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ENVIRONMENT AND HUMAN ADAPTATION IN PALAEOOLITHIC KASHMIR: A STUDY OF SETTLEMENT AND SUBSISTENCE PATTERNS

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Abstract

The Palaeolithic period in Kashmir provides significant evidence for understanding the interaction between early human communities and their natural surroundings. The location of prehistoric settlements was closely associated with elevation, slope, drainage and the availability of resources within the surrounding landscape. During the period when the Kashmir basin remained occupied by a lake, human occupation was largely concentrated in the uplands, especially in gently sloping hilly areas. The subsequent northward tilting of the lake around 200,000 years ago resulted in the exposure of the *wuders*, locally known as Karewas, particularly in southern and south-western Kashmir, thereby creating new areas for habitation. Caves and rock shelters also served as places of refuge and dwelling. The subsistence economy was primarily based on hunting, scavenging and gathering, while the surrounding forests, grasslands, lakes, rivers and streams provided diverse resources. The changing nature of stone tools, raw materials and manufacturing techniques further demonstrates technological adaptation. The present study examines the relationship between environmental conditions, settlement choices and subsistence practices of Palaeolithic communities in Kashmir.

Keywords: Palaeolithic Kashmir, Human Adaptation, Environment, Karewas, Settlement, Subsistence, Lithic Technology

Introduction

The Palaeolithic communities of Kashmir lived in an environment characterized by considerable geographical and ecological diversity. Their dependence upon naturally available resources meant that the selection of habitation sites, procurement of food and manufacture of tools were closely related to the physical features and resources of the landscape. The archaeological evidence from Kashmir provides an opportunity to examine these aspects through the distribution of settlements, caves and rock shelters, stone tools and the remains of plants and animals.

The changing environmental conditions of the Kashmir Valley, particularly the lake system and emergence of the *wuders* or Karewas, had an important bearing on patterns of human occupation. At the same time, the availability of forests, grasslands, water sources and animal resources supported a subsistence economy based primarily on hunting and gathering. The following discussion examines the settlement and subsistence practices of Palaeolithic communities in Kashmir in relation to these environmental conditions.

1. Landscape and the Distribution of Early Settlements

The geographical location of Palaeolithic sites suggests that settlement distribution in Kashmir was significantly influenced by the physical characteristics of the region. Factors such as elevation, slope gradient and drainage patterns, together with the availability of resources within the surrounding catchment, appear to have played an important role in determining where human groups established themselves. During the period when the valley basin was occupied by a lake, habitation was mainly concentrated in the upland areas. A closer examination of these uplands shows that settlements were generally situated on gently sloping hilly terrain, much of which is today associated with river valleys.

The preference for such locations was closely connected with the natural configuration of the landscape. Topographic relief, slope characteristics and drainage networks provided suitable conditions for habitation, while the surrounding catchment contained grasslands, forests and water sources in the form of rivers, lakes and streams. The presence of these resources created favourable conditions for obtaining food and water and consequently made such areas suitable for sustaining early human communities.¹

A major environmental transformation occurred around 200,000 years ago (BP), when the lake gradually tilted towards the north. This change resulted in the emergence of the *wuders*, locally known as *Karewas*, in the southern and south-western parts of Kashmir from beneath the former lake waters. Once exposed, these areas became accessible and suitable for human occupation. The transformation consequently made the valley basin increasingly favourable for settlement. Gradually, the *wuders* became an important centre of human habitation, demonstrating their significance within the changing settlement pattern of Palaeolithic Kashmir.

2. Habitation Spaces: Caves and Rock Shelters

Natural shelters also constituted an important element of Palaeolithic habitation in Kashmir. Aijaz Bandey investigated a number of caves in the Manasbal area and recovered Palaeolithic tools belonging to the Middle Pleistocene period. The discovery of these tools provides evidence that caves were used by people during this period as places of refuge and habitation.²

Evidence from Bomai further adds to our knowledge of Palaeolithic dwelling practices. A large rock shelter was identified at the site, with tools belonging to both the Middle and Upper Palaeolithic periods scattered in its vicinity. A rock engraving attributed to the Palaeolithic period was also found at the site. The presence of these remains suggests that the shelter was utilized as a dwelling space and was particularly suitable for occupation during the summer months.

3. Development of Lithic Technology

The stone-tool assemblage of Palaeolithic Kashmir consisted of several types of implements, including hand-axes, cleavers, choppers, points, borers and burins. The process of tool production was not uniform throughout the Palaeolithic period; rather, it underwent gradual changes in terms of forms, techniques, raw materials and designs. The development can be traced from comparatively simple flake tools to more sophisticated forms such as parallel-sided double scrapers, backed knives, burins, points and borers.

Different varieties of similar tool types have been reported from archaeological sites such as Sonamarg, Prang, Ganeshbal in the Lidder Valley, Manasbal and Kuladur. The variation observed among these assemblages indicates the existence of regional differences in Palaeolithic tool-making traditions.³

The raw materials employed for producing stone implements also changed over time. Broadly, the Palaeolithic period in Kashmir may be considered in terms of the Early and Middle Palaeolithic and the Upper Palaeolithic phases. During the Early and Middle Palaeolithic, Panjal trap and quartzite were the principal materials used by tool-makers. At Pahalgam, Panjal trap was initially the major material employed for manufacturing implements. With time, however, there was a gradual preference for quartzite. Similar to

developments in other regions of the Old World, quartzite offered advantages because of its hardness and its favourable flaking properties, making it an effective material for tool manufacture.⁴

During the Upper Palaeolithic, tool-makers at Sombor employed a wider range of materials for producing small implements. These included jasper, siliceous stone, limestone and trap rock. The use of these different materials reflects changes in technological practices and the attempt to produce implements that could be utilized more precisely and efficiently.⁵

The techniques of tool manufacture in Kashmir were broadly comparable with those known from other areas of the Old World. The block-on-block, stone hammer and soft hammer techniques were among the methods employed. These techniques involved the gradual shaping of stone towards the desired form and were particularly associated with the Lower and Middle Palaeolithic. Another important method was the prepared-core technique, commonly known as the Levalloisian technique. In this method, the core was deliberately prepared in a particular form before a flake was detached from it. The technique appeared during the Middle Palaeolithic and subsequently became widely used by Upper Palaeolithic tool-makers, allowing greater control and precision in the production of tools.⁶

4. Subsistence and Exploitation of Natural Resources

The subsistence economy of Palaeolithic communities was primarily based upon hunting animals and gathering wild plants. Stone tools recovered from archaeological contexts indicate their use in hunting activities as well as in the processing of animal carcasses. Meat obtained through hunting and scavenging therefore appears to have formed an important component of their diet. The placement of camps near streams, lakes, forests and grasslands further provided access to a variety of resources and created opportunities for hunting, fishing and gathering edible plants.

The Quaternary deposits of Kashmir, particularly those associated with the *wuders*, provide important evidence regarding the environmental conditions and resources available during the Palaeolithic period. During the Ice Age, large mammals such as Siwalik elephants, deer and different kinds of birds were present around the lakes and valleys. The foothill regions supported big cats, elephants, horses, pigs, hippopotamuses and cercopithecoid monkeys.

The lower and upper *wuders* have yielded fossils representing a wide range of plant, invertebrate and vertebrate species. Plant remains include *Acer* or maple, *Berberis* or barberry, *Rosa* or wild rose, *Pinus* or pine and *Picea* or spruce. The animal remains include freshwater shells, fish, horses (*Equus*), prehistoric elephants (*Hypselephas*), wild cattle (*Bos*), *Sivatherium*, rhinoceroses, deer (*Cervus*) and wild boars (*Sus*).

The presence of such a diverse range of fauna suggests that the region supported both native and migratory species. Horses and elephants, for example, are believed to have entered the Indian subcontinent from Central Africa, with a major part of their migration taking place through the north-western frontiers. Evidence concerning hunting behaviour is also provided by a sketch attributed to the Upper Palaeolithic period. Although the depiction does not clearly indicate the weapons or implements used by the hunters, the presence of several figures may suggest that hunting was undertaken cooperatively rather than individually. It therefore raises the possibility that early humans employed collective strategies and coordinated efforts while hunting large animals. Because direct evidence concerning the everyday livelihood of Palaeolithic communities is relatively limited, ethnoarchaeological, ethnobotanical and ethnozoological evidence can contribute to the reconstruction of their possible subsistence practices.⁷ A number of traditional practices preserved in Kashmir provide useful comparative examples. For instance, when a wild and aggressive animal entered a settlement, people would traditionally join together to drive it away and kill it with rough stones. Similarly, the practice of repeatedly pursuing an animal until exhaustion made it easier to capture or injure it and has continued to be observed in certain areas.

Stone implements such as hand-axes, cleavers and scrapers may consequently have formed important parts of prehistoric hunting equipment. Traditional fishing methods also provide useful comparative evidence. These included altering the course of a stream to capture small fish, striking larger fish with stones in running water, and using moonlight or firelight—locally referred to in Kashmir as *lashi gada*—to attract and catch fish.

Comparable simple techniques could also be used for catching birds and collecting fruits and nuts from tall trees. Rural communities in Kashmir have traditionally used methods such as throwing weighted sticks, known as *gel*, or using a stick with a stone placed at its front to knock down food resources. Such practices provide useful insights into the possible use of simple techniques for obtaining food resources in prehistoric times.

The collection of wild plants and fruits remained an important practice in Kashmir until relatively recently.⁸ The continued use of such resources indicates the availability of a considerable variety of naturally occurring food plants and suggests that some of these resources may have been identified and exploited by ancient hunter-gatherer communities.

Among the wild edible plants traditionally consumed were *kambe* (*Solanum nigrum*), *trev*, *kuna*, *kreri* and *kraal mund* (*Capsella bursa-pastoris*). Other plants included *bera muj*, a variety of *Umbellifer*, *kai kok*, a turnip-rooted *Umbellifer*, and the seeds of *jewar* (*Euryale ferox*).

Aquatic resources also formed part of the traditional diet. These included *gar-gul* or water chestnut, *throh* (*Barbarea* sp.) and the root of *Nepetya raphanorhiza*. Pollen from *dal nabad* or reed mace, stems of *pumposh* (*Nymphaea stellata*), *hedar* or mushroom, and both the nut and stem (*nadru*) of *pamposh* or *pambach* (lotus) were also consumed.

The range of edible plants further included *chattr* (*Phytolacca acinosa* and *Megacarpaea polyandra*), *nag bubr* (*Nasturtium*), *abij* (*Rumex*), *hand* (*Cichorium intybus*), *sehbarg* (*Oxalis corniculata*), *pambahak* (*Rheum*), *kakuteri* (*R. acetosa*), *rumach* (*Polygonum rumicifolium*) and *chauncharu* or adder's tongue. Different varieties of wild onions, known as *van pran*, *drab* (*Polygonum* sp.) and nuts such as *virin* or hazel were also collected.

A variety of berries and other wild resources were also part of the traditional food resources. These included *gulala* or red poppy, *kaodach* or barberry, *posthil* or the bark of yew (*Taxus baccata*), *tsok ladder* (*Polygonum polystachyum*), *ingra* or strawberry, *hargil* or black currant, *dhan chanch* or blackberry, *kulmanch* or guildler, *sur chanch* or bramble and *mailtang* or beam tree.

Other plants and herbs included *zumb* or bird cherry, *kev* (*Chaerophyllum* sp.), *wolitok*, similar to *karm sag*, *hopal* (*Dipsacus inermis*), *van ruhan* or wild garlic, *wata krim* (*Lychnis* sp.) and the roots of *zergogal*, a turnip-rooted *Umbellifer*. Other traditionally collected foods included *kanguch* or morel, *ded* or ferns, *kahokhur* (*Hudnum coralloides*), *silr* (*Agrocybe flammans*), *chanch* or raspberry and several varieties of fungi.⁹

The evidence of these plant and animal resources demonstrates the considerable variety of food available within the Kashmir environment. The subsistence of Palaeolithic communities could therefore draw upon different categories of resources, including hunted and scavenged animals, fish, birds, wild plants, fruits, roots and aquatic resources.

Conclusion

The evidence from Palaeolithic Kashmir demonstrates that settlement and subsistence practices were closely connected with the natural environment. The location of settlements in upland areas and gently sloping hilly terrains was associated with favourable topography, drainage and the availability of forests, grasslands and water sources. The emergence of the *wuders* or Karewas following the northward tilting of the lake around 200,000 years ago further expanded the areas available for human habitation.

The use of caves at Manasbal and the rock shelter at Bomai provides evidence concerning the dwelling practices of Palaeolithic communities. The lithic assemblages from Sonamarg, Prang, Ganeshbal, Manasbal and Kuladur reveal diversity in tool forms, while the use of Panjal trap, quartzite, jasper, siliceous stone, limestone and trap rock reflects changes in raw-material selection. The development of different manufacturing techniques, including the prepared-core or Levalloisian technique, further demonstrates technological development.

The subsistence economy was based mainly on hunting, scavenging and gathering, with fishing and the exploitation of aquatic resources also providing opportunities for obtaining food. The wide range of animal and plant remains associated with the *wuders*, together with the traditional knowledge of wild food resources in Kashmir, demonstrates the richness of the surrounding environment. The settlement choices, technological practices and subsistence activities of Palaeolithic communities were thus closely associated with the resources and environmental conditions of Kashmir.

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