Daramdin village, the Government of Sikkim proposed building a replica of the Stairway to Heaven and a Lepcha Museum. The project, which started in 1993, is still underway. A resident who had closely monitored the project in the initial years when the soil was being excavated to lay the foundation of the edifice reminisced that *something* that looked like a stone hearth associated with charcoal pieces was seen in the foundation pit. Similarly, a contractor working in Lungyam village, which is approximately 6 kilometres from Daramdin Bazar in a spot near Kattarbotey, mentioned that in one of his road-building projects, when he was excavating the place, potsherds and charcoal were found in the past. A resident from Tikpur had a similar narrative of the time when his grandfather and father found pottery sherds in their agricultural fields while ploughing the field. In addition to that, he mentions that it has been more than 30-35 years since he has not heard of potsherds in the region.

Besides Chyandara, the other precise spots, such as agricultural fields and road construction sites, as identified through narrations and anecdotal evidence by the residents, are tabulated below (Table 1).

Table 1: The Three Locations where the Respondents have Sighted Pottery Sherds in the Past

Location	GPS Co-ordinates
Stairway to Heaven Project	27º08'38.21" N, 88º09'51.15" E
Sri Sathya Sai Sarva Dharma Kendra	27º08'10.97" N, 88º10'16.30" E
Kattarbotey (Lungyam)	27º07'02.17" N, 88º09'49.86" E

Source: Authors

Therefore, to investigate deeper into the pottery sherds found in Daramdin, two-section profiling was done in a spot beside Chyandara. Section profiling helps in understanding the stratigraphy of the landscape. Section **A** (929 MSL) comprises two layers (Figure 6). The layers are distinct from one another. The humus layer is approximately 40 cm in depth from the surface. Below the humus layer, there is only one other layer. The colour of the soil is determined using the Munsell Soil Colour Book (Munsell Color Co. Inc., 1992). The details are given below (Table 2).

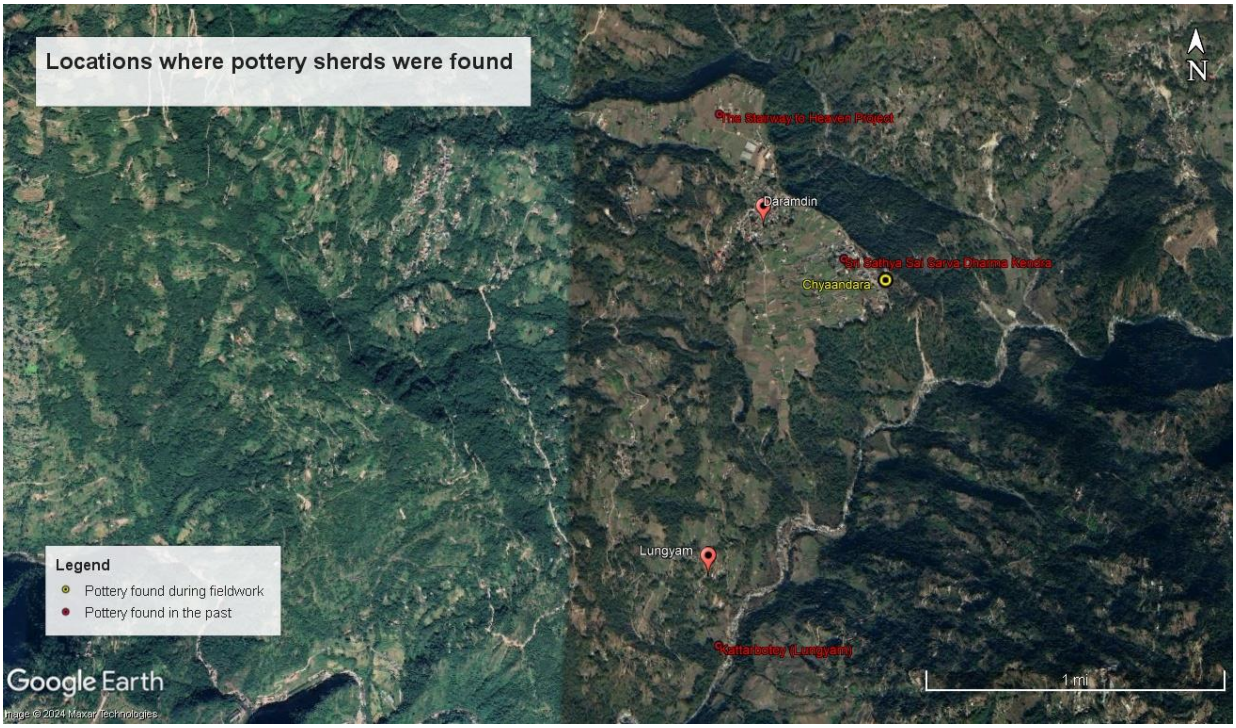

Figure 6: Map Showing Locations where Pottery Sherds were Found (Accessed on 08.04.2024, 10:11 pm)

Table 2: Colour of the Soil in Section **A**			
Layer	Depth (cm)	Colour	Name of the Colour
1	0 – 40	10YR 2/2	Very Dark Brown
2	40-80	10YR 3/3	Dark Brown
Source: Authors			

Potsherds were noted between 20 cm and 40 cm from the surface. From 68 cm onwards, there are no potsherds. Charcoal is collected from three depths — 30cm, 42 cm and 78 cm from the surface. There were potsherds of two colours collected from the second layer. They are yellowish red (5YR 5/8) and black (5 YR 2.5/1).

Section **B** (942 MSL) comprises four layers (including the humus layer) (Figure 7). The humus layer falls within 0-35 cm from the surface. There are 33 potsherds collected in total, which were collected from 15 cm onwards up to 80 cm depth. There are two distinct types — black potsherds and red potsherds (Figure 8). The colour of the potsherds was determined using the Munsell Soil Colour Book (Munsell Color Co., Inc., 1992). Black potsherds (2.5 Y 2.5/1, Black) are found at a depth range of 20-40 cm from the surface. Dark Reddish Brown pottery (5 YR 3/3 and 5 Y.R. 3/4, dark reddish brown) was also found in the same range. A sample potsherd collected from a 40-60 cm depth had two layers of colour. One side was 7.5 YR 5/4, Brown, and the other side was 2.5 Y 4/1, dark grey. The pottery collected from the 60-80 cm depth range corresponded to 7.5 YR 6/6, reddish yellow. Charcoal was found only at a depth of 97 cm.

The colour of the soil in different stratigraphic layers too was also determined using the Munsell Soil colour Book, and the details are as follows (Table 3).

Figure 7: Section 'A', which Consists of Two Layers
Source: Authors

Table 3: Colour of the Soil in Section **B**			
Layer	Depth (cm)	Colour	Name of the Colour
1	0-20	10YR 2/2	Very Dark Brown
2	20-50	7.5 YR 2.5/1	Black
3	50-80	10 YR 4/3	Brown
4	80-100	7.5 YR ¾	Dark Brown
Source: Authors			

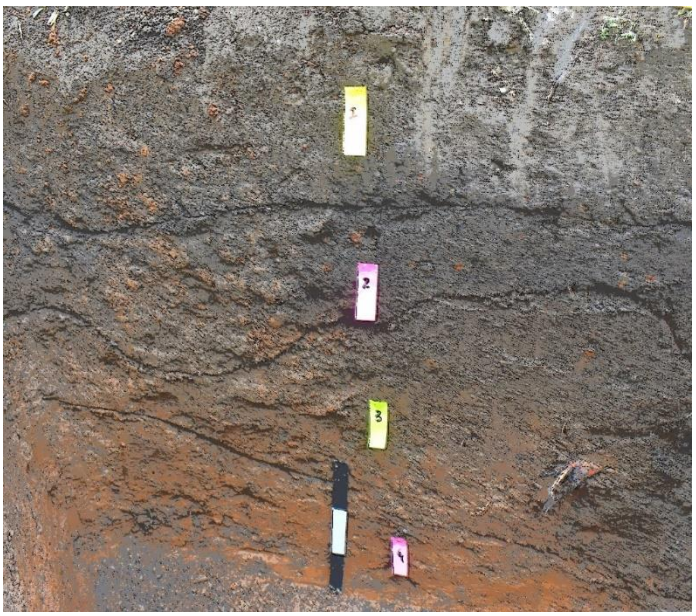

Figure 8: Section '**B**', which consists of Four Layers
Source: Authors

Figure 9: Representative Samples of Pottery Sherds
Source: Authors

Among multiple factors, the colour of an object also largely depends upon cultural and linguistic variety in terms. In the case of Daramdin pottery, the inhabitants of the place, while describing the colour of the sherds, would often say, "sherds of red and black colour were abundantly found in the region previously". The verbal description of colour posed a risk of dissimilarity in its conceptualisation since the perception of colour is subjective to the human eye (Stanco et al., 2011). So, mitigating this disparity by using a colour chart becomes imperative. Munsell Soil colour chart is commonly used by archaeologists to standard identify and name the colour. Although the chart comes with many general problems and is critiqued for inconsistencies in colour readings, it is recommended, deemed sufficient, and appropriate for a simple descriptive naming of colours identified for artefacts (Stanco et al., 2011; Frankel, 1980). As regards the soil colour, it provides much information about mineralogy, organic content, moisture content, as well as the age of the soil and its formation (Turk & Young, 2020; Harden, 1982; Turk et al., 2008).

Since there is a discontinuation in the practice of manufacturing pottery in the region, the respondents are unsure where the clay was brought from; one of them mentioned that it *might be* from somewhere around here, where another respondent acknowledged that he was too small to remember that. Nonetheless, the elderly respondents who had seen the process of manufacturing pots remember that most of the pots resembled the shape of a *ghyampa* – a container which is used to produce and keep *raksi*- fermented rice beer or *gagri* – a container with constricted neck and everted rims generally used to store water. The pots were made on a wheel. As remembered and demonstrated by the respondent, the potter's wheel would be 3-3.5 feet in diameter.

Once the pots of different shapes and sizes were made, a hole was dug in the ground, and the pots were loosely kept on top of each other. It was covered with dry hay (*paral*) and fired. The respondent does not remember any post-firing processes but mentioned that some pots were decorated with groove-like marks or fine lines. Some of these pots also had lids on top of them. They were also used to keep clothes inside them. This account finds congruence with another account of a respondent where he recalls that the pottery sherds, which looked like plates, were also unearthed in the past. The pots were then sold in nearby marketplaces like Jorethang in South Sikkim, Bijanbari in West Bengal, and Sombaria in West Sikkim, to name a few, on days of weekly markets called *Haat.*

The pottery sherds collected for analysis are mostly bodysherds. A dearth of rimsherds and

basesherds are noticeable. Furthermore, it is challenging to determine whether the sherds were produced using a handmade or wheel-thrown technique based solely on the observable striation marks (see Smogorzewska, 2007).

The personal and collective memories of the *Kumales* narrated by the elderly residents have been considered. An attempt has been made to understand the elemental and mineralogical composition of the potsherds, which will enable us to discern the provenance of the pottery.

Compositional Analysis of Pottery and Soil Samples

The Daramdin Pottery was subjected to Powder X-Ray Diffraction (p-XRD) and Energy Dispersive X-ray Spectroscopy (EDX) analysis to identify the minerals and elements present in the clay with which the pottery was made. Soil samples were collected from the deposit in which the pottery was found. The soil samples, too, were analysed using pXRD and EDX. One of the fundamental ways pottery can be studied is by looking into its technological aspects. In this light, this study tries to understand the pottery sherds found in Daramdin using methods like Powder X-ray Diffraction (XRD) and Energy Dispersive X-Ray Spectroscopy (EDX or EDS). The result of the analysis will help us understand the elemental and mineralogical characteristics of the pottery. It will facilitate our understanding of the region's provenance and technological aspects of pottery production.

Energy Dispersive X-Ray Spectroscopy (EDX or EDS)

Energy Dispersive X-Ray Spectroscopy is a qualitative and quantitative method of identifying the elemental composition of the inorganic materials (Davit et al., 2014, p. 5), which are pottery and soil samples. The instrument used is a Field Emission Scanning Electron Microscope (FESEM) coupled with OXFORD EDX in the Sigma model manufactured by Zeiss. The experimental analysis was done in the Central Instruments Facility (CIF) at the Indian Institute of Technology, Guwahati. Since compositional analysis was required, only EDX was taken into account. The similarity or dissimilarity in the contents of the ceramics and the soil will indicate whether the potsherds were manufactured locally using soil from the same or surrounding region or whether they were brought from elsewhere. It would, in such a case, differ from an earlier discourse that Sikkim possessed no tradition of the art of ceramic production (Sharma, 1996, p. 47).

Four pottery samples and five soil samples from Daramdin, Soreng District, Sikkim, were subjected to EDX analysis, and measurements were taken from different spectra. The pottery samples are DRD P.2.1, DRD P.2.2, DRD P.2.3, and DRD P.2 B.P., and the soil samples are DRD S.2.1, DRD S.2.2, DRD S.2.3, DRD S.2.4, and **DRD S.2 BS.** 10-15 spectra were measured, and the result is as follows (Table 4).

Table 4: Elemental Composition (Weight %) of Potsherd Samples

Elements	DRDP.1 (%)	DRDP.2 (%)	DRDP.3 (%)	DRDP.BP (%)
Oxygen	47.41	50.95	46.65	47.35
Carbon	16.70	--	--	21.22
Silicon	20.16	19.00	18.85	16.98
Aluminium	9.86	12.47	19.20	12.10
Iron	3.83	14.23	13.41	1.25
Potassium	0.76	0.45	0.85	1.05
Bromine	1.06	1.93	--	--
Magnesium	0.16	--	1.00	--
Phosphorus	--	0.95	--	--
Total	99.94	99.98	99.96	99.95

Source: Authors

Soil

The associated soil was analysed using the same instrument for elemental analysis (Table 5). The samples were collected from a section profile of an agricultural terrace in Daramdin, from which the potsherds were also collected. X-ray Diffraction was carried out to understand mineral identification and characterisation to corroborate the elemental identification.

Table 5: Elemental Composition (Weight %) of Soil Samples

Elements	DRDS.1 (%)	DRDS.2(%)	DRDS.3(%)	DRDS.4(%)	DRDS. BS(%)
Oxygen	37.07	51.03	51.02	55.52	53.86
Carbon	--	10.29	11.00	5.74	--
Silicon	30.54	23.57	21.25	21.24	22.90
Aluminium	7.71	10.14	9.81	12.84	11.45
Iron	23.42	3.20	6.22	3.33	8.90
Potassium	0.85	0.97	0.66	0.70	0.88
Bromine	--	--	--	--	--
Magnesium	--	--	--	0.28	0.35
Phosphorus	--	--	--	--	0.26
Niobium	0.40	--	--	0.35	--
Calcium	--	0.10	--	--	0.86
Tantalum	--	0.28	--	--	--
Zirconium	--	--	--	--	0.21
Total	99.99	99.61	99.96	100	99.67

Source: Authors

X-Ray Diffraction Report of the Ceramics and Associated Soil from Daramdin

This analysis was done in the Central Instruments Facility, Indian Institute of Technology Guwahati. Five potsherds were subjected to X-Ray Diffraction using a Rigaku Smartlab X-Ray Diffractometer with a wavelength (CuKα) of 1.5406Å. The 2θ range was determined from 10° to 90°. The sample was in powdered form. The *d*-value (interplanar spacing) was determined using Bragg's law,[1] **nλ=2dSinθ**. The *d*-values of the detected peaks are depicted in Figure 10 and Figure 11.

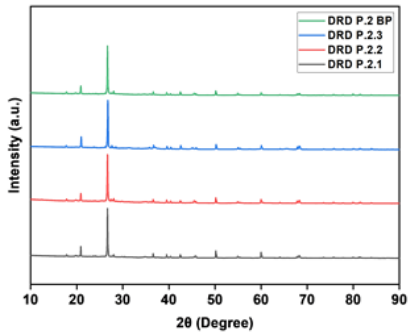

Figure 10: XRD Graph for Pottery Samples (DRD P.2)
Source: Authors, using Origin Pro Graphing and Analysing Software

[1]Braggs's Law explains the diffraction of X-rays by crystal lattices. It states that when incident X-rays hit the atomic planes of a crystal structure at specific angles, the incident ray is diffracted, creating a pattern. This pattern allows researchers to calculate the distance between two atomic planes (inter-planar spacing) to determine the composition and crystalline structure of the sample. In the formula nλ=2dSinθ:
n = wavelength of the incident X-ray, d= inter-planar distance between atomic planes and θ= Angle of diffraction

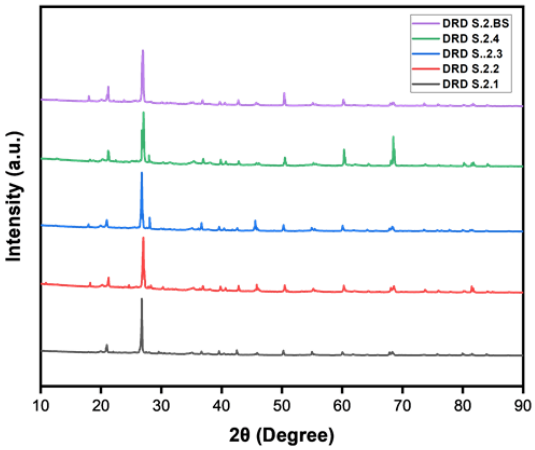

Figure 11: XRD graph for Soil Samples (DRD S.2)
Source: Authors, using Origin Pro Graphing and Analysing Software

Table 6: Minerals Present* in Pottery and Soil Samples

d-value (Å)	Minerals	DRD P.1	DRD P.2	DRD P.3	DRD P.BP	DRD S.1	DRD S.2	DRD S.3	DRD S.4	DRD S.BS
4.99	Illite	--	--	+	--	--	--	--	--	+
4.25	Quartz	+	+	+	+	+	--	+	+	+
3.33	Microcline	+	+	+	+	+	+	+	+	+
2.45	Goethite/Quartz	+	+	+	+	+	+	+	+	+
2.27	Quartz	+	+	+	+	+	+	+	+	+
2.12	Quartz/Graphite	+	+	+	+	+	+	+	+	+
1.99	Microcline	--	+	--	+	+	+	+	--	+
1.81	Quartz	+	+	+	+	+	+	+	+	+
1.66	Illite/Hematite	--	--	+	+	+	+	+	--	+
1.54	Kaolinite	+	+	+	+	+	+	+	+	+
1.37	Quartz	+	+	+	+	+	+	+	+	+
1.28	Microcline	--	--	--	--	--	+	--	--	+
1.19	Illite	--	--	--	--	+	--	--	+	+

Note. *The minerals presents are marked with **+** and those absent are marked with **–**
Source: Authors

Soil pH

Measuring soil pH enables archaeologists to understand the nature of the soil (Deetz & Dethlefsen, 1963, pp. 242-243). The soil from Daramdin belongs to the Mangjin-Daramdin soil series and comprises silt loam and loam (National Bureau of Soil Survey & Land Use Planning, 2005). The litmus test conducted by the authors in the Laboratory of Archaeological Sciences in the Department of Humanities and Social Sciences, Indian Institute of Technology Guwahati, corresponded to pH 5, which is moderately acidic. The method used for the litmus test is soil suspension, where the soil sample is mixed with water in a 1:2 ratios and stirred to mix well. The litmus paper is then suspended in the mixture, and the colour change is noted. Soil with a pH less than 6 is likely to be lacking in micronutrients such as Calcium (Ca), Magnesium (Mg) and Potassium (K) (Tan, 2011, pp. 249-250). Soluble aluminium is found in a substantial quantity in soils of acidic nature. Congruous to this, the EDX result for soil samples also indicates that Ca, Mg and K are present in

the samples in negligible quantities, less than 1 %. However, XRD confirms the presence of Illite in the soil, which indicates poor drainage conditions and low permeability (Tan, 2011, p. 280). Table 7 shows the litmus test reading of four soil samples from Daramdin collected from different depths.

Table 7: The Litmus Test of Soil Samples

Sl.No.	Soil Name (Depth from the Surface)	pH reading	Remarks
1.	DRD S.1 (0-20 cm)	5	Moderately Acidic
2.	DRD S.2 (20-50)	5	Moderately Acidic
3.	DRD S.3 (50-80)	5	Moderately Acidic
4.	DRD S.4 (50-80)	5	Moderately Acidic

Source: Authors

Discussion

The folktale passed down/around inter/intra generationally has proved to be a vantage point for finding spots and sites of human activities. Samanden and Daramdin have been the land of interaction in their own ways, between multiple groups. The mythical element is often rooted in the tangible material evidence(s) associated with the place, which is told and retold in the form of stories, myths and legends. In this case, the presence of potsherds in the agricultural fields of Daramdin or the presence of a stone erected in Samanden has evoked layered meanings to the landscape, thereby weaving narratives and tales about what event must have occurred in the past to have left this tangible evidence (s).

In the case of Daramdin, the Lepchas were fleeing from the shenanigans of a demon. They arrived at a place which, in their imaginative configuration, was an 'arcadia' or an idealised 'other place' which acted as a haven to escape human suffering (Howard, 2003, p. 47). The descriptions of the demon (*Laso Mung*) suggest the presence of a second party who was antagonistic to the present group of people (Lepcha). The presence of Limboos in Daramdin in the story adds a layer by putting forward the element of cordiality between the two groups (Lepcha and Limboos). Otherwise, the occupation of a foreign land to build a structure without a mark of conflict seems non-viable. It may also be, in probability, an attempt to indicate that both groups did not lead sedentary lives and hence laid no claims to the land since humans generally do not restrict themselves to their territory alone, instead wander around and push their boundaries within the radius of 300 kilometres (Tilley, 1994, p. 39). Nowhere in the story is it mentioned whether the people continued living there after the stairway crumbled or retired to their familiar place. The story also gives us an idea about the people arriving at this place from the North following the course of River Rammam. It is well known that the movements and routes are tracked, and the connecting points are marked with indicators such as erected stones, sacred groves, similar names or referred to in myths and stories (Tilley, 1994, p. 30). Having said this, Samanden, where *Sokpa Dhunga* (Yeti Stone) is erected, lies 11 km as the crow flies[2] (Vocabulary.com, n.d.) North to Daramdin. The story talks about human-non-human contestation for resources, resulting in the erection of a boundary stone to demarcate habitable land from forest land. The creation of boundaries is concurrent with the

[2] As the crow flies, signals that the shortest distance between Daramdin and Samanden, measured in a straight line, is 11 km.

concept of otherness and cultural difference. Boundaries along natural features in the landscape signify the choice of habitable lands and spatial connections of routes (Tilley, 1994, p. 17). Boundaries, whether natural or human made have also been the subject of myths and stories harbouring supernatural occurrences/events (McCarthy, 2016). Therefore, the Yeti in this story may mean a different group of people trying to seize this portion of land. Hence, the physical confrontation between the Lepcha shaman and the Yeti probably symbolises an actual conflict between two groups of people, leading to the demarcation of 'our and their' territory. This has led to demonising the other party in legends such as that of the Sokpa.

The humanised spaces are thus constructed by constant production and reproduction of the inhabitants' movements and activities endowed with social meanings in the form of myths, legends, and tangible and intangible symbols. It is interesting to note, however, that even though the story is recounted in detail by the inhabitants of Samanden, no Lepchas are residing in the village. Therefore, these folktales have been "a pastiche of memory and myth" for generations (Weitzman, 2006, p. 195). Samanden is en route to Nepal via Phalut (13 km from Samanden), the tri-junction of Sikkim, Darjeeling (West Bengal) and Nepal. It is also one of the arterial routes used for exchanges between these places. The very name of Samanden indicates that it was a place to rest for people carrying rice (*Samal*). The *Sokpa Dhunga*, therefore, could also be a marker on the route for travellers and traders.

The pottery sherds collected from Daramdin were the first of its kind to be analysed from the region. A dearth of previous literature on any aspect of pottery led us to opt for scientific analysis of the pottery samples to answer questions of provenance and production technology. Therefore, the analysis was conducted on four pottery samples and five soil samples to determine the elemental and mineralogical composition. This enables us to identify the provenance of the clay used to make the pottery. In that regard, Energy Dispersive X-Ray spectroscopy (EDX) divulged valuable information on the composition of the elements present in the pottery and soil samples. Elements like Oxygen (O), Silicon (Si), Aluminium (Al), Potassium (K) and Iron (Fe) are found in the soil samples as well as pottery samples. However, elements in smaller quantities, like Magnesium (Mg) are found in two pottery samples (DRDP.1 and DRDP.3) and two soil samples (DRDS.4 and DRDS.BS). Phosphorus (P) is present in one pottery sample (DRD P.2) and one soil sample (DRDS.BS). Bromine (Br), which is present in two pottery samples (DRD P.1 and DRD P.2) is, however, absent in the soil samples. Furthermore, there are elements found in trace amounts in the soil samples, which are absent in the pottery samples. These elements are Niobium (Ni) in DRD S.1 and DRD S.4, Calcium (Ca) in DRD S.2 and DRD S.BS, Tantalum (Ta) in DRD S.2 and Zirconium (Zr) in DRD S.BS. It is observable that the weight percentage of the elements present in both soil samples and pottery samples (O, Si, Al, Fe and K) are in approximate alignment with each other. However, there is an inconsistency in the presence of certain elements in the samples, as mentioned above. To corroborate the elemental composition of the samples, a mineralogical composition was determined with the help of the Powder X-Ray Diffraction (pXRD) technique. Powder XRD and Energy Dispersive X-ray Spectroscopy confirmed that Quartz **(**SiO_2**)** abound in the composition of the pottery sample. Along with quartz, there are other minerals like Goethite ($FeHO_2$), Hematite (Fe_2O_3), Illite ($KAl_2[Al_{0.65}Si_{3.35}O_{10}](OH)_2$) Microcline ($KAlSi_3O_8$), Kaolinite ($Al_2Si_2O_5(OH)_4$) and Graphite (C). The similarity in the elemental and mineralogical composition of pottery samples and soil samples suggests that the pottery samples collected from the field were, in all probability manufactured using local soil from the region.

There are numerous aspects of the pottery production process, of which firing temperature and condition play a significant role. The conditions under which pottery is fired—whether in an oxidising or reducing atmosphere or the maximum temperatures achieved during

the firing process provide valuable insights into the manufacturing technologies used by artisans in specific temporal and spatial contexts. Therefore, to preliminarily ascertain the firing temperature, the results of pXRD were taken into account, which indicates the presence of Microcline which is stable below the temperature of 500°C (Haldar & Tišljar, 2014, p. 76). Therefore, its presence in all the pottery samples suggests a firing temperature below 500°C. To corroborate this, kaolinite found in all four samples implies that the sherds were fired below 550°C (Moon et al*.,* 2021, p. 1239). Particularly for DRDP.1 and DRDP.2, the presence of Goethite suggests that the sherds may be fired below 300 °C since Goethite converts to hematite at 300 °C (Gialanella et al., 2010, p. 868). Regarding DRDP.3 and DRDP.BP, it is not conclusive whether the presence of hematite is because of Goethite conversion or the presence of natural hematite. Further analysis is needed for a conclusive answer. Therefore, the temperature in which the sherds were fired, in all possibilities, ranges between < 300 °C – 500 °C.

The firing condition of the ceramics can be inferred from the colour of the pottery sherd. If the colour ranges from orange to brown, it is indicative that the pottery has been fired in an oxidising atmosphere (Nodari et al*.,* 2007; Ther et al*.,*2019, p. 1158; Tite, 2008, p. 220). Based on this, it can be asserted that the three pottery sherds (DRD P.1. DRD P.2 and DRD P.3) were fired in an oxidising condition. The fourth sample (DRD P.4), however, is black. The black colour of the pottery is typically achieved in two ways — when pottery is fired in a reduced atmosphere where there is the nucleation of the black coloured oxides of iron like magnetite (Fe_3O_4), and by way of smoking or smudging technique where the carbon particles cover the surface and penetrate the pores of the vessel thus imparting a black colour (Amicone et al., 2021, p. 543). The EDX and pXRD results have shown that the presence of carbon (by EDX) and Graphite (by pXRD) in DRD P.BP and the absence of magnetite, thus suggesting theoretically that it may be smudging of carbon during firing that led to the black colour of the pottery.

Accelerator Mass Spectrometry (AMS) has been used to determine the site's chronology. A temporal framework has been obtained, but more analysis needs to be done. On the basis of preliminary analysis, a date range from 45 B.C.E.(IUACD#23C6561) to 1640 C.E. (IUACD#23C6562) can be envisaged.

Conclusion

Social groups in niche areas have remembered their past through stories, myths, and traditions little known to the rest. Following the folktales, the regions of Daramdin and Samanden were explored. Both these places bore remnants of the past as mentioned in the folktale. The efficacy of folktales in archaeological investigations, substantiated through this study, demonstrates how oral narratives can serve as repositories of cultural, material and locational information, thereby informing the identification of potential sites. In Sikkim, where little archaeological investigation has been conducted, the information contained in the folktales, especially the names of the places and the material evidence mentioned in it served a significant purpose in finding the spot where the potsherds and the megalith were situated. Due to the lack of concrete references for pottery remains, the pottery sherds and the associated soil were analysed using scientific techniques. The similarity in the elemental and mineralogical composition of the soil and pottery samples indicated that the pottery was perhaps manufactured in and around the region of study. The presence of minerals like Microcline and Kaolinite also confirms that the pottery was fired within the range of <300°C - 500°C. More information on the archaeological pottery of the surrounding places, and especially Eastern Nepal, is needed to understand the connection between these regions and to eke out more ethnographical information on the process of manufacturing the potsherds.

One limitation of this study that needs mentioning is the fact that the information provided by the inhabitants in the form of memories and anecdotes about the pottery sherds is taken *prima facie*, given that the researchers believed this to be the most

workable approach to substantiate the information found in the folktales. Additionally, while the radiocarbon dating of the charcoal samples indicates an age range from 45 B.C.E to 1640 C.E., an in depth discussion could not be effectively established within the scope of this research. This study opens up avenues for exploring pottery production practices and the temporal situation of the artefacts, details of which have largely faded from memory.

However, a significant development in the region's archaeology is that the AMS dates of charcoal samples provide us with a chronological framework that has not been previously established. The findings indicate that human activities were present in the region as early as 45 B.C.E., thereby contributing significant insights into the prehistoric timeline of the area while also stressing aspects of crafts like pottery production that were categorically denied by previous studies.

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Appendix

Table 7: Mineral Reference Chart for XRD

Sl. No.	*d*- value (Å)	Mineral	Mineral Group
1.	4.99	Illite (Drits et al., 2010)	Silicates
2.	4.89	Magnetite (Hudson Institute of Mineralogy, 2000)	Oxides, Hydroxides
3.	4.25	Quartz (Buzgar, et al., 2010) (Singh and Sharma, 2016)	Oxides, Hydroxides
4.	3.33	Quartz (Buzgar, et al., 2010, Singh and Sharma, 2016) Microcline (Bailey, 1969, Hudson Institute of Mineralogy, 2000)	Oxides, Hydroxides K-Feldspar
5.	2.45	Goethite/Quartz (Singh & Sharma, 2016)	Oxides, Hydroxide
6.	2.27	Quartz (Singh & Sharma, 2016)	Oxides, Hydroxides
7.	2.12	Quartz (Singh & Sharma, 2016) Graphite (Hudson Institute of Mineralogy, 2000)	Oxides, Hydroxides
8.	1.99	Microcline (Blasi et al., 1987)	K-Feldspar
9.	1.81	Quartz (Singh and Sharma, 2016)	Oxides, Hydroxides
10.	1.66	Illite (Drits et al., 2010) Kaolinite (Tamilarasu et al., 2017) Hematite (Singh and Sharma, 2016)	Silicates Kaolin Oxides, Hydroxides
11.	1.54	Quartz/Kaolinite (Singh and Sharma, 2016) Quartz (Tamilarasu et al., 2017) Graphite (Hudson Institute of Mineralogy, 2000)	Oxides, Hydroxides/Kaolin Oxides, Hydroxides
12.	1.37	Quartz (Singh and Sharma, 2016)	Oxides, Hydroxides
13.	1.28	Microcline (Downs et al., 2003)	K-Feldspar
14.	1.19	Illite (Drits et al., 2010)	Silicates

Ethical Declaration

The authors declare that the manuscript was prepared following the protocols of the Declaration of Helsinki. Informed consent was obtained from all participants regarding the study's nature, aims, and objectives. All measures were taken to ensure the participants' safety, rights, and well-being.

Ethical Committee Approval

The Department of Humanities and Social Sciences, Indian Institute of Technology

Guwahati, does not have an Ethical Committee to oversee the research.

Informed Consent

The authors declare that the research has been conducted with the informed consent of the participants and interviewees.

Conflict of Interest

The authors declare that they have no conflict of interest—either financial or personal—related to this research.

Authorship Contribution Statement

Upasna Chettri: Conceptualisation, methodology, data collection, analysis, and draft development.

Sukanya Sharma: Conceptualisation, methodology, analysis, guidance and supervision, and validation.

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Data Availability Statement

The data will be made available upon request with a valid justification.

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