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Editorial Note

Pakistan Heritage is a double-blind peer-reviewed journal, published annually. This volume included the papers on different aspects of archaeology and history of Pakistan and adjacent regions with subject matter ranging from the Prehistoric to the British Period.

We acknowledge the efforts of the members of the Board of Editorial Advisors, the contributors, the review and colleagues of the Department of Archaeology, Hazara University Mansehra. On the other hand, we are grateful to the worthy Vice Chancellor and management of Hazara University Mansehra for support and encouragement.

Editors

Whispers in Stone: A Reappraisal of Cup-Marks in the Hazara Region, Pakistan

JUNAID AHMAD AND ANAS MAHMUD ARIF

Abstract

This paper examines the cup-marked stones of the Hazara region of Khyber Pakhtunkhwa Province in Pakistan. Based on a comprehensive survey of published archaeological reports of multiple sites known so far in the region, this research seeks to contextualise the spatial distribution, typology, and possible functions of these enigmatic rock carvings. By integrating field data with spatial visualisations, comparative ethnographic tendencies and a review of archaeological literature, as a developed methodology (e.g. Frodsham, 2022; Waddington, 2022; Luke & Roosevelt, 2017; Kalhoro, 2013; Khan & Khan 2017), this paper contextualises the Hazara region's cup-marks within broader rock art traditions. The study argues that cup marks were not arbitrary carvings but functioned within complex cultural, ritualistic, and economic frameworks and hence it explores the potential for further archaeological investigations.

Keywords: Cup-marks, Cupules, Archaeology of Hazara Region, Torghur, Tourism in Hazara

Introduction

Cup-marks, more precisely 'cupules' defined as shallow, circular or conical depressions hewn generally into the bedrock (Bednarik 2008: 62), are one of the most widespread forms of rock art known since the prehistoric times and across the globe except the Antarctica (Frodsham 2022: 136; Jaeger et al. 2019: 118; Gosso 2010: 205; Schultrich 2024: 2; Carlton 2022: 105). Their presence in the Hazara region suggests a long history of human existence in the area and engagement with the local landscape. Studies have identified cup-marked stones with various interpretations ranging from ritual usage (Gosso, 2010: 217), territorial markers (Luke & Roosevelt, 2017: 13), and astronomical functions. Within the framework of rock art studies, cup-marks can be classified into two broad interpretive categories: shamanistic and quotidian representations. Given their frequent association with ritual and ceremonial contexts, cup-marks could more appropriately be positioned within the shamanistic category, as they are widely interpreted as instruments of libation rituals.

In the Hazara region, cup-marked stones are predominantly found on boulders situated in hilly terrains, near modern settlements, within pine forests, and along ancient pathways. Generally, with a significantly lower occurrence in plains or open landscapes. This study undertakes a systematic examination of these markings, integrating archaeological field data, ethnographic insights, and comparative research to explore their possible functions. By synthesising existing scholarship with empirical observations from surveyed reports, it reassesses the role of cup-marks in past societies and their broader implications for future research. A total of 51 cup-marked sites have been identified and spatially analysed to assess potential patterns and interrelations. While these cup-marks are generally attributed to the historic period (see), this assumption contrasts with the prevailing scholarly consensus, which tends to classify such rock carvings as belonging to prehistoric or proto-historic contexts yet doubting on the exact reason on why and what

these really were. These discrepancies necessitate a critical re-evaluation of existing chronological frameworks, urging a reconsideration of established interpretations in light of new archaeological evidence in the Hazara region.

Materials and Methods

The primary dataset comprises 51 documented cup-marked sites across the Hazara region, recorded through archaeological surveys conducted primarily by the Directorate of Archaeology and Museums, Government of Khyber Pakhtunkhwa (DOAM) and the Department of Archaeology, Hazara University Mansehra. The data, extracted from published reports, includes GPS coordinates, elevation from sea level, the number of cup-marks at each site, proximity to modern settlements, and vegetation types. However, field documentation gaps exist, with some sites lacking high-resolution photography and precise metric analyses of cupule dimensions, which are essential for a more comprehensive interpretation.

For spatial relationship tracing and distribution patterns of these cup-marked sites, QGIS 3.3.2 Lima is a specific version of Quantum Geographic Information System (QGIS, https://www.qgis.org), is employed. Spatial distribution were used as a visualisation method but further analyes were not possible with the existing depth of the data (see

Table **1**). The basic assessment of correlations between cupule sites, landscape variuables and settlement patterns thofor rely on the visualisations of the data. Similar methods are also adopeted in many studies in the region (e.g. Kalhoro, 2013; Khan et al., 2017).

Results

The spatial distribution patterns observed in the study are both intriguing and informative, particularly in terms of landscape spatiality. However, as is the case with most cupule studies, their interpretative value remains limited, posing challenges in deriving definitive cultural or functional meanings. The GIS-generated maps clearly illustrate that these sites are situated away from major settlement areas, often nestled within the hilly tracts of the lower Himalayas (see map). The distribution of cup-marked sites reveals their presence across diverse landscapes, including hilltops, forested areas, and locations adjacent to modern settlements.

In terms of elevation, the cup marks in the Kaghan Valley appear to be situated at the highest altitudes recorded within the study area. However, when examining the number of cupules per site (see Map 1, where bullet sizes indicate cupule density), no clear or consistent pattern emerges, suggesting that their distribution may not adhere to a uniform communal typology and structure. However, a distinct clustering pattern is observable in the Agror Valley (see Map 2 heatmap), indicating a possible concentration of these features in this region.

Geologically, the region is highly seismically active, having experienced multiple earthquake events over time. A significant 7.5-magnitude earthquake in 2005 had devastating effects, particularly on the eastern side of the region, i.e. Kaghan valley. Given this seismic history, the landscape has likely undergone substantial surface transformations, which may have affected the preservation and visibility of certain cup-marked sites. The possibility that some sites have been displaced, buried, or destroyed due to geological activity must be considered a critical factor in interpreting their current distribution and absence in certain areas.

Cup Marks in the Kaghan Valley

The Kaghan Valley, located in the northeastern part of the Hazara region, is a geographically isolated area where it meets the Neelum Valley of Kashmir. This valley follows the course of a high-gradient river, originating approximately 150 km upstream near the Nanga Parbat's massif, the second-highest peak in the Himalayan range. The river's source at Dharam Sar Lake flows through a network of tributary valleys, eventually merging with the Jhelum River below Muzaffarabad. Within this valley, cup marks have been recorded in the Manoor Valley, which serves as a transverse tributary. The most significant site includes a rock bearing approximately 120 cupules, situated in the upper retreats of the Manoor valley in the remote hamlet of Biari (see Figure 1 a). These cupules display varying depths, adding complexity to their interpretation. Additional sites include: Biari Bazar – A cluster of seven cup marks, located approximately a furlong from the Biari by the Manoor stream. Another, Badal Garan Mound – a cup-marked rock, with 3 cupules is located km downstream (see Map 1).

These cup-marked sites are unique, as no similar instances have been recorded elsewhere in the valley. In the current state of research, their presence in this geographically isolated landscape represents a novel discovery.

Archaeologically, the Kaghan Valley has not been known for significant material culture, aside from a few terracotta animal figurines (see Stein 1905: 18; Ali 2006: 41; Ali et al. 2011: 156; Shakirullah et al. 2021: 53; Hameed et al. 2021: 190) and possible Buddhist site in its lower sections near Balakot (see Shakirullah et al. 2016: 36), which is sometimes referred to as Nainsukh valley. Similarly, no known ethnographic accounts or oral traditions link these cup marks to local communities, and their significance remains unrecognised by present-day communities.

Spatial Distribution of cupules in the Siran Valley

Within this study, Mansehra Tehsil is examined in relation to the Siran Valley, which constitutes the northernmost part of the Pakhli Plains—a historically significant region known as Pakhli Imarat, an established state during the 15th century. The spatial analysis indicates a strong correlation between cup-marked sites and hilly terrains, settlement areas. As, with the exception of Reerh Bela (Shakirullah et al. 2021: 112), located in the lower Siran Basin (or eastern Pakhli Plains), all documented cup-marked sites are situated in the upper reaches of the valley, within the hilly tracts (see Map 1). This distribution contrasts with the archaeological record of the lower Siran River and Pakhli Basin, where numerous sites have been attributed to the Gandhara Grave Culture (Protohistoric Cemeteries), as well as Buddhist and Hindu Shahi periods (e.g. Shakur 1946: 1; Stein 1905: 18; Hameed et al. 2021: 168). However, there is a notable absence of Bronze Age and earlier sites, suggesting either a gap in preservation, documentation, or settlement continuity in the region. This hinders a direct link to the cup-marked sites.

According to local ethnographic traditions, cupules are commonly believed to have served as milestones or markers indicating the presence of buried treasures beneath the earth. This interpretation, rooted in folk narratives and oral traditions, reflects the way present-day communities perceive and attribute meaning to these ancient markings, although no archaeological evidence currently associated to such claims.

Sites distribution in Tehsil Oghi Area

Oghi, a Tehsil in District Mansehra, is home to several significant cup-marked sites, particularly in its northern region, Agror Valley. This valley is where the Unar River originates, flowing southwest through Tanawal Valley before merging with the Indus River near Darband. Agror appears to be one of the most prominent areas for cupule sites, with a considerable number of these carvings documented across the region. Most of the cup-marked sites in Agror are found on hilly ridges, within pine-forested areas, and on exposed bedrock outcrops (see Map 1, Figure 1 b). Notably, this region has experienced relatively low geological deterioration and erosion, which may have contributed to the preservation of these carvings. The sites are often located in prominent positions within the landscape, suggesting their potential role in wayfinding, settlement markers, or even recreational or ritualistic activities. At points, their proximity to modern settlements raises the possibility that these areas were favoured locations for past habitation due to their topographical advantages.

One particularly noteworthy example of cup marks is found at the Nasapa Cup-Marks site, where an unusual pattern is observed (Shakirullah et al. 2021b: 139, see Figure 2). Unlike the typical arrangement of cupules, this site features a circular cup-mark is positioned adjacent to a square-shaped, which are interconnected by a channel. This engraved channel then leads downward from a circular cupule along the rock surface. Such an arrangement suggests a possible utilitarian function, potentially linked to liquid flow or ritual libation practices, although no definitive interpretation has yet been established.

Locally, these cup-marked stones are often regarded as part of a mysterious ancient communication system, though no specific oral traditions or indigenous interpretations have been firmly associated with them. The broader archaeological record of area indicates the presence of Buddhist-period sites, with a probable Saka (Damijada) Kharosthi inscription from Sahdore (see Blakiston 1927: 116, 119, 169-170 ; Konow 1929: 13). However, beyond this evidence, no definitive archaeological material has been identified to date, highlighting the need for further investigation into the deeper history of the region.

Cup-marked sites in District Torghur and Tehsil Allai of District Battagaram

District Torghar, located in the northwest of the Hazara region, is a rugged, hilly landscape situated along the left bank of the Indus River. The region has remained geographically isolated, a characteristic that persists to this day. Cup marks have been documented on hilltops as well as along the banks of the Indus River (see Map 1), yet beyond their spatial distribution, no distinct anomalous features have been observed in the markings.

Further north, in Allai area, which represents the northernmost extent of cup-marked occurrences within the study area, these markings are also found in highly prominent locations. The valley here upstream becomes increasingly narrow and steep, as the Indus River winds through the Hazara-Kohistan region. Despite extensive archaeological surveys in the upper reaches of the Kohistan, no cup-marked sites have been reported in this part of the study region.

Morphology and Distribution of Cup Marks

The cup marks documented in the Hazara region exhibit considerable variation in size, depth, and spatial arrangement. Their diameters range from 5 to 40 cm, while depths vary between 2 and 24 cm. Some cup marks appear individually, while others are arranged in clusters, often forming geometric or linear patterns. The primary typological variations include:

- Isolated cup marks – Found on boulders near pathways or cultivated fields, a common type.
- Clustered cup marks – Arranged roughly in rows or circular formations, possibly indicating ritualistic or symbolic usage (e.g., Shangledar Khangaro).
- Cup marks with grooves –linked by shallow channels, which may suggest water-related or libation practices (e.g., Nasapa Cup-Marks).

Given the complex geological formations of the region, cup marks are carved into various types of stone, though they are predominantly found on hard basalt or granite surfaces, likely due to durability and resistance to erosion. While some cupules are created on smaller, freestanding boulders, the majority are positioned on larger bedrock outcrops, often in prominent or elevated locations within the landscape.

Discussion

The association of cup marks with historic-period sites (e.g. Shakirullah et al. 2023: 13) supports interpretations that link them to ritualistic practices. Comparative studies have attributed similar markings to fertility rites, ancestor veneration, and initiation ceremonies (e.g. Frodsham 2022: 136; Waddington 1998: 51). Their proximity to water sources aligns with interpretations suggesting their use in libation

rituals, religious purification, or symbolic representations of water, as seen in Swat and Gilgit (e.g. Olivieri and Vidale 2004).

While the precise chronological placement of these cup marks remains uncertain, their presence at historic-period sites suggests a long-standing tradition, possibly spanning multiple cultural phases. Some cup-marked stones appear to have been repurposed in Islamic contexts, indicating their continued cultural and symbolic relevance beyond their initial period of use (e.g. Shakirullah et al. 2023: 24). Certain cup-marked sites also exhibit grooves or channels, which may have functioned as water conduits or features related to libation practices specially where water is close by (e.g. Kalhoro 2013: 811).

Spatially, many of these sites of Hazara region are located near important areas such as Mansehra and the Indus River sides. One could think of ancient trade routes, suggesting an additional function in territorial demarcation, wayfinding, or ritual activity as suggested in other places as well such as Anatolia (e.g. Luke and Roosevelt 2017: 18).

It is important to note that cupules are not unique to the Hazara region, as similar carvings have been documented in archaeological surveys of Kashmir (Khan and Rahman 2020: 33). One particularly notable instance is at Kotli Saula, where cupules were carved onto a vertically oriented rock face, an unusual placement that may carry ritual or symbolic significance (Khan and Khan 2017: 73; Khan et al. 2017; Khan and Rahman 2020: 37). Additionally, the close association of some cup-marked stones with Hindu religious structures, such as the Sharda Temple in Neelum Valley (Khan and Rahman 2020: 227; Figure 4), accordingly, suggested a plausible religious-based chronology for some of these carvings (Khan and Khan 2017: 77).

However, these cupules do not exist in isolation from other forms of rock art. The archaeological record indicates the presence of other artistic expressions, including painted rock shelters, which may have coexisted with cup marks. Studies suggest that cupules may have functioned as grinding depressions for preparing red ochre, which was subsequently used in rock paintings (Alam et al. 2018: 38; Olivieri 2015).

From a spatial perspective, cup marks are found in geographically distant locations, ranging from Biari in Manoor Valley to Pajo Sar in Allai. While these sites are not directly connected, their distribution raises important questions regarding cultural linkages, group identity, and chronology. Were these cup marks created by the same group of people? If so, when and how did they spread across such diverse landscapes? Unfortunately, these questions cannot be answered conclusively, specially, given the current state of research. One certainty, however, is that spatial distribution should not be conflated with chronological continuity. It remains unclear whether different regional communities independently produced these markings as part of their own localized traditions, or whether they were created by mobile groups who carried this cupule-making tradition across different areas over time. This lack of clear temporal indicators remains a major limitation in understanding the broader cultural and chronological context of the Hazara region's cup-marked sites.

Conclusion

This study has explored the spatial distribution, morphology, and possible interpretations of cup-marks in the Hazara region, situating them within the broader traditions of South Asian rock art and global cupule studies. Drawing upon archaeological surveys, GIS-based spatial relations, ethnographic parallels, and

comparative research, the study revealed that these enigmatic carvings are not arbitrary markings but integral elements of past cultural landscapes. Their occurrence in hilly terrains, near religious sites, and along ancient pathways suggests a long tradition of human interaction with the landscape, with potential functions ranging from ritual and ceremonial activities to navigational or territorial markers. However, I do not hesitate to reiterate the important point that there is not enough still to say for sure. This conclusion is, as, Frodsham (2022: 142) would, "far from conclusive".

A dominant theme in cupule studies worldwide is their association with shamanistic and ritualistic traditions, often linked to libation practices, fertility rites, or ancestor veneration (e.g. Bednarik 2008; Frodsham 2022; Gosso 2010). In the Hazara region, their proximity to water sources, sacred sites, and burial grounds strengthens the hypothesis that they played a role in ritual purification, rainmaking, or ceremonial activities (Kalhoro, 2013; Olivieri & Vidale, 2004). Additionally, some sites, such as Nasapa Cup-Marks, feature cupules connected by grooves or channels, potentially indicating utilitarian functions, liquid offerings, or pigment preparation for rock art (Alam et al., 2018; Olivieri, 2015). Further reinforcing their ritual importance is their association with religious structures. In Kashmir, cup-marked stones have been found near Hindu temples such as Sharda Temple (Khan & Rahman, 2020: 227), and at sites like Kotli Saula, where the cupules are carved onto vertically facing rock surfaces, possibly as part of ritual iconography or temple consecration practices (Khan & Khan, 2017: 73, 77). This pattern suggests that at least some cup-marked sites in the Hazara region may have held religious significance in Hindu and Buddhist traditions before the Islamic period.

Another possible interpretation can be seen in the current transhumant movement patterns. It is plausible that cupules may have functioned as markers highlighting sacred, economic, or migratory zones. They were potentially serving as boundary indicators or waypoints along frequently travelled routes in the local landscape.

A major challenge in cup-mark research globally, is lack of accurate chronological framework. While many Hazara cupules are tentatively attributed to the historic period, this assumption contrasts with the global tendency to associate such carvings with prehistoric or protohistoric phases (Frodsham, 2022; Bednarik, 2008). The absence of Bronze Age or earlier archaeological sites, point to the actual antiquity of these markings being Bronze or Stone Age in the region. The reuse of cup-marked stones in later Islamic contexts (see Shakirullah et al., 2023: 24) indicates their continued cultural significance, but it does not clarify their initial phase of creation. In this regard, further research employing scientific dating methods, such as micro erosion analysis and residue studies, could provide more concrete chronological insights. This aligns with Bednarik's (2008) proposition that cupules should not be viewed as static artifacts but rather as dynamic components of long-term cultural landscapes, where their meanings and uses evolved over time. Similarly, Frodsham (2022) and Waddington (1998) argue that cupules functioned as mnemonic devices, encoding ritual knowledge and ancestral memory within the landscape.

Future Directions

The widespread occurrence of cupules across diverse cultural and geographical contexts suggests a broader, possibly universal cognitive or symbolic significance. The Hazara cup-marked sites exhibit strong typological parallels with global traditions but present a distinct trajectory due to their reuse across multiple cultural phases, including Buddhist and Hindu Shahi periods (e.g. Shakirullah et al. 2023: 24). Future

research should prioritize refining their chronological placement, avoiding overinterpretation while acknowledging their association with ritual and sacred landscapes.

A more spatially robust data collection strategy is essential, integrating micro-erosion analysis to establish precise dating frameworks. Systematic recording of all rock art, including painted rock shelters, should be undertaken to explore interrelations, chronological sequences, and developmental trends. Comparative research beyond Hazara, particularly with the rock art traditions of Kashmir and Swat, could clarify regional connectivity and shared symbolic practices. Developing a comprehensive spatial database encompassing all forms of rock art will facilitate deeper analysis of distribution patterns and cultural affiliations. This will also allow further to statistically and spatially model these scenarios.

Archaeological excavations at select sites would provide critical contextual insights by associating cup-marked stones with material culture such as pottery, lithic tools, and architectural remains. Given the region's seismic activity and environmental vulnerabilities, urgent conservation strategies, including site documentation and protective measures, are imperative. Additionally, these sites hold significant potential for heritage tourism, offering opportunities for public engagement and sustainable local development while making the process self-sustaining and ensuring the sites' preservation for future generations.

Acknowledgements

I extend my sincere gratitude to the teams of the Department of Archaeology and Museums, Government of Khyber Pakhtunkhwa, and the Department of Archaeology, Hazara University, Mansehra, for their invaluable work of documenting and publishing the archaeological heritage of the study area. The contributions of local researchers, field archaeologists, and scholars have been instrumental in advancing the understanding of cup-marked sites in Hazara. I also deeply appreciate the local communities and knowledge keepers whose oral traditions and insights provide essential cultural context, fostering a more holistic and inclusive approach to archaeological research and heritage preservation.

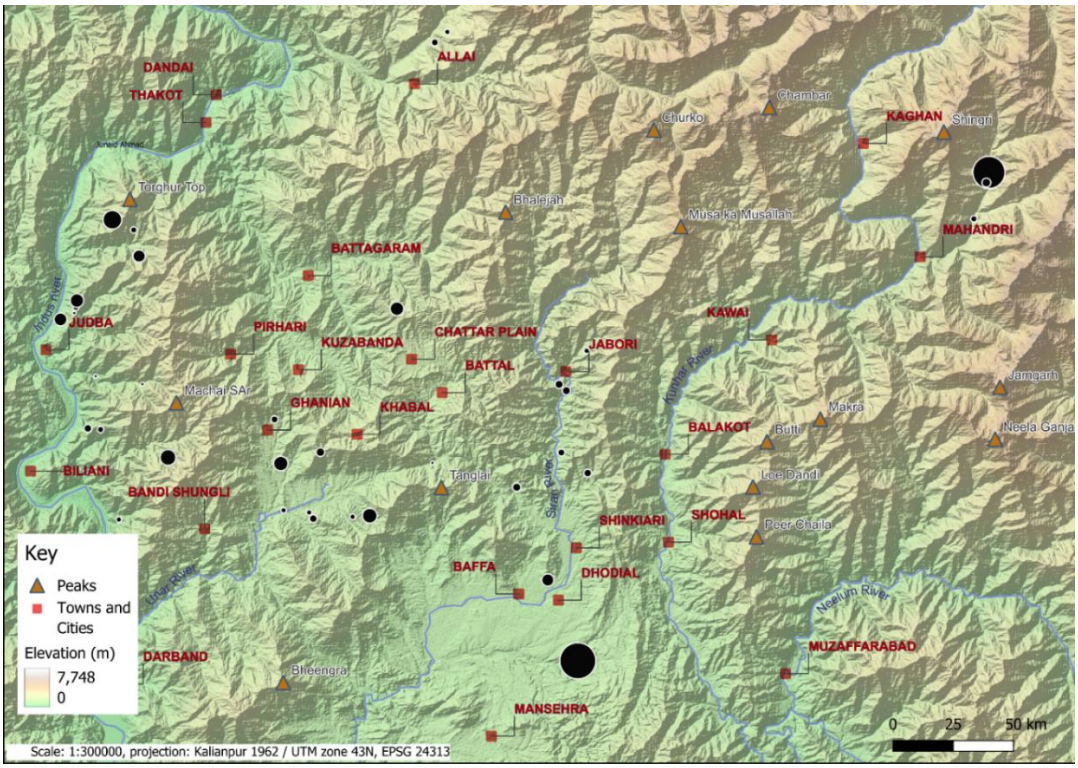
Table 1. A catalogue of sites

Sr. No.	Site	Elevation Recorded (m)	Number of cup-marks	Diameter (cm)	Depth (cm)
1.	Pajo Sar Cup Marks	1926	8	7.62	5.08
2.	Sar Mast top inscription	2010	20		
3.	Ochaar Wall Remains (Cup Marks) Remains	1813	4		
4.	Mattay Gattopaty Cup Marks	2046	2	7.6	40.6
5.	Kandar Cup Mark	1431	1	27.94	26.4
6.	Shangledar Khangaro Cup Marks	1946	40		
7.	Kandao Cup Mark	1407	3		7.6
8.	Khanaki Kandaw Sar (Cup Mark)	1337	28		
9.	Arnail (Shawai)	1234	18		
10.	Balkot Cup Mark	816	1	5.9	24.3
11.	Qadafi Shengaldar Cup Mark	1650	3		
12.	Qafai Cup Mark	1661	16		
13.	Kandao Cup Mark lll	1398	20		
14.	Kot (Darbanai) Cup Mark	953	3	25.4	25.4
15.	Kot Cup Mark ll	949	5	15.2	25.4
16.	Konare Mound	898	2	12.7	7.62
17.	Zor Killi (Kotkai)	566	5		
18.	Bai Cup Mark	1322	1		
19.	Bajna Maira Mound	1006	16		

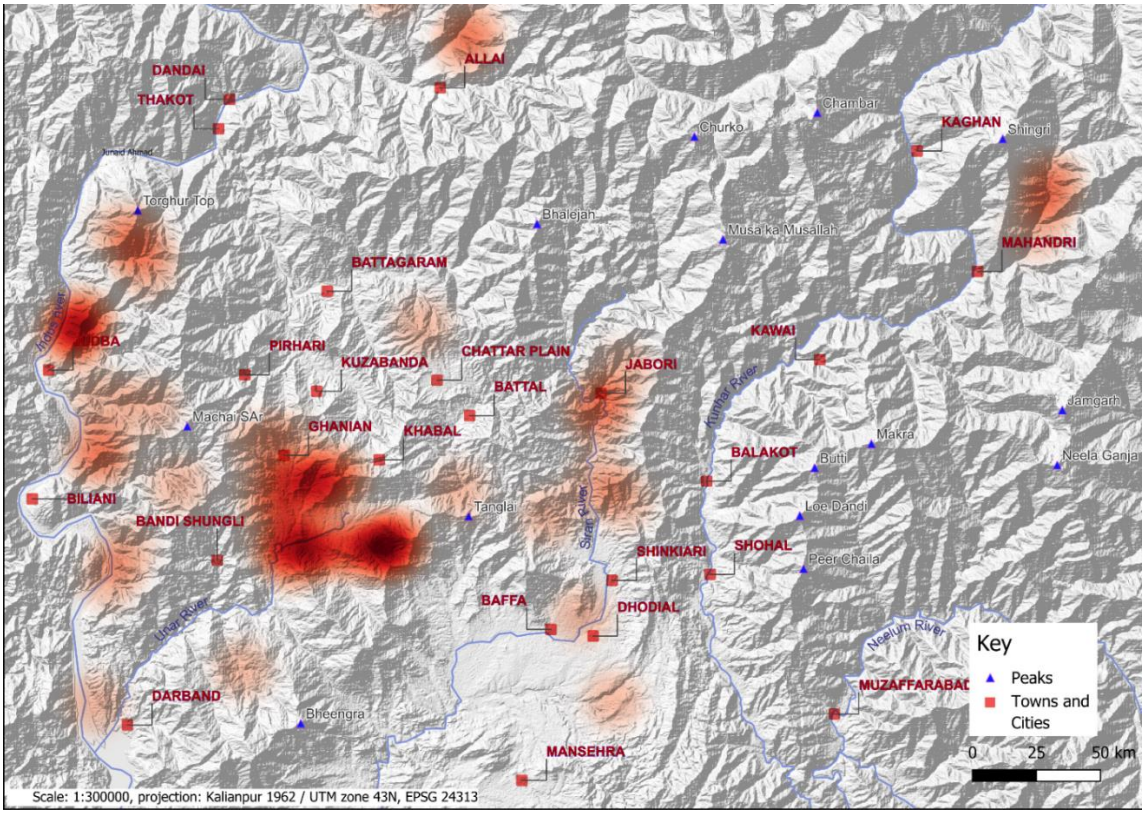
20.	Dadar Cup Marks	1220	4		
21.	Dardan Cup Marks	1640	6		
22.	Khanaki Kandaw (Stone Flower)	1311	1		
23.	Kotli Bala cups Marks	1140	6		
24.	Biari Cup Marks	2436	120		
25.	Biari Bazaar Cup Marks	2354	7		
26.	Reerh Bela Cup Marks	1058	150		
27.	Reian Cup Marks	1769	2		
28.	Timbri Cup Marks	1340	5	4	3
29.	Badal Garan Mound-I	2098	3		
30.	Garanthalli Mound Cup Marks	1348	6		
31.	Haji Qamber	1257	5		
32.	Hussain Banda Cup Marks	1213	2		
33.	Dakai Cup Marks	1231	2		3
34.	Thalpa Mound	1272			
35.	Hawa Gali Rocks	1401	2		
36.	Chin Kot Cup Marks-II	1340			
37.	Chin Kot Cup Marks	1391			
38.	Gujjar Bandai Mound	1252			
39.	Belian Dheri	1512			
40.	Nasapa Cup Marks	1288	23		
41.	Bashirabad Mazar	1268			

42.	Chulandrian Cup Mark Mound	1291	4		
43.	Likhi Dilli	1219			
44.	Uchari Cup Mark	1846	7		
45.	Jabri Cup Mark	1842			
46.	Shurun Ghar Cup Marks	1289	1		
47.	Nava Ghai Cup Marks	1233			
48.	Qalaghai Cup Marks	1236			
49.	Bela Cup Marks	1248	24		
50.	Hafiz Qamber Cup Marks	1760			
51.	Tale Wali Gali	534			

Figures and Maps



Map 1. Mape of the study area, Hazara Region with black points indicating the cup-mark sites and their size relating to the number of cupules



Map 2. Heatmap of the cup-marked sites in the study area

Figure 1. a. Biari Cup-marks b. Nakkah Cup Mark (After Shakirullah et al. 2021a: 50)

Figure 2. Nasapa Cup-marks, Tehsil Oghi (After Shakirullah et al. 2021b: 139)

Figure 3. Kotli Saula Cup-marked Rock (After Khan and Rahman 2020: 37)

Figure 4. Stone slabs bearing cup-marks near the Sharda temple, Neelum Valley, Pakistan (After Khan and Rahman 2020: 227)