

ECOLOGICAL CHANGES IN THE HEADWATERS OF THE INDUS

Karl Jettmar

SYNOPSIS

Already during the third and second millennium BC, humped cattle (*Bos indicus* L) is attested by excavations in Swat as the most numerous species. Domestic sheep and goats were less frequent. This situation persisted until the time of Alexander's inroad: he captured 230,000 heads of cattle.

The Buddhist pilgrim Huichao who travelled in the beginning of the eighth century AD mentions that in the mountains at the northern periphery of Gandhara and Kashmir the forests had been destroyed by fire. Apparently the vegetation was damaged by ruthless clearings.

Under such unfavourable conditions, goat-breeding could be a suitable solution, the stomach of a goat can even digest woody substances. However, it seems that only after the immigration of the Shins who came from the present Hazara district the goat became the most important domestic animal. The Shins expanded far to the north, especially in the belt between heights of 900–2,200 metres. There, twigs of the evergreen hollyoak (*Quercus balout*) can be fed to the goats during wintertime. However, only fresh and tender shoots from the treetops can be used. The shepherd has to cut them down with an iron axe.

The earlier inhabitants maintained their herds in stables during winter, fodder was collected by humans. So, in the cold period when meat could be stored, a part of the herds was slaughtered. This custom is still remembered and continued in peripheral areas.

In which century the transition to more extensive goat-breeding took place, is not clear. Among the Shins, religious concepts, previously connected with the noble bag of the hunters, were attributed to the domestic goats. They were understood as relatives of the lords of the mountains: ibex and markhor.

Keywords: Humped cattle, goat-breeding, fodder, husbandry, oxen, vegetation, forests, irrigation, Shin, rock inscriptions

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INTRODUCTION

When I tried to bring the results of my fieldwork in Dardistan (ongoing since 1955) into a scientific concept, my main interest was directed towards a historical interpretation of ancient beliefs and customs. That finally resulted in my book *Religions of the Hindukush*, which is a comprehensive collection of information contained in the early reports, plus my own observations (Jettmar, 1975).

Certainly I took notice of the regional systems of agriculture and livestock breeding, but I understood regional differences as adaptations to minor differences of the environment. The study of the faunal remains in the sites of Swat, published on the basis of the material collected in the layers of the third and second millennia BC, speaks for a 'normal' development. Prevalent on the bones of cattle (zebu), and sheep or goats, followed by pigs and equids. Dogs were known, while the bones of wild animals were rare. We might assume that the earliest inhabitants of the interior mountain valleys had an economy, on the one hand based on mobile grazing and sedentary stock raising. On the other hand, the cereals, wheat, barley and rice were most important, lentils were known and grapevine brought from outside was cultivated (Stacul, 1987, esp. the contributions by Compagnoni and Constantini).

This is not quite in accordance with observations which were made on rockcarvings which were discovered on the bare cliffs and boulders in the Indus valley between Bunji and Sazin. Here some of the earliest scenes, rendering domesticated animals, depict bovids, namely zebus. The hump is clearly visible (Jettmar, 1985; Jettmar and Thewalt, 1985: 13).

We would expect that in such a mountainous area husbandry should start with the main emphasis on goatbreeding. That would be in accordance with still persisting local beliefs. Repeatedly I was told that domestic goats are the less holy, but still pure relatives of the caprines which are indigenous in the area, to the ibex, roaming in the highest regions, and to the markhor having a lower stand.

CATTLE BREEDING

Well known historical sources however corroborate the importance of cattle-herding. In his description of the campaign to the Indus, Arrian (Arrianus, c. 160; VI/25 cf. Godolphin 1942: 526) tells about the enormous booty which was made before Alexander led his forces against Massaga, the capital of Swat. Referring to Ptolemy, Arrian says that 230,000 oxen were taken, of which Alexander picked out the finest, because they 'seemed to excel both in beauty and size'. He wanted to send them to Macedonia in order to get better plough-oxen there.

Who were the cattle-breeders who kept such huge and excellent herds? I assume that the dangerous enemies, who made the detour of Alexander's army to Swat necessary, were nomads or seminomads, because there they had their fortified refuges (and meadows) in summertime. They were comparable to the 'Kuchis' which I saw on the way downcountry, when I travelled to Swat in autumn 1958. Perhaps such early itinerants were Indo-Iranians, maybe from the Dardic tribes. Then we should ask whether the permanent settlements excavated in the Swat valley by Italian archaeologists were not inhabited by them, but by their sedentary partners.

So there might have been a coexistence of peasants and pastoralists. During winter the cattle breeders moved to the plains where they found suitable meadows, like the modern successors. Today the Banihara bring their buffalos from the mountains around Kashmir to Jammu. The Kandi Gorar have migration routes for their mixed stock, shorter and farther to the west. The goat-breeding Bakrwal go from the Great Himalaya Range to different places in Jammu, partly crossing the Kashmir valley. Maybe, similar systems existed already 2,000 years ago (Rao and Casimir, 1982, 1985, 1992: 95–100, cf. Fig. 1).

At the end of this long and relatively peaceful period there is another historical text which was not recognized in Rao and Casimir's ecological evidence.

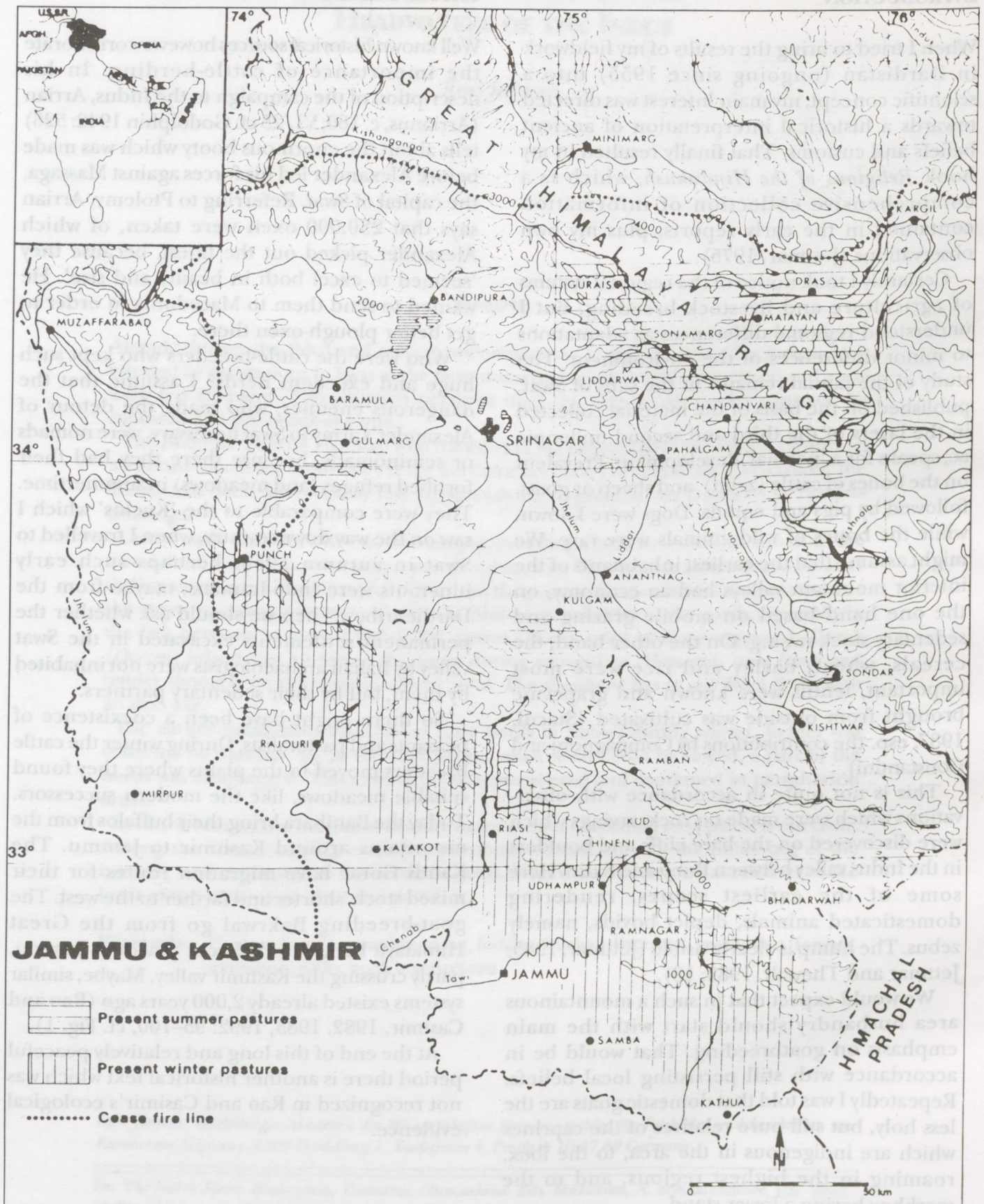


Figure 1. Sketch of present summer and winter pasture areas of the Bakrwal in Jammu and Kashmir (After Rao, 1992).

HISTORICAL BACKGROUND OF KASHMIR AND SWAT

The pilgrim Huichao, of Korean extraction, who visited India and returned to China in 729 AD, was deeply impressed by the devastations caused by human activities in the areas around Kashmir. Between Kashmir and Gandhara no trees were left on the mountains, he says, only burnt treestumps, and between Kashmir and Little Palur (i.e., the Gilgit valley) the situation was not better (Fuchs, 1939: 444f). This reference might refer as well to the present Hazara-district.

Wars are catastrophic for irrigation systems, flourishing areas might become deserted, but prolonged peace might have even worse effects on the forests. It would be fascinating to study the results of the modern period of merciless fighting in Afghanistan. Perhaps districts made inaccessible by mine-fields may show some recovery. A study of such areas should be done in the distant days of peace.

The radical devastations observed by Huichao in the hinterland of Kashmir were almost certainly caused by a period of relative stability, starting at the time when the mountains were included into states dependent on the Kushan emperors and ending in the time of Ghaznavid conquests. I remember that I have seen field-terraces on the mountains of Buner, high up in places where irrigation is not possible (and was not necessary), they may go back to the peaceful times of the first millennium AD.

The modern local historians of Swat and Kalam, intensely collaborating and exchanging their views, are convinced that since the fifth century the lowlands and mountains were integrated into the realm of the White Huns. A splendid example of this folkloristic literature was recently published (Abd-al-Haq Mankiralay, translated and commented by A.P. Palwal, 1987 and 1992-3). It is not clear who propagated the story that Swat was for centuries under Hunnish rule. Caroe's highly appreciated book on the Pathans could be partly responsible (Caroe, 1958: 81-90). We do not know whether an indigenous tradition was blended with the historical constructions of the British Sahibs. Maybe there

is some kernel of truth, but certainly the Huns were not so ferocious as they were depicted.

Certainly, Muslim armies reached the mountain-valleys of Swat in the eleventh century. Their first mosque was constructed on the ruins of a building from the Hindu-Shahi period. The foundation-inscription was made on a block of marble, taken from the previous construction (Scerrato, 1985; Abdur Rahman, 1988). But the conquest was only an interlude and not followed by a period of Islamic domination: that is the conclusion drawn from the experiences of a Tibetan pilgrim who reached the area in the thirteenth century. The actual religion was a 'popular and magic form of Buddhism'. Witchcraft was still in full swing (Tucci, 1940: 9, 40). We may assume that this reconversion was supported by the surrounding mountain tribes, more conservative than the villagers in the main valley.

Tucci also published the report of another Tibetan pilgrim, who visited Swat shortly before the conquest of the whole area by the Yusufzai-Pakhtuns in the seventeenth century. This travelogue clearly indicates that in the meantime Buddhism had been replaced by Hinduism, or to say it more cautiously, by a syncretistic popular religion, incorporating many Hinduistic elements, sometimes perverting them by clinging to local concepts (Tucci, 1940: 66-83).

GOAT BREEDING ASSOCIATED WITH THE INDUS

This syncretistic religion persisted in many valleys into the nineteenth century (Jettmar, 1975: 250-3), and we know that the most remarkable innovation was the replacement of the cow, the holy animal of the Hindus, by the goat. The domestic goat was now of crucial economic importance to all the tribes living in the southern fringes of the westernmost Himalayas, so the prevalence even in the cultural sphere is consequent and perfectly understandable.

Apparently this adjustment was propagated by Dardic tribes speaking north-west-Indian frontier languages (Morgenstierne, 1974), migrating in several waves into the mountains.

The movement of such an expansive Dardic people is well attested in the areas east of the Indus, before the river enters the plains.

We may assume that this predilection for goatbreeding was evolved in the areas where the indigenous vegetation, the forests, were destroyed by the needs and the actions of the local sedentary population—as told by Huichao.

To Professor Casimir I am indebted for the essential information that in areas where the natural environment is already damaged by careless clearings there are still suitable ecological niches for goat-breeders. The goats can digest wood-fibres, their stomach being much bigger than that of the bovinds.

We cannot exactly fix the date *when* in the forelands, devastated by felling of the trees and setting fire to the undergrowth, the corresponding tradition of semi-nomadic or nomadic goatbreeding was unfolded, supported by a specific kind of pastoral ideology.

As long as this system was diffused in the southern slopes of the Himalayas, the keeping of large herds was not problematic during wintertime. It was only necessary to migrate with the flocks southwards before snowfall. There are many places along the rivers of the Punjab where grazing is possible in autumn and winter, after the harvest, without impeding agriculture. In this respect, recent observations made by Rao and Casimir (1982, 1985, 1992) among expanding goat-breeders (Bakrwal's) in the areas of Kashmir and Jammu are most interesting.

Deeper in the mountains, the way southwards would be blocked by early and protracted snowfall closing the passes. Only recently, migration with the herds to the south has become possible—after the construction of the Karakoram Highway. Previously the way through the gorges of the Indus had been too difficult and dangerous, even for goats.

So it was necessary to keep the goats even during the winter behind the mountain chains forming the southern boundary of the 'Inner Himalayas'. That could be done by feeding them with foliage and herbs, brought down from the meadows by humans. That needs a great investment of human labour and, consequently, restricts the size of the herds.

In areas where the climate is cold enough, the animals which are to be used for nourishment in winter and spring are slaughtered as soon as possible, then the frozen meat can be used bit by bit.

But it is generally known that the twigs of the hollyoak can be used as fodder for domestic goats, all the year round. That is the main basis for keeping larger herds.

That was corroborated by the observations of the first German Hindukush Expedition 1935–6. It resulted in the following statement of Scheibe (1937: 127; translation Jettmar)

Areas with concentration on goat-breeding and the areas where the hollyoak is distributed (*Quercus balout*) are congruent with an astonishing exactitude.

This explication seems to be very easy and convincing. *Quercus balout* is an evergreen tree, that allows the feeding of the goats during wintertime, without keeping them in the stables. This solution has been possible for many centuries. Why should we assume a late transition to intensive goatbreeding?

An observation made by P. Snoy, in fact we could say it was suggested to him by his informants (Snoy, 1993: 67–69), indicates that this explanation is too simple. The hollyoaks have leaves which are in lower parts of the treetop hard, spiny and prickly, indigestible even for goats. There is, however, a way to get fresh and tender shoots, namely by the assistance of man. The shepherd has to cut them down with an axe with a long handle.

So the use of the hollyoak forests in the interior Himalayas was not a 'natural' precondition, it needed human interference with a technique which was a progressive invention and diffused together with the use of the iron axe.

THE SHINS AND THE AGROPASTORAL SYSTEM

It seems that the diffusion was not accomplished by the earliest wave of Dardic immigrants. Only a later wave introduced this superior adaptation. The language of these invaders is called Shina,



Figure 2. Boulder near the Karakoram Highway in the area of Partab Bridge. The decorated boulder shows a Brahmi inscription and Buddhist images. It is surrounded by rock splinters from the blastings nearby (Photo: Jettmar 1988).

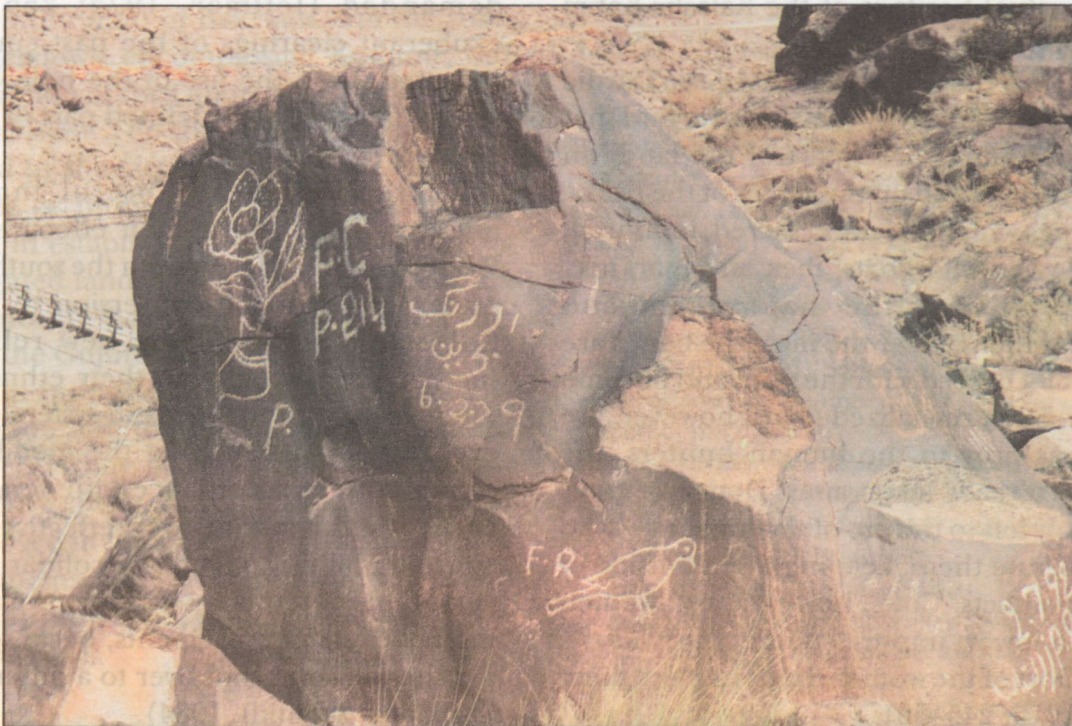


Figure 3. Cliff near Shatial bridge. Damaged by blastings during the construction of a larger road. Workmen tried to imitate the original carvings, adding modern inscriptions (Photo: Baumann 1994).

it has similarities with the Dardic idioms in the lowlands, especially with the Tirahi. The term for this population, Sin = shin is only under certain conditions used as an ethnonym, near to the borders of its diffusion. As a rule, the Shins are the (formerly) dominating stratum of a people also including Yeshkuns, Kamins and Doms in a sort of caste-system. This ethnic conglomeration (without a collective name) includes the inhabitants of the Gilgit-Agency (with exceptions, e.g., Hunza, Nagar and Yasin), occurs in Shinkari—where the Shins are most frequent—and in the eastern part of Indus-Kohistan. Some enclaves are further to the east.

It is a general conviction that the Shin came from Pakli (Biddulph, 1971: 155–64), the area between the Indus and the Kishanganga river. There is a township 'Shinkiari'. The physical appearance of the Shins is different from that of the ancient mountaineers, they look more 'orientalid', not so europoid as the Yeshkun and the Burushos. That seems to confirm the thesis of a southern origin.

The deciding peculiarity of the Shin is their engagement in goat breeding, deeply integrated into the spiritual system, which we may call a pastoral ideology with livestock symbolism, like that in the ritual heritage of the Kalasha-Kafirs (Parkes, 1988).

Summing up the essential traits of the Dardic religion, well-preserved by the Shins, we find that in the highest and purest part of the land, on the high meadows and on the slopes of the peaks, female beings which are pure, sacred, immortal, are herding the wild goats, ibex and markhor. They are milking the nannygoats and slaughtering them. After the meal the bones are put together, covered with the skin, and become alive again. Such revitalized goats, however, are conceded as prey to the human hunters, the essence was already taken away. Domestic goats are definitely left to the use of the humans—who should venerate them, keeping them outside of polluting contacts. Cows, however, and women belong to a lower, impure sphere. Agriculture, the daily effort of the women, finds its place there (Jettmar, 1975: 245–50).

Repeating previous deliberations, we may conclude that intense goat-breeding was

developed at the fringe of the mountains. When the population here (certainly not only the Shin in Pakli) came under pressure by Muslim raiders and later on by immigrations of Pashtun tribes, they moved into the valleys higher up. With their typical implement, the iron axe, they could exploit the holly-oak forest in the lower parts of the mountains 900 m and 2,300 m in height.

There they pushed away the earlier inhabitants, the 'Dangariks', speaking other Dardic languages, who had combined cattle-breeding with agriculture. In many places a sort of coexistence, a symbiosis was arranged. Mostly the goat-breeders who had brought their weapons and implements from the outskirts remained in a superior position. Entering further into the mountains, they came into contact with the original inhabitants of the extreme mountains. In their economic system, hunting was still an important factor to sustenance, religious ideas grown on this basis were now accepted and combined with the heritage of the newcomers.

Adaptation can easily be observed in other parts of social life, the felling of the tree was considered as a violation of divine prescripts, to calm down the spirits, the offering of a goat was demanded (Jettmar, 1975: 255). So the exuberant clearings of the past could not be repeated. Even the use of the holly-oak forests was regulated, only a defined part of them were used each year.

These ecologically useful innovations, however, lost much of their effectiveness when Pashtun tribes attacked from the south under the pretext of enforcing conversion to Islam. The Kohistanis accepted the new religion, but succeeded in preserving their ethnic identity. They also accepted the Wesh-system (periodical exchange of land among the members of the community, in accordance with demographical changes). This system is very effective in creating and maintaining mechanic solidarity, but not favourable for the environment, as nobody is interested in improvements, because he knows that he will soon shift over to a different lot (cf. Zarin and Schmidt, 1984).

A last change of the agropastoral system happened in Tangir, maybe even in other areas

during the last decades. Here, the previous complicated agricultural system with a variety of grains and crop-rotation was replaced by the almost exclusive cultivation of maize. In case that the available manure is concentrated on such fields, one harvest will have a considerable surplus, which could not be used for exportation.

So the landowners used such otherwise vain benefits in order to recruit share-croppers who accepted all labours connected with agriculture. The women were completely discharged from their previous tasks—and confined to their houses, a great step for establishing new fundamentalistic morality (Jettmar, 1960).

However, the landlords can now spend the whole summer with their families and their cattle on the high meadows, under better climatic conditions and a permanent chance for hunting—and private warfare.

This system was challenged when Bhutto's speeches pronounced that the man working in the fields should also become the legal owner. However, I was told that sharecroppers—'dakans'—who became rebellious were dismissed by their masters. After all the masters still had the better guns.

The model for my reconstruction was not so much the infiltration of Bakrwals into the zone of high meadows, encompassing Kashmir, but the immigration of the Gujurs into the Northern Areas of Pakistan. The chance for this migration was offered by the fact that all previous settlers, aboriginals or immigrants, had more or less succeeded in establishing themselves as owners of the irrigated land. That means prestige and a solid economic base. In emulation of this tendency, the Gujurs were ready to accept every hardship. In Indus-Kohistan they acted as serfs, and were even sold to other landlords. In some cases however they acted as mercenaries and bodyguards of the local chiefs. Maybe the Shin were employed in the same way by the local lords who were themselves refugees from the border-states crumbling under the pressure of the Muslim powers.

ROCK INSCRIPTIONS

The observations used for this article were made during my fieldwork in Pakistan between 1955 and 1988, culminating in the discovery of a far unknown rockart province with many inscriptions (Jettmar, 1989).

In most of the clusters, the activities of the artists were not perpetuated after the beginning of the second millennium AD. This abrupt close was enigmatic, but maybe it indicates the invasion of the Shins who came from an area where bare rocks were rare, so that a tradition of producing petroglyphs by hammering and engraving was not developed.

On the other hand, the carvings made by the earlier inhabitants were considered as the works of (dangerous) fairies, so the images were not damaged for many centuries.

Recently, after our research work, the awe has vanished. So the decorated rocks are mutilated by blastings under the construction of roads, by primitive attempts of emulation or by sheer vandalism (Figs. 2 and 3).

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