

## Ecologic Relationships of Ethnic Groups in Swat, North Pakistan

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THE importance of ecologic factors for the form and distribution of cultures has usually been analyzed by means of a culture area concept. This concept has been developed with reference to the aboriginal cultures of North America (Kroeber 1939). Attempts at delimiting culture areas in Asia by similar procedures have proved extremely difficult (Bacon 1946, Kroeber 1947, Miller 1953), since the distribution of cultural types, ethnic groups, and natural areas rarely coincide. Coon (1951) speaks of Middle Eastern society as being built on a mosaic principle—many ethnic groups with radically different cultures co-reside in an area in symbiotic relations of variable intimacy. Referring to a similar structure, Furnivall (1944) describes the Netherlands Indies as a plural society. The common characteristic in these two cases is the combination of ethnic segmentation and economic interdependence. Thus the “environment” of any one ethnic group is not only defined by natural conditions, but also by the presence and activities of the other ethnic groups on which it depends. Each group exploits only a section of the total environment, and leaves large parts of it open for other groups to exploit.

This interdependence is analogous to that of the different animal species in a habitat. As Kroeber (1947:330) emphasizes, culture area classifications are essentially ecologic; thus detailed ecologic considerations, rather than geographical areas of subcontinental size, should offer the point of departure. The present paper attempts to apply a more specific ecologic approach to a case study of distribution by utilizing some of the concepts of animal ecology, particularly the concept of a *niche*—the place of a group in the total environment, its relations to resources and competitors (cf. Allee 1949:516).

*Groups.* The present example is simple, relatively speaking, and is concerned with the three major ethnic groups in Swat State, North-West frontier Province, Pakistan.<sup>1</sup> These are: (1) *Pathans*—Pashto-speaking (Iranian language family) sedentary agriculturalists; (2) *Kohistanis*—speakers of Dardic languages, practicing agriculture and transhumant herding; and (3) *Gujars*—Gujri-speaking (a lowland Indian dialect) nomadic herders. Kohistanis are probably the ancient inhabitants of most of Swat; Pathans entered as conquerors in successive waves between A.D. 1000–1600, and Gujars probably first appeared in the area some 400 years ago. Pathans of Swat State number about 450,000, Kohistanis perhaps 30,000. The number of Gujars in the area is difficult to estimate.

The centralized state organization in Swat was first established in 1917, and the most recent accretion was annexed in 1947, so the central organization has no relevance for the distributional problems discussed here.

*Area.* Swat State contains sections of two main valleys, those of the Swat

and the Indus Rivers. The Swat River rises in the high mountains to the North, among 18,000 foot peaks. As it descends and grows in volume, it enters a deep gorge. This upper section of the valley is thus very narrow and steep. From approximately 5,000 feet, the Swat valley becomes increasingly wider as one proceeds southward, and is flanked by ranges descending from 12,000 to 6,000 feet in altitude. The river here has a more meandering course, and the valley bottom is a flat, extensive alluvial deposit.

The east border of Swat State follows the Indus River; only its west bank and tributaries are included in the area under discussion. The Indus enters the area as a very large river; it flows in a spectacular gorge, 15,000 feet deep and from 12 to 16 miles wide. Even in the north, the valley bottom is less than 3,000 feet above sea level, while the surrounding mountains reach 18,000 feet. The tributary valleys are consequently short and deeply cut, with an extremely steep profile. Further to the south, the surrounding mountain ranges recede from the river banks and lose height, the Indus deposits some sediment, and the tributary streams form wider valleys.

Climatic variations in the area are a function of altitude. Precipitation is low throughout. The southern, low-altitude areas have long, hot summers and largely steppe vegetation. The Indus gorge has been described as "a desert embedded between icy gravels" (Spate 1954:381). The high mountains are partly covered by permanent ice and snow, and at lower levels by natural mountain meadows in the brief summer season. Between these extremes is a broad belt (from 6,000 to 11,000 feet) of forest, mainly of pine and deodar.

*Pathan-Kohistani distribution.* Traditional history, in part relating to place-names of villages and uninhabited ruins, indicates that Kohistani inhabitants were driven progressively northward by Pathan invaders (cf. Stein 1929:33, 83). This northward spread has now been checked, and the border between Kohistani and Pathan territories has been stable for some time. The last Pathan expansion northward in the Swat valley took place under the leadership of the Saint Akhund Sadiq Baba, eight generations ago. To understand the factors responsible for the stability of the present ethnic border, it is necessary to examine the specific ecologic requirements of the present Pathan economy and organization.

Pathans of Swat live in a complex, multi-caste society. The landholding Pakhtun caste is organized in localized, segmentary, unilineal descent groups; other castes and occupational groups are tied to them as political clients and economic serfs. Subsistence is based on diversified and well-developed plow agriculture. The main crops are wheat, maize, and rice; much of the plowed land is watered by artificial irrigation. Manuring is practiced, and several systems of crop rotation and regular fallow-field rhythms are followed, according to the nature of the soil and water supply. All rice is irrigated, with nursery beds and transplantation.

Only part of the Pathan population is actively engaged in agriculture. Various other occupational groups perform specialized services in return for payment in kind, and thus require that the agriculturalists produce a consider-

able surplus. Further, and perhaps more importantly, the political system depends on a strong hierarchical organization of landowners and much political activity, centering around the men's houses (*hujra*). This activity diverts much manpower from productive pursuits. The large and well-organized Pathan tribes are found in the lower parts of the Swat valley and along the more southerly tributaries of the Indus, occupying broad and fertile alluvial plains. A simpler form of political organization is found along the northern fringes of Pathan territory. It is based on families of saintly descent, and is characterized by the lack of men's houses. This simplification renders the economy of the community more efficient (1) by eliminating the wasteful potlatch-type feasts of the men's houses, and (2) by vesting political office in saintly persons of inviolate status, thus eliminating the numerous retainers that protect political leaders in other Pathan areas.

Pathan territory extends to a critical ecologic threshold: the limits within which two crops can be raised each year. This is largely a function of altitude. Two small outliers of Pashto-speaking people (Jag, in Duber valley, and a section of Kalam) are found north of this limit. They are unlike other Pathans, and similar to their Kohistani neighbors in economy and political organization.

The conclusion that the limits of double cropping constitute the effective check on further Pathan expansion seems unavoidable. Pathan economy and political organization requires that agricultural labor produce considerable surplus. Thus in the marginal, high-altitude areas, the political organization is modified and "economized" (as also in the neighboring Dir area), while beyond these limits of double cropping the economic and social system can not survive at all.

Kohistanis are not restricted by this barrier. The Kohistani ethnic group apparently once straddled it; and, as they were driven north by invading Pathans, they freely crossed what to Pathans was a restricting barrier. This must be related to differences between Kohistani and Pathan political and economic organization, and consequent differences in their ecologic requirements.

Kohistanis, like Pathans, practice a developed plow agriculture. Due to the terrain they occupy, their fields are located on narrow artificial terraces, which require considerable engineering skill for their construction. Parts of Kohistan receive no summer rains; the streams, fed from the large snow reserves in the mountains, supply water to the fields through complex and extensive systems of irrigation. Some manuring is practiced. Climatic conditions modify the types of food crops. Maize and millet are most important; wheat and rice can only be raised in a few of the low-lying areas. The summer season is short, and fields produce only one crop a year.

Agricultural methods are thus not very different from those of Pathans, but the net production of fields is much less. Kohistanis, however, have a two-fold economy, for transhumant herding is as important as agriculture. Sheep, goats, cattle, and water-buffalo are kept for wool, meat, and milk.

The herds depend in summer on mountain pastures, where most of the Kohistanis spend between four and eight months each year, depending on local conditions. In some areas the whole population migrates through as many as five seasonal camps, from winter dwellings in the valley bottom to summer campsites at a 14,000 foot altitude, leaving the fields around the abandoned low-altitude dwellings to remain practically untended. In the upper Swat valley, where the valley floor is covered with snow some months of the year, winter fodder is collected and stored for the animals.

By having two strings to their bow, so to speak, the Kohistanis are able to wrest a living from inhospitable mountain areas which fall short of the minimal requirements for Pathan occupation. In these areas, Kohistanis long retained their autonomy, the main territories being conquered by Swat State in 1926, 1939, and 1947. They were, and still are, organized in politically separate village districts of from 400 to 2000 inhabitants. Each community is subdivided into a number of loosely connected patrilineal lineages. The central political institution is the village council, in which all landholding minimal lineages have their representatives. Each community also includes a family of blacksmith-cum-carpenter specialists, and a few households of tenants or farm laborers.

Neighboring communities speaking the same dialect or language<sup>2</sup> could apparently fuse politically when under external pressure, in which case they were directed by a common council of prominent leaders from all constituent lineages. But even these larger units were unable to withstand the large forces of skilled fighters which Pathans of the Swat area could mobilize. These forces were estimated at 15,000 by the British during the Ambeyla campaign in 1862 (cf. Roberts 1898, vol. 2:7).

*"Natural" subareas.* The present Swat State appears to the Kohistanis as a single natural area, since, as an ethnic group, they once occupied all of it, and since their economy can function anywhere within it. With the advent of invading Pathan tribes, the Kohistanis found themselves unable to defend the land. But the land which constitutes one natural area to Kohistanis is divided by a line which Pathans were unable to cross. From the Pathan point of view, it consists of two natural areas, one containing the ecologic requisites for Pathan occupation, the other uninhabitable.<sup>3</sup> Thus the Kohistanis were permitted to retain a part of their old territory in spite of their military inferiority, while in the remainder they were either assimilated as serfs in the conquering Pathan society or were expelled.

From the purely synchronic point of view, the present Pathan-Kohistani distribution presents a simple and static picture of two ethnic groups representing two discrete culture areas, and with a clear correspondence between these culture areas and natural areas: Pathans in broad valleys with a hot climate and scrub vegetation as against Kohistanis in high mountains with a severe climate and coniferous forest cover. Through the addition of time depth, the possibility arises of breaking down the concept of a "natural area"

into specific ecologic components in relation to the requirements of specific economies.

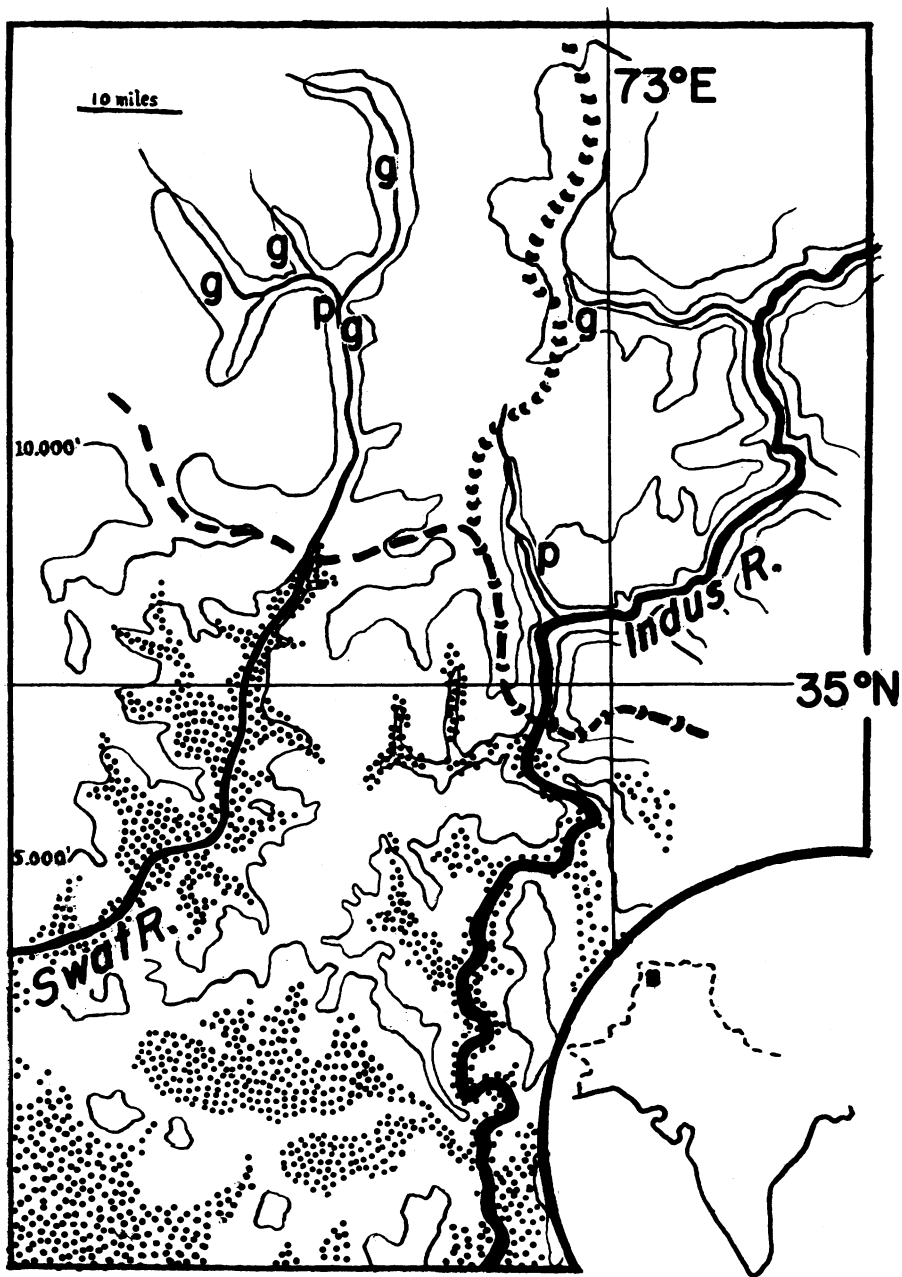
Analysis of the distribution of Gujars in relation to the other ethnic groups requires such a procedure. Gujars are found in both Pathan and Kohistani areas, following two different economic patterns in both areas: transhumant herding, and true nomadism. But while they are distributed throughout all of the Pathan territory, they are found only in the western half of Kohistan, and neither reside nor visit in the eastern half. The division into mountain and valley seems irrelevant to the Gujars, while the mountain area—inhabitable to Pathans and usable to Kohistanis—is divided by a barrier which Gujars do not cross. The economy and other features of Gujar life must be described before this distribution and its underlying factors can be analyzed.

Gujars constitute a floating population of herders, somewhat ill-defined due to a variable degree of assimilation into the host populations. In physical type, as well as in dress and language, the majority of them are easily distinguishable. Their music, dancing, and manner of celebrating rites of passage differ from those of their hosts. Their political status is one of dependence on the host population.

The Gujar population is subdivided into a number of named patrilineal tribes or clans—units claiming descent from a common known or unknown ancestor, but without supporting genealogies. There are sometimes myths relating to the clan origin, and these frequently serve as etymologies for the clan name. The clans vary greatly in size and only the smallest are localized. The effective descent units are patrilineal lineages of limited depth, though there is greater identification between unrelated Gujars bearing the same clan name than between strangers of different clans. These clans are irrelevant to marriage regulations. There is little intermarriage between Gujars and the host group.

The economy of the Gujars depends mainly on the herding of sheep, goats, cattle, and water buffalo. In addition to animal products, Gujars require some grain (maize, wheat, or millet) which they get by their own agriculture in marginal, high-altitude fields or by trade in return for clarified butter, meat, or wool. Their essential requirements may be satisfied by two rather different patterns of life—transhumance and true nomadism. Pathans differentiate persons pursuing these two patterns by the terms Gujar and Ajer, respectively, and consider them to be ethnic subdivisions. In fact, Gujars may change their pattern of life from one to the other.

Transhumance is practiced mainly by Gujars in the Pathan area, but also occasionally in Kohistan (see map). Symbiotic relationships between Gujars and Pathans take various forms, some quite intimate. Pathans form a multi-caste society, into which Gujars are assimilated as a specialized occupational caste of herders. Thus most Pathan villages contain a small number of Gujars—these may speak Gujri as their home language and retain their separate culture, or may be assimilated to the extent of speaking only Pashto. Politically



Sketch map of area of Swat State, Pakistan. Stippled area: under cultivation by Pathans. Broken line: border between Pathan and Kohistani areas. Dotted line: border of area utilized by Gujars (the two borders coincide towards the southeast). p: outlying Pathan communities. g: outlying communities of transhumant Gujars. Gujars nomads spend the summer in the mountains central and north on the map, and winter in the southernmost area of the map. Inset: location of sketch map.

they are integrated into the community in a client or serf status. Their role is to care for the animals (mainly water buffalo and draft oxen) either as servants of a landowner or as independent buffalo owners. They contribute to the village economy with milk products (especially clarified butter), meat, and manure, which is important and carefully utilized in the fields.

In addition to their agricultural land, most Pathan villages control neighboring hills or mountain-sides, which are used by Pathans only as a source of firewood. The transhumant Gujars, however, shift their flocks to these higher areas for summer pasture, for which they pay a fixed rate, in kind, per animal. This rent supplies the landholders with clarified butter for their own consumption. Gujars also serve as agricultural laborers in the seasons of peak activity, most importantly during the few hectic days of rice transplantation. They also seed fields of their own around their summer camps for harvest the following summer.

In Kohistan there is less symbiosis between Gujars and their hosts but the pattern is similar, except that the few fields are located by the winter settlements.

The transhumant cycle may be very local. Some Gujars merely move from Pathan villages in the valley bottom to hillside summer settlements 1,000 or 1,500 feet above, visible from the village. Others travel 20 or 30 miles to summer grazing grounds in the territory of a different Pathan tribe from that of their winter hosts.

Nomads travel much farther, perhaps 100 miles, utilizing the high mountain pastures in the summer and wintering in the low plains. While the transhumant Gujars place their main emphasis on the water buffalo, the nomads specialize in the more mobile sheep and goats. Nonetheless, the two patterns are not truly distinct, for some groups combine features of both. They spend the spring in the marginal hills of Pathan territory, where they seed a crop. In summer the men take the herds of sheep and goats to the high mountains, while the women remain behind to care for the buffalo and the fields. In autumn the men return with the herds, reap the crops, and utilize the pastures. Finally, they store the grain and farm out their buffalo with Pathan villagers, and retire to the low plains with their sheep and goats for the winter.

The true nomads never engage in agricultural pursuits; they may keep cattle, but are not encumbered with water buffalo. The degree of autonomous political organization is proportional to the length of the yearly migration. Households of locally transhumant Gujars are tied individually to Pathan leaders. Those crossing Pathan tribal borders are organized in small lineages, the better to bargain for low grazing tax. The true nomads co-ordinate the herding of flocks and migrations of people from as many as 50 households, who may also camp together for brief periods. Such groups generally consist of several small lineages, frequently of different clans, related by affinal or cognatic ties and under the direction of a single leader. Thus, though migrating through areas controlled by other political organizations, they retain a moderately well-defined organization of their own.

*Gujar distribution.* The co-existence of Gujars and Pathans in one area poses no problem, in view of the symbiotic relations sketched above. Pathans have the military strength to control the mountainous flanks of the valleys they occupy, but have no effective means of utilizing these areas. This leaves an unoccupied ecologic niche which the Gujar ethnic group has entered and to which it has accommodated itself in a politically dependent position through a pattern of transhumance. Symbiotic advantages make the relationship satisfactory and enduring. It is tempting to see the expansion of Gujars into the area as resulting from the Pathan expulsion of Kohistanis from the valley. The Kohistanis, through their own pattern of transhumance, formerly filled the niche and it became vacant only when the specialized agricultural Pathans conquered the valley bottom and replaced the Kohistanis.

But the co-existence of Gujars and Kohistanis poses a problem, since the two groups appear to utilize the same natural resources and therefore to occupy the same ecologic niche. One would expect competition, leading to the expulsion of one or the other ethnic group from the area. However, armed conflict between the two groups is rare, and there is no indication that one is increasing at the expense of the other. On the other hand, if a stable symbiotic or noncompetitive relationship may be established between the two groups, why should Gujars be concentrated in West Kohistan, and not inhabit the essentially similar East Kohistan area? The answer must be sought not only in the natural environment and in features of the Gujar economy, but also in the relevant social environment—in features of Kohistani economy and organization which affect the niche suited to utilization by Gujars.

*East vs. West Kohistan.* As indicated, Kohistanis have a two-fold economy combining agriculture and transhumant herding, and live in moderately large village communities. Although most Gujars also practice some agriculture, it remains a subsidiary activity. It is almost invariably of a simple type dependent on water from the melting snow in spring and monsoon rains in summer, rather than on irrigation, and on shifting fields rather than manuring. The Kohistanis have a more equal balance between agriculture and herding. The steep slopes require complex terracing and irrigation, which preclude shifting agriculture and encourage more intensive techniques. The size of herds is limited by the size of fields, which supply most of the winter fodder, since natural fields and mountain meadows are too distant from the winter dwellings to permit haying. Ecologic factors relevant to this balance between the two dominant economic activities become of prime importance for Kohistani distribution and settlement density.

There are significant differences in this respect between East and West Kohistan, i.e. between the areas drained by the Indus and the Swat Rivers respectively. While the Indus and the lowest sections of its tributaries flow at no more than 3,000 feet, the Swat River descends from 8,000 to 5,000 feet in the section of its valley occupied by Kohistanis. The higher altitude in the west has several effects on the economic bases for settlement: (a) Agricultural production is reduced by the shorter season and lower temperatures in the



higher western valley. (b) The altitude difference combined with slightly higher precipitation in the west results in a greater accumulation of snow. The Indus bank is rarely covered with snow, but in the upper Swat valley snow tends to accumulate through the winter and remains in the valley bottom until April or May. Thus the sedentary stock-owner in West Kohistan must provide stored fodder for his animals throughout the four months of winter. (c) The shorter season of West Kohistan eliminates rice (most productive per land unit) as a food crop and reduces maize (most advantageous in return per weight of seed) in favor of the hardier millet.

These features serve to restrict the agricultural production of West Kohistan, and therefore the number of animals that can be kept during the winter season. No parallel restrictions limit the possibility for summer grazing. Both East and West Kohistan are noteworthy for their large, lush mountain meadows and other good summer grazing, and are thus rich in the natural resources which animal herders are able to exploit. However, these mountain pastures are only seasonal; no population can rely on them for year-round sustenance. Consequently, patterns of transhumance or nomadism are developed to utilize the mountain area in its productive season, while relying on other areas or techniques the rest of the year. True nomads move to a similar ecologic niche in another area. People practicing transhumance generally utilize a different niche by reliance on alternative techniques, here agriculture and the utilization of stored animal fodder. There appears to be a balance in the productivity of these two niches, as exploited by local transhumance in East Kohistan. Thus, in the Indus drainage, Kohistanis are able to support a human and animal population of sufficient size through the winter by means of agriculture and stored food, so as to utilize fully the summer pastures of the surrounding mountains. In an ecologic sense, the local population fills both niches. There is no such balance in the Swat valley. Restrictions on agricultural production limit the animal and human population, and prevent full exploitation of the mountain pastures. This niche is thus left partly vacant and available to the nomadic Gujars, who winter in the low plains outside the area. Moreover, scattered communities of transhumant Gujars may be found in the western areas, mainly at the very tops of the valleys. With techniques and patterns of consumption different from those of Kohistanis, they are able to survive locally in areas which fall short of the minimal requirements for permanent Kohistani occupation. The present distribution of Gujars in Kohistan, limiting them to the western half of the area, would seem to be a result of these factors.

A simple but rather crucial final point should be made in this analysis: why do Kohistanis have first choice, so to speak, and Gujars only enter niches left vacant by them? Since they are able to exploit the area more fully, one might expect Gujars eventually to replace Kohistanis. Organizational factors enter here. Kohistanis form compact, politically organized villages of considerable size. The Gujar seasonal cycle prevents a similar development among them. In winter they descend into Pathan areas, or even out of tribal territory and

into the administered areas of Pakistan. They are thus seasonally subject to organizations more powerful than their own, and are forced to filter through territories controlled by such organizations on their seasonal migrations. They must accommodate themselves to this situation by travelling in small, unobtrusive groups, and wintering in dispersed settlements. Though it is conceivable that Gujars might be able to develop the degree of political organization required to replace Kohistanis in a purely Kohistani environment, their dependence on more highly organized neighboring areas still makes this impossible.

The transhumant Gujar settlements in Kohistan represent groups of former nomads who were given permission by the neighboring Kohistanis to settle, and they are kept politically subservient. The organizational superiority of the already established Kohistanis prevents them, as well as the nomads, from appropriating any rights over productive means or areas. What changes will occur under the present control by the State of Swat is a different matter.

This example may serve to illustrate certain viewpoints applicable to a discussion of the ecologic factors in the distribution of ethnic groups, cultures, or economies, and the problem of "mosaic" co-residence in parts of Asia.

(1) The distribution of ethnic groups is controlled not by objective and fixed "natural areas" but by the distribution of the specific ecologic niches which the group, with its particular economic and political organization, is able to exploit. In the present example, what appears as a single natural area to Kohistanis is subdivided as far as Pathans are concerned, and this division is cross-cut with respect to the specific requirements of Gujars.

(2) Different ethnic groups will establish themselves in stable co-residence in an area if they exploit different ecologic niches, and especially if they can thus establish symbiotic economic relations, as those between Pathans and Gujars in Swat.

(3) If different ethnic groups are able to exploit the same niches fully, the militarily more powerful will normally replace the weaker, as Pathans have replaced Kohistanis.

(4) If different ethnic groups exploit the same ecologic niches but the weaker of them is better able to utilize marginal environments, the groups may co-reside in one area, as Gujars and Kohistanis in West Kohistan.

Where such principles are operative to the extent they are in much of West and South Asia, the concept of "culture areas," as developed for native North America, becomes inapplicable. Different ethnic groups and culture types will have overlapping distributions and disconforming borders, and will be socially related to a variable degree, from the "watchful co-residence" of Kohistanis and Gujars to the intimate economic, political, and ritual symbiosis of the Indian caste system. The type of correspondence between gross ecologic classification and ethnic distribution documented for North America by Kroeber (1939) will rarely if ever be found. Other conceptual tools are needed for the study of culture distribution in Asia. Their development would

seem to depend on analysis of specific detailed distributions in an ecologic framework, rather than by speculation on a larger geographical scale.

## NOTES

<sup>1</sup> Based on field work February–November 1954, aided by a grant from the Royal Norwegian Research Council.

<sup>2</sup> There are four main Dardic languages spoken in Swat State: Torwali, Gawri, and Eastern and Western dialect of Kohistai or Mayan (Barth and Morgenstierne Ms.).

<sup>3</sup> The Pathan attitude toward the Kohistan area might best be illustrated by the warnings I was given when I was planning to visit the area: "Full of terrible mountains covered by many-colored snow and emitting poisonous gases causing head and stomach pains when you cross the high passes; inhabited by robbers, and snakes that coil up and leap ten feet into the air; with no villages, only scattered houses on the mountain tops!"

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