

Ecology and Land Rights in the Punjab

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Covering Ranjit Singh's reign and the agrarian order that he established, this paper describes the varied forms of land use, land relations and socio-economic conditions prevalent in the different ecological zones of Punjab. Focusing specifically on different types of farmers and their access to land rights, it examines how Punjabi agricultural communities adapted their 'modes of resource use' and lifestyles to the physical environment. The natural setting also instrumental in shaping the development of 'villages' and human settlements along the fertile lands fringing the rivers. Ranjit Singh's land revenue extraction policies too varied accordingly. But within a decade of Ranjit Singh's death, the establishment of British rule disturbed this equilibrium and led to 'an ecological watershed' with a qualitatively different political order, economic organization and technological developments.

The ecological context, that is 'the soil, water, animal, mineral and vegetative bases of society', has traditionally been assumed by historians but studied by biologists and geographers.¹ Today, however, 'human ecology' has become the concern of several social science disciplines, each linking the 'structure and organization of a human community to interactions with its localised environment'.² A considerable part of economic, social and political organization in the pre-industrial societies in particular can perhaps be accounted for in terms of adaptations to physical environment. The present paper illustrates this point with reference to land rights in the pre-colonial Punjab under Ranjit Singh (1780-1839). His state encompassed the Punjab plains from the river Satluj in the south-east to across the Indus in the north-west, besides the Kangra and Jammu hills and Kashmir and Laddakh. Its directly administered areas in the plains were sufficiently extensive to comprehend different ecological zones and their somewhat varying interactions with the state. Fortunately, the politico-administrative developments having a bearing on land rights are better documented for the kingdom of Lahore than for the earlier periods in the history of the region. Under Ranjit Singh there was notable expansion in agriculture and long distance trade, and yet the agrarian situation was embedded in the pre-industrial 'modes of resource use'.³ It was the establishment of colonial rule within a decade of his death that represented 'an ecological watershed',⁴ with a qualitatively different political order, economic organization and technological developments.

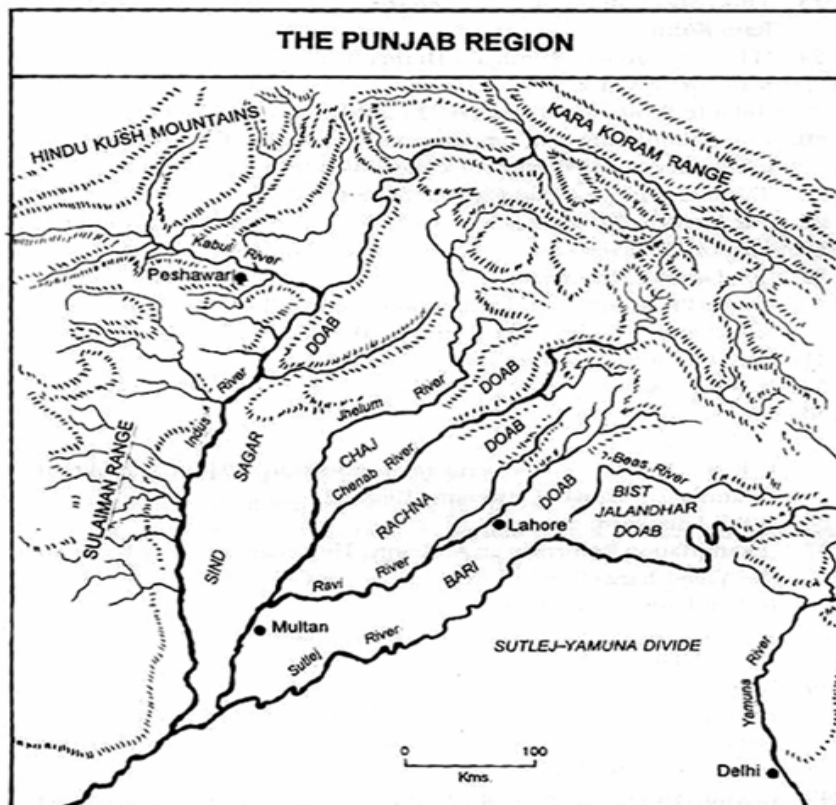
The scope of this enquiry is confined to four basic questions: (i) What were the distinct ecological zones in the region? (ii) What was the nature of land

rights in the early nineteenth century Punjab? (iii) To what extent did land rights reflect adjustments with the physical environment? (iv) How were land rights affected by political change and state policies?

I

Intersected by six rivers, the Punjab plains constituted five *doabs* or inter-fluvial tracts of unequal sizes - the Bist Jalandhar, Bari, Rachna, Chaj and the Sindh Sagar.⁵ With the exception of the first and the smallest interfluve, the uplands in the remaining *doabs* were clearly marked off from the flood plains of the rivers by their high banks. The rainfall received from the south-west and north-east monsoons cut across the *doabs* and divided them into diverse horizontal zones running parallel to the hills, with the rainfall decreasing with distance from the hills. It was supplemented by irrigation mainly from the masonry and unlined wells, seasonal streams, perennial canals and inundation channels, besides moisture from autumnal floods and marshes. The methods of waterlift varied with the depth of water, also having implications for efficiency and costs. The cultivated area had about half a dozen varieties of soil which were locally known by different names. Then there were stretches of land covered by sand, grass, shrubs, brushwood, and jungle, while the upper Sindh Sagar Doab had the Salt Range and the Pothohar Plateau.⁶

A meridian through Lahore divided the plain areas into two very dissimilar tracts. The tract east of Lahore formed only a quarter of the plains but accounted for half of the cultivated area. The western tract which formed nearly half of the entire Punjab plains contained roughly a quarter of the cultivated area. Furthermore, the south-western river valleys and the north-western hilly tract



presented two other somewhat distinct ecological areas. With broadly homogenous climate, water, soil and vegetation, these four tracts formed distinctive natural zones in the region, each with a somewhat distinctive form of land rights.⁷ However the existence of a dominant form of ecological adaptation in a particular zone, did not preclude the presence here and there of features characteristic of the other zones.

II

Land rights may be looked upon as the socially and politically recognized claims to the use and control of land. For a pre-modern situation in particular it is far more relevant to talk about 'rights rather than ownership'. Rights were rarely if ever absolute as there were 'rights within rights, that is rights limited by the concomitant interests, entitlements and rights of others in the same possession'.⁸ Broadly, three levels of heritable interests in land or its income were in existence in the region under Ranjit Singh. The most cherished was the right to possession, use and conveyance of land through sale and mortgage. The known deeds of sale and mortgage of agricultural land provide clear documentary evidence in support of the individual's heritable right to private property in the pre-colonial period.⁹ The entire agricultural land of the region was owned by the cultivating and non-cultivating proprietors, the former overwhelmingly outnumbering the latter.¹⁰ Numerically, and in terms of the area cultivated, the self-cultivating proprietors, using their family labour and the means of cultivation owned by themselves, constituted the most important agrarian class in the Punjab.¹¹ The size of a proprietary holding varied according to the fertility and water resources of the locality and the human and material resources of the family.¹²

Next in importance were the tenants (*muzaras*) who subsisted on the cultivation of the land belonging to others which largely included the village common lands and holdings of the non-cultivating proprietors and the religious grantees.¹³ The tenants essentially held an inalienable right to the use of land, subject to the payment of land revenue and cesses to the state, and in certain situations, rent or proprietary dues (*malikana*) to the owner.¹⁴ Their right to the use of land originated in different circumstances but broadly comprised the long and short term tenancies. Those who started cultivating under Ranjit Singh or in the period immediately preceding his reign were effectively treated as hereditary tenants who could build house, plant trees and use timber and manure but were generally not allowed to sink well in the upper *doabs*. The short term tenants coming from outside or cultivating on certain terms were akin to the later tenants-at-will under the British. The relative proportions and the area cultivated by the two categories of tenants varied, but it was broadly in inverse proportion to that of the peasant proprietors.¹⁵ As a whole, the tenants cultivated about a fourth of the total area; the average size of a tenant's holding was nearly half that of a peasant proprietor's.¹⁶

A much smaller section of society enjoyed the right to income from land which, however, did not extend to the cultivation and conveyance of the land

yielding the income. In this category were included all those whose claim originated in distant past through settlement or conquest or as assignees (*jagirdars*) and revenue collectors (*ta'alluqdars*). By the beginning of the nineteenth century, however, they had been made to relinquish the control and management of land to the actual cultivators in return for a fixed but nominal share which wherever paid, generally varied from 1.5 to 3.5 per cent of the revenues. Where the crops were divided by measure, it was paid by weight – one *seer* in a *maund* or one *pai* in each *path* (1/46th).¹⁷

These three levels of landed interests – to income, use, and possession accompanied by the right to conveyance – often existed concurrently or above one another in the same soil. Occasionally, the same person could hold different pieces of land as the proprietary, tenantry and revenue-share holdings. Of all of them, the rights of the actual cultivators, whether as proprietors or tenants, who constituted about 90 per cent of the landed classes appear to have been directly relevant for an understanding of adaptation to natural environment in different ecological zones.

III

The favourably endowed eastern plains constituted the core area of the kingdom of Lahore and represented land rights in their most developed form. Comprising broadly the upper *doabs*, the eastern plains formed an ample rainfall zone, with 20 to 30 inches a year in the middle portion, and increasing to 40 inches as one moved closer to the hills. The area was also served by several perennial streams, their tributary *nalas* and hill torrents. Consequently, a sufficiently high water table facilitated well irrigation which was noticed as a peculiarity of the province of Lahore under Akbar.¹⁸ By the beginning of the nineteenth century, use of the wooden *arhat* or *rahat*, also called the Persian wheel had become quite common in the area to the east of the river Jhelam.¹⁹ The other means of waterlift known in the Mughal period - *charas* and *dhenkli* in particular - were used extensively in the upper *doabs*.²⁰ Continuing broadly with the agricultural techniques and implements known in the Mughal times, the cultivators in this area were familiar with the mixed crops and the use of organic manure, river silt and rotation of crops.²¹ Alluvial deposits from the rivers and the fine soil of the eastern uplands encouraged extensive cultivation of superior food grains, millets pulses, spices, vegetables and fodder as well as the mainly commercial crops like cotton, sugarcane, oil seeds and tobacco.²² By about the end of Ranjit Singh's reign, this tract became extensively cultivated and densely populated, particularly around Jalandhar, Amritsar and Sialkot.²³ The agricultural operations in the eastern plains were supported by the large presence of hereditary artisans functioning as village servants under a well recognized system of mutual support and obligations called *sepidari*.²⁴ It is not surprising that the upper *doabs* came to have a well established *cash nexus*, *extensive* trade networks and the largest number of towns and cities, many of them also reputed for their specialized manufactures.²⁵

Conditions of settled agriculture and well-defined rights in land went together. The right to own, bequeath and sell agricultural land was typical of the eastern plains, where land was predominantly held by small proprietors who cultivated their own land in whole or in part.²⁶ Family was the basic unit of property, and there was 'no land susceptible of separate appropriation' which was 'not the separate property of an individual or family'.²⁷ These proprietors of separate holdings associated together in village communities composed generally of the members of the same clan or kin group. If any of the members wished to sell his rights, the other members of the community had a preferential right to purchase them at a price as could be obtained from outsiders.²⁸ While the cultivated land and residential dwellings were held in separate ownership, the wasteland, pasture, ponds, or tanks were held in common.²⁹

The founding of new villages became an important feature of the reign of Ranjit Singh and his immediate predecessors, because numerous deserted sites and pockets of uncultivated land were reportedly scattered in the region.³⁰ Many settlements of villages in the upper *doabs* date back to the late eighteenth century or the early decades of the nineteenth when the local administrators encouraged people to reclaim wasteland.³¹ The foundation of new villages requiring both capital and labour was generally a collective venture, particularly among the Jats who were 'most numerous' among the 'land-owning and agriculturist population' in the core dominions of Ranjit Singh.³² The process began by one or more enterprising persons approaching the local administrator on behalf of their kinsmen for permission to found a village. Integral to the process was the joining of the artisans as 'village servants' and other service providers, including the *chuhras* (scavengers).³³ The cultivators contributing their labour towards colonization acquired hereditary rights as well-sinkers (*abad-karan*) and breakers of waste (*banjar-shigafan*).³⁴ In other cases of 'cooperative colonies' involving members of different tribes or castes, the prescriptive right of the clan to land got weakened in favour of the individual's right who could sell his land to outsiders more easily. The following description is fairly representative of the process of colonization and may be reproduced at some length:³⁵

The first thing the new settlers set about is to select a site for their village. They never build their houses on the old deserted site, for this, they say, would be very unlucky, the first settlers having long ago taken all the *barkat* ('blessing') out of that spot. The laying the foundation of a village is called, from the ceremony with which it is accompanied, *mori garna*. This consists in planting a pole to the north side of the intended habitation; the neighbouring *zamindars* are invited to be witnesses, and sweetmeats are distributed among them. To have borne a part in this ceremony is considered the strongest evidence in support of proprietary right.....They next build a well, in the expense of which all the new settlers join, and pay for it in the proportion of their shares in the village.

....The next process is to divide the village land by lot in accordance with the ancestral shares of the different castes or

families who have founded the village, or with any other system of shares on which they may have agreed to distribute their proprietary rights. For this purpose the whole area is first marked off into two or more primary divisions called *taraf*. The *tarafs* are then subdivided again into two or more portions called *patti*, and the *pattis* again into *lari*.

....The last subdivision, whatever it may be, after deducting, if necessary, a sufficient quantity of land to be held in common for grazing purposes or for cultivation by non-proprietary residents, is then apportioned in separate shares. These shares, as being the most convenient size, are usually made to represent the quantity of land which can be cultivated by a plough, which is generally about thirty *ghumaos* [a measure of land ordinarily approximating an acre] but which varies with reference to the nature of the soil, the breed of cattle used in ploughing, etc., etc. The shares are consequently always called 'ploughs,' but they have no necessary connection with the quantity of land capable of cultivation by a plough.

The lands not covered by the fields, pastures and residential areas of the village communities were assumed to belong to the state which encouraged the reclamation of wasteland as a matter of policy as noted later in this paper. Ranjit Singh also maintained some preserves (*rakhs*) in the upper *doabs* so that the supply of fodder for the milch cattle and the horses and bullocks of the army could be ensured.³⁶ The proportion of land subsequently 'reserved' by the colonial state as 'preserves' in all probability was far more extensive and rigorously controlled.³⁷

IV

In the south-western river valleys constituting the *suba* of Multan in the state of Ranjit Singh, the annual rainfall did not exceed ten inches. Cultivation in this tract was largely confined to the area which could be irrigated from the rivers or which received percolation from seasonal floods. Twenty-three inundation canals owned and managed largely by private persons operated in this zone during the 1830s.³⁸ Whatever wells this tract had were within this belt which extended to about ten miles from the riverbed. In the Mughal period also, cultivation in this tract was dependent on inundations and wells.³⁹ Since the right to land was useless without water, irrigation channels, embankments and wells became the real unit of property valued distinctly from the land around. Under Diwan Sawan Mal's governorship of the Sikh province of Multan, the proprietary right in the source of water was acquired by individuals, or even a group of persons coming from outside, who provided money for the construction and maintenance of the source of water. The holders of this right were most commonly called *chakdars*, that is the owners of the *chak* or wooden frame on which the masonry cylinder of the well was built.⁴⁰ The other terms

used for similar situations were *sildars*, *taraddadkars*, *adhlapidars* and *kasur-khawars*. Denoting the local variations in the origin and nature of proprietary rights, these terms were derived respectively from *sil* or the bricks of the well; from *taraddad* or effort in the maintenance of a well and cultivation of land irrigated from it; from *adhlap* or half, signifying ownership of half of the well on the basis of sharing half of the profits and obligations; and from *kasur* or a fraction of the produce, collected by the one who invested capital in the digging of a well to bring barren land under cultivation.⁴¹

In the framework of revenue administration, the owner of the source of irrigation was generally called *adna malik* and was distinguished from the owner of the land called *a'ala malik*. The *adna malik* paid a small sum to the *a'ala malik* as *haqq-i-zamindari* in acknowledgment of the latter's right over the waste. His right was 'superior' to that of the *chakdar's* only in the sense that the *zamindar* was the owner of all the wasteland, and if the *chakdar* abandoned his share, it reverted to the original proprietor or *zamindar*. Since land in this dry tract was useless without water, the *adna malik* became proprietor of half of the irrigated land, took half of the proprietor's share of the produce, and paid half of the land revenue which was fixed on the well according to its capacity for irrigation. His 'full' proprietary right was underlined by the fact that this right was transferable, and the original proprietor or the *a'ala-malik* who received *haqq-i-zamindari* for the newly irrigated land, could cultivate it in the *chakdar's* share only as his tenant.⁴²

Those who could not invest capital, contributed labour to acquire a recognizable right in land. The south-western river valleys thus had the largest number of tenants (*muzaras*) working on the locally varying terms and conditions.⁴³ Many of them derived their right from clearing of the shrubs or bushes (*buti*) and stumps or roots (*mundi*). Hence, they were known as the *butimar* and *mundimar muzaras*. The ones contributing towards the sinking of wells (*kuhmar*) and the erecting of embankments (*latmar*) also were treated as the privileged among the tenants.⁴⁴ At the same time, the tenants did not appear to be keen about long term rights in land. This was probably as much because of the easy availability of wasteland as the expense and effort involved in its cultivation in a semi-arid tract, which paradoxically could suffer from river action.

It is interesting to note that in the *suba* of Multan under Ranjit Singh 'regular village communities' existed in the fertile lands fringing the rivers, but 'all traces of these disappeared where the cultivation was dependent on scattered wells beyond the influence of the river'. Where the wells were sufficiently near to be conveniently included within one village boundary, they were later grouped into 'village communities' by the British.⁴⁵

V

The western plains constituted by the dry uplands of the Bari, Rachna, Chaj and the Sindh Sagar Doabs were semi-arid plateaux between the river valleys. Generally referred to as the *bars*, these uplands were locally known as the Ganji

Bar and Nili Bar in the lower Bari Doab, Sandal Bar in the lower Rachna, Kirana Bar in the Chaj, and the *thal* in the lower Sindh Sagar Doab.⁴⁶ Outside the ordinary sphere of the monsoons, the *bars* generally received around six inches a year, while the rainfall was much less in the *thal*. The water table in the western plains was between 80 to 120 feet below the surface. The natural vegetation of the land receiving some rainfall was grass and low hardy bushes. The 'high platform' of the *thal* was more or less completely covered by sand dunes, giving the appearance of 'a sandy rolling prairie, covered with grass in years of relatively good rainfall but little better than a desert in seasons of drought'.⁴⁷ It was this area covering the *bars* and the *thal* that later came under the large irrigation schemes of the British.⁴⁸ The following description of the *bar* tract before colonization may be of some interest:⁴⁹

A typical *Bar* of the Western Punjab was a desolate place; the surface mostly bare, in places hard and smooth and almost impervious to water when rain fell, in places powdery with saltpetre, and in some places growing some grass after rain. Belts of open ground alternated with belts dotted with small hardy trees or shrubs, which tended to collect the moving sand and dust to form sand hills that in places formed a miniature Sahara.... A few pastoral and nomad tribes lived a free but hard life, living precariously by their camels which could eat anything, and their cattle that seem able to exist on the smell of grass roots, finding sport and occupation in stealing cattle from each other and from riverain neighbours.

The cattle graziers inhabiting the *bars* and the *thal* had thousands of cattle which constituted their real property. While herds were usually owned by separate households, pastures apparently were 'common property'.⁵⁰ Their clans moving in search of pastures had 'temporary camps' with loosely defined spheres of interest, but not any fixed rights to specific areas of land. In years of 'good' rainfall, occasional cultivation was possible. However, in such situations, the recognized right was to the standing crop, which was the fruit of labour, and not to the soil which in any case was useless without water. Several tribes such as the Kharals, Dogars, Wattus, Bhattis, Gujjars, Biloches and even the Jats in these inhospitable tracts were maintaining herds of cattle and breeding horses and camels as their primary economic activity.⁵¹

The main source of the state's revenue in the western plains under Ranjit Singh was not the land but the grazing tax called *tirni* which was levied upon every head of cattle owned by the big herdsmen.⁵² The pastoral tribes on the banks of the river Chanab, for example, paid 50,000 rupees a year on 20,000 buffaloes, 10,000 cows, 10,000 sheep and 4,000 camels.⁵³ In Mitha Tiwana, in the lower Sindh Sagar Doab, the proportion of *tirni* amounted to a fourth of the total revenues, and the single town of Nurpur yielded 7,000 rupees by way of grazing tax on camels and cows.⁵⁴ It was a source of income also in the *bars*.⁵⁵ Although *gao-shumari* or census of the cattle and *kah-charai* or grazing tax, were both known in the Mughal times, it was Diwan Sawan Mal who developed

tirni as an important source of the state's income. Initially, he took one goat and one camel from every herd, but after the census of cattle fixed the following annual rates in cash:

Camel (female)	:	Rs. 2-0-0
Camel (male)	:	Rs. 1-0-0
Buffaloe	:	Rs. 1-0-0
Cow	:	Rs. 0-6-0

For every goat and sheep one *anna* was the rate. Concession was given to cows and to the cattle coming for grazing from Bahawalpur which was outside the state of Ranjit Singh. A distinction apparently was made between the household cattle of the agriculturists and the herds of the pastoralists. The villages on the bank of the Satluj did not pay any *tirni* if the cattle grazed in the lands belonging to the villagers themselves.⁵⁶

Date trees growing in abundance in the semi-arid tracts of the province of Multan also came to be treated as a property separate from the land in which these were grown.⁵⁷ When the owners declined to take contract for the date trees in their lands, Diwan Sawan Mal brought in the enterprising outsiders who eventually became *maliks* of the trees. In such situations proprietors of land were given one-eighth to one-fourth of the income in recognition of their title.⁵⁸ Date trees were a source of income to the government in Muzaffargarh and Shahpur also.⁵⁹

VI

The north-western hilly tract, particularly across the Indus, was inhabited very largely by the Pathan tribes. It received less than twenty inches of rainfall and it was irrigated mostly by laboriously erected embankments on the capricious hill torrents and hill streams which left parts of the tract unirrigated. The soil too was not of uniform quality. The land in this area was thus of unequal fertility. To redress inequalities and to give each member of the tribe 'a chance of holding good lands in turn', the periodical redistribution of holdings, locally called *vaish* (literally, large blocks of land of differing soils), was the common practice in this tract, though the interval varied between three and thirty years from area to area and tribe to tribe. *Vaish* essentially involved a rotation of property, including lands, fields and even houses, among the sub-sections of a tribe inhabiting a group of villages. This was followed by division among the individual proprietors living in a village. However, in the riverine area, where cultivation was relatively secure, this redistribution was done every year, and it covered even the two feet wide narrow strips along the river upto the moisture zone on both sides.⁶⁰

The periodical exchange was regulated by the original proprietary shares, particularly where good soil and water were scarce. Like all landed property, these shares in land and water were capable of transfer by sale and mortgage, subject to the prescriptive right of the members of the tribe. In fact, *vaish* implied the individual's right to use a certain proportion of land and the natural

resources owned by the tribe, but not to absolute possession of specific sources of irrigation or fields. However, the right to fixed possession was conceded in situations where considerable labour had been put in for the construction of embankments and clearing of the waste. The *barani* or rain-cultivated areas, where crops were raised with the individual's labour alone, were also exempt from rotation of property. The outsiders who were prepared to expend money and labour in similar situations, acquired the right to the use of land and water as tenants.⁶¹ The state under Ranjit Singh did not interfere so long as revenues were paid. This situation was substantially altered after annexation of the kingdom by the British who restricted the periodical exchanges only to the proprietors of the same village.⁶²

VII

Land rights could not be exercised independently of the political organization and its ideological underpinnings. For considerations of security and enhancement of revenues, the state under Ranjit Singh particularly protected the rights of the breakers of waste and the diggers of wells, and generally favoured the 'working rural population'.⁶³ It allowed the industrious Jats, Kambohs and Arains in Gujrat and Jhelam districts and elsewhere to usurp the lands of large proprietors and become 'proprietors in possession' (*malik-i-qabza*).⁶⁴ The local administrators disfavoured the proprietors leaving their lands uncultivated and obliged them to engage tenants on any conditions. The administration strongly disapproved of the ejection of tenants unless the proprietor wanted the land for his own use. Moreover, in the assessment and collection of land revenue and cesses, no distinction was made between the tenants and proprietors or between the latter and the 'inferior' proprietors who provided the means of irrigation and undertook to pay the revenues. Even the artisans cultivating small strips of land, which they had received from the village body as remuneration for their skills and labour, were treated essentially as proprietors.⁶⁵ At annexation some blacksmiths and carpenters were cultivating land as proprietors in Hoshiarpur, Gurdaspur and elsewhere.⁶⁶ This process was probably facilitated also by the Sikh movement which 'normatively did not recognize any hereditary barriers to upward mobility'.⁶⁷

By the end of Ranjit Singh's reign, the possession of each cultivator, whether a tenant or a proprietor or even a village servant, appears to have become the measure of his right and liability. Under this 'levelising' or 'grinding' policy, disapprovingly so called by the early British administrators, 'a non-resident *malik* was almost a non entity', and 'no man had any right to the land he could not cultivate'.⁶⁸ On the whole, the administrative action under Ranjit Singh appears to have affected those elements adversely that had become politically, economically and socially ineffective, but who were claiming a share of the produce at the cost of the state or the cultivator.

At the same time, certain rights in the income from land were upheld by the state by way of political accommodation, administrative convenience and social recognition. One-fourth share in revenues called *chaharam* was allowed to the

locally influential persons in the newly conquered territory, particularly in the north-western tribal areas; it was later substituted by a small subsistence allowance to be paid out of the government share.⁶⁹ Likewise, the *pattidars*, who were the descendants of the original Sikh conquerors of the late eighteenth century, were allowed a small amount of revenues as subsistence in recognition of their past contribution to the process of joint conquests.⁷⁰ The revenue-free lands granted to the local revenue functionaries like the *chaudharis* and the *muqaddams* as perquisites facilitated the collection of land revenue, while the *dharmarth* grants to personages and institutions of all faiths won the loyalties of the locally influential people.⁷¹

However, state policies too followed the direction given by the physical environment. Revenue rates varied according to the soil and availability of water. The rain-cultivated lands were generally assessed at a higher rate than the irrigated lands that required investment of labour and capital. The rates of assessment on wells varied according to their nature (masonry or unlined), mode of waterlift and capability. The varying rates were likewise charged on ploughs due to differences of soil, water, and the quantity of seeds and the breed of cattle used. The changes caused by river action too were accommodated by the state.⁷² Ranjit Singh's state repaired and maintained the perennial and inundation canals in the eastern plains, and also helped clear the inundation channels in the south-western river valleys.⁷³ Significantly, in both the areas it was reviving the canals constructed or probably functioning during the Mughal period.⁷⁴ The pastoralists like the Labanas and the Gujjars were encouraged to settle as agriculturists in the Rachna Doab which, as noted already, had been desolated in the recent past.⁷⁵ In fact, 'majority of the villages' in the *bar* in Gujranwala 'were founded during the reign of Ranjit Singh'.⁷⁶ The *taqavi* loans for digging wells and the concessional rates of assessment in the newly cultivated areas were a common feature of his revenue system.⁷⁷ To encourage extension of cultivation he continued with the Mughal practice of granting half of the *dharmarth* grant in wasteland, allowing the reclaimed land to become the property of the recipient.⁷⁸ There were instances also of the men in the army receiving the *in'am jagirs* on hereditary basis for bringing uninhabited villages under cultivation.⁷⁹ As a cumulative result of the policies and measures of Ranjit Singh's state, there was a 'visible increase in cultivation',⁸⁰ which, probably was the 'rectification' largely of the decline in cultivation' in the previous century.⁸¹

The state could not but follow the lines set by the physical environment, because the available technology set a limit upon the exploitation of natural resources. In theory, the qualitative changes in agricultural technology could be brought about by the large proprietors with sizeable surplus or by the state through investment and persuasion or even coercion. However, the small cultivators who predominated numerically were engaged in subsistence cultivation, with traditional techniques and implements and limited division of labour. The most effective means of irrigation in the Punjab, the Persian wheel was outside the reach of many of them because of the requirements of capital and artisanal skills for its construction and maintenance. The small cultivators could at most have a turn (*vari*) in its use by sharing the costs which were rather

prohibitive.⁸² Moreover, the revenue demand was sufficiently high as not to leave the average peasant proprietor, let alone the tenant, with any incentive or capital for major improvements.⁸³ The limited resources available were channelled into the colonization of wastelands which was relatively a much simpler undertaking and which received active encouragement from the state. Moreover, the extension of cultivation under Ranjit Singh, effected with existing production technology and hereditary division of labour, was probably sufficient to meet the slowly expanding market for agricultural produce in the early nineteenth century Punjab. Apparently, neither the state nor the people felt any serious pressures on the existing utilization of resources which could perhaps induce a change in the level of technology as happened subsequently under the British. Yet, the majority of cultivators in the colonial period continued with the traditional techniques.⁸⁴

There is, thus, a core of life particularly in the pre-industrial period, which is closely related to the subsistence activity of the people and their conscious and unconscious adjustments with their natural environment. It is worth emphasizing that the physical environment may not necessarily be a constant or immutable factor in historical times. In any study of society in totality, therefore, habitat may not be taken for granted as playing a passive or merely permissive role. Its influence may be examined as a causative factor moulding the 'modes of resource use' in a given space and time. However, the imprint of environment on the web of life woven around land notwithstanding, it is not possible always to establish a direct correlation between nature and society. Land rights and use and control of land bear the mark also of the people, their cultural setting and particular historical experience.

Notes

1. Ecology is defined as the branch of biology that deals with the 'relations of organisms with one another' and 'to their physical surroundings'. *The New Oxford Dictionary of English*, 2000 (first Indian edition), p. 586. See also, R.C. Chandna, *Environmental Geography*, New Delhi: Kalyani Publishers, 2003, p. 295; Madhav Gadgil and Ramachandra Guha, *The Fissured Land: An Ecological History of India, Use and Abuse of Nature*, New Delhi: Oxford University Press, 2001 (omnibus edition), p. 12.
2. *The Fontana Dictionary of Modern Thought*, ed. Alan Bullock et al, London: Fontana Press (rev. edn.), 1988, p. 248.
3. Gadgil and Guha, *The Fissured Land*, p. 13. The authors use the 'concept of modes of resource use' to 'complement the concept of modes of production'.
4. *Ibid.*, p. 116.
5. Mughal emperor Akbar gave the name 'Punjab' to the province of Lahore and also coined names for its five *doabs* by joining the first letters of the rivers for each interfluvium.

6. This understanding of the physical environment is based on the contemporary travel accounts and the early British settlement reports and district gazetteers. For a concise description of the geography of the north-western India, see O.H.K. Spate and A.T.A. Learmonth, *India and Pakistan: A General and Regional Geography*, London: Methuen and Co., 1967 (3rd edn.), pp. 513-29.
7. For some detail, Indu Banga, *Agrarian System of the Sikhs: Late Eighteenth and Early Nineteenth Century*, New Delhi: Manohar Publications, 1978, pp. 1-10 and 168-87.
8. I.M. Lewis, *Social Anthropology in Perspective*, Penguin Books, 1976, p. 181. See also, Theodor Shanin, *Peasants and Peasant Societies*, Penguin Modern Sociology Series, 1976, pp. 105 and 240.
9. For example, Documents IV, V and XIV in B.N. Goswamy and J.S. Grewal, *The Mughal and Sikh Rulers and the Vaishnavas of Pindori*, Simla: Indian Institute of Advanced Study, 1969; and Documents II, VII and IX in J.S. Grewal, *In the By-Lanes of History: Some Persian Documents from a Punjab Town*, Simla: IAS, 1975. See also, J.S. Grewal and Indu Banga, tr. and ed. *Early Nineteenth Century Panjab* (from Ganesh Das's *Char Bagh-i-Panjab*), Amritsar: Guru Nanak Dev University, 1975, pp. 27-28, 58, 67, 69, 71 and 72.
10. According to one estimate, out of over 34,722 villages in the Punjab in the late nineteenth century, 33,020 were owned by the cultivating proprietors and only 1707 entire villages were held by the non-cultivating proprietors or *zamindars*. *Punjab Famine Commission Enquiries Report, 1878-79*, Lahore: 1878 and 1879, Vol. II, pp. 559-68. A recent study brings out the varying proportions of the non-cultivating proprietors in the central Punjab: it was less than 0.5 per cent in Jalandhar, 6.5 in Hoshiarpur, 8 in Amritsar, 11 in Gujranwala, 26 in Sialkot and 40 per cent in Jhang. Radha Sharma, *Peasantry and the State: Early Nineteenth Century Punjab*, New Delhi: K.K. Publishers, 2000, p. 80.
11. Out of the total cultivated area of over 27,250,000 acres in the Punjab in the 1880s, over 16,500,000 acres was held by the self-cultivating proprietors. B.H. Baden Powell, *Land Systems of British India*, Oxford: 1892, Vol. II, p. 721. Numerically, nearly 60 per cent of the cultivators happened to be the proprietors of their land. *Punjab Famine Commission Enquiries Report*, II, p. 552.
12. The available empirical studies point to a wide range in the size of proprietary holdings. Around 1848, in village Phalpota (Vilyatpur) in the Jalandhar Doab, the range was from less than a quarter of an acre to more than forty acres. The average holding was thirteen acres, and in some cases, the size of the holding actually cultivated by a family was smaller than the ownership unit. Tom G. Kessinger, *Vilyatpur 1848-1968: Social and Economic Change in a North Indian Village*, New Delhi: Young Asia Publications, 1979 (first Indian edition), pp. 71-74. See also Sharma, *Peasantry and the State*, pp. 86-93. The average size

- of holdings was small in districts with higher density of population: For example, it was 12.5 acres in Jalandhar, 13 acres in Amritsar and Sialkot, 22.43 in Hoshiarpur, 27 in Lahore, and 48 acres in Gujranwala.
13. Ibid., p. 101.
 14. The amount of *malikana* varied from area to area depending, among other things, upon the productivity of the soil and availability of water, strength of the proprietors, proportion of the tenants, and the disposition of the local administrator. The proprietary dues thus ranged from 1½ per cent to 25 per cent, although the widely prevalent rates of *malikana* were from 5 to 10 per cent. Banga, *Agrarian System*, 182-83 and nn.
 15. Ibid., pp. 180-82; Sharma, *Peasantry and the State*, pp. 101-10.
 16. Banga, *Agrarian System*, p. 179. The average size of 'tenancies of all descriptions' in the Punjab was reported to be six acres. *Famine Commission Enquiries Report*, Vol. II, p. 553. Sharma, *Peasantry and the State*, p. 101.
 17. James M. Douie, *Punjab Settlement Manual*, Lahore: 1930 (4th edn), pp. 68 and 78.
 18. Irfan Habib, *The Agrarian System of Mughal India 1556-1707*, New Delhi: Oxford University Press, 1999 (second rev. edn), p. 29.
 19. Ibid., p. 28; Baden Powell, *Land Systems*, I, pp. 14-15.
 20. *Dhenkli* or *dhingli* consisted of 'a lever pole weighed at one end and furnished at the other end with a bucket or earthen pot'. In the *charas* or *charsa* 'a large leather bag' (sometimes a bucket furnished with an iron rim) was 'hung by a stout rope over a pulley wheel, drawn up and down by cattle.' Sukhwant Singh, *Agricultural Growth under Colonial Constraints: The Punjab 1849-1947*, Delhi: Manpreet Prakashan, 2000, p. 41. For some other modes of waterlift *ibid*, pp.42-45.
 21. Sukhwant Singh, 'Agricultural Production', *Maharaja Ranjit Singh: The State and Society*, eds Indu Banga and J.S. Grewal, Amritsar : Guru Nanak Dev University, 2001, pp. 176-77; Sharma, *The Peasantry and State*, p. 64. Cf. Chetan Singh, *Region and Empire : Punjab in the Seventeenth Century*, Delhi : Oxford University Press, 1991, p. 106.
 22. Sharma, *Peasantry and the State*, p. 64; Sukhwant Singh, 'Agricultural Production', p. 175.
 23. *Report on the Census of the Punjab taken on the 10th January 1868*, Calcutta: 1870, pp. 9,10 and 13-15.
 24. For a discussion of the place of artisans in the traditional socio-economic set-up, see Harish C. Sharma, *Artisans of the Punjab: A Study in Social Change in Historical Perspective (1849-1947)*, New Delhi: Manohar, 1996, pp. 28-36. Significantly, the village artisans were concentrated in the upper *doabs* where 'the general standard of agriculture was comparatively high'. *Ibid*, p. 40.
 25. See, for example, J.S. Grewal, *Maharaja Ranjit Singh: Polity, Economy and Society*, Amritsar: Guru Nanak Dev University, 2001,

- pp. 75-87. Reeta Grewal, 'Urbanization', *Maharaja Ranjit Singh: The State and Society*, pp. 196-210.
26. In the central Punjab the area cultivated by the peasant proprietors ranged between 45 and 80 per cent. Sharma, *Peasantry and the State*, p. 93.
 27. D.G. Barkley, 'Character of Land Tenures', *Report on the Administration of the Punjab and its Dependencies (1872-1873)*, Lahore: 1873, Part II, p. 11.
 28. There are numerous instances of the sale of land to individuals belonging to the same community as the vendor, or to outsiders when the collaterals had no objection. Banga, *Agrarian System*, p. 176 n 36.
 29. Barkley, 'Land Tenures', p. 11.
 30. For example, the country around Gujranwala was said to have been 'densely populated and highly cultivated' under the Great Mughals when the saying was that, 'there was a well to every 12 acres of land'. It was 'nearly depopulated' during the eighteenth century as evident from the 'old mounds, broken down wells, and dilapidated village sites' scattered 'everywhere'. *Gazetteer of the Gujranwala District 1883-84*, p. 4.
 31. This is evident, among other things, from the classification of the hereditary tenants (*asamian-i-mustaqil*) into three categories by the administration : *Asamian-i-qadim*, who started cultivating around the last quarter of the eighteenth century; *mustaqil purana*, who started cultivating around 1810; and *mustaqil jadid* who were the latest to start cultivation. Banga, *Agrarian System*, p. 180.
 32. *Ibid.*, p. 8 and n. 22.
 33. Kessinger, *Viljatpur*, pp. 48-49 and 57.
 34. G. Ousley and W.G. Davies, *Report on the Revised Settlement of Shahpur District (1866)*, Lahore: nd, pp. 101-2. The tenants clearing the wasteland on the river side of the village were charged with light rents. Sharma, *Peasantry and the State*, p. 105.
 35. From the *Gazetteer of Ferozpur District, 1883-84*, quoted in Baden Powell, *Land Systems*, II, pp. 679-80. Foundation of villages in this tract seldom dated beyond the early decades of the nineteenth century.
 36. J.S. Grewal and Indu Banga, *Civil and Military Affairs of Maharaja Ranjit Singh: A Study of 450 Orders in Persian*, Amritsar: Guru Nanak Dev University, 1987, Documents 283, 296, 302, 313 and 318.
 37. The areas earmarked as *rakhs* were fairly widespread. For example, the Lahore district alone had 116 *rakhs* covering 269,096 acres. Of these 78 *rakhs* were under the control of the Forest Department and the remainder under the district authorities. Ten of these *rakhs* were notified as 'reserved forests', a category different from 'protected forests' which however did not exist in this district. *Gazetteer of the Lahore District, 1883-84*, p. 91.
 38. *General Report on the Administration of Punjab Territories for the years 1851-52 and 1852-53*, Selections from the Records of

- Government of India (Foreign Department), Calcutta: 1854, pp. 170-72. Cf. Gurdit Singh, 'Irrigation in the Punjab during the Maharaja's Time', *Maharaja Ranjit Singh: First Death Centenary Memorial*, eds. Teja Singh and Ganda Singh, Amritsar: Khalsa College, 1939, p.150.
39. Habib, *Agrarian System*, p. 38. Apparently, the inundation canals were desilted and repaired under Ranjit Singh rather than excavated 'for the first time'. Cf. Sukhwant Singh, *Agricultural Growth*, p. 44.
40. Barkley, 'Land Tenures', pp. 14-15. Occasionally, even the owners of irrigation channels were called *chakdars*. This particular tenure was introduced in Multan by Diwan Sawan Mal. Banga, *Agrarian System*, p. 178, n. 44.
41. *Ibid.*, pp. 177-78 and nn.
42. *Gazetteer of the Multan District, 1883-84*, p. 70.
43. *Ibid.*, p. 76. The tenants in the *suba* of Multan constituted 66 per cent of the total cultivators.
44. Munshi Hukm Chand, *Tarikh-i-Zila'-i Multan* (Urdu), Lahore: New Imperial Press, 1884, pp. 643-44.
45. Barkley, 'Land Tenures', p.13.
46. Banga, *Agrarian System*, p. 4, n.11.
47. *Ibid.*, p.5.
48. See Imran Ali, *The Punjab under Imperialism, 1885-1947*, Delhi: Oxford University Press, 1989, pp. 8-61.
49. E.S. Lindley, 'The Canal System of the Punjab', quoted in Spate and Learmonth, *India and Pakistan*, p. 520.
50. Gadgil and Guha, *The Fissured Land*, p.28. In a predominantly pastoral tract the cattle wealth was generally the means of exchange in various situations. Lewis, *Social Anthropology*, p.177.
51. See Denzil Ibbetson, *Panjab Castes*, Patiala: Languages Department, Punjab, 1970 (reprint of 'The Races, Castes and Tribes' from the Census of 1881), pp. 56, 65, 105, 115, 144-46, 174-75, 177 and 183. It may be mentioned that in the dry areas of the Derajat Pathans also took to pastrolism.
52. G.W. Hamilton, 'On the Tirnee Tax of Jhung', *Selections from the Public Correspondence Punjab*, Vol. I, No. 9, Lahore: 1853, pp. 103-11.
53. *Foreign/Secret Proceedings*, 18 November 1845, No. 17, National Archives of India, New Delhi.
54. *Foreign/Secret Consultation*, 28 April 1848, No. 65, NAI.
55. *Gazetteer of the Gujrat District 1883-84*, p.102.
56. Hukm Chand, *Tarikh-i-Multan*, p. 712.
57. *ibid.*, p. 698. In village Fatehpur alone in Multan there were more than a lakh of date trees. *Ibid.*, p. 694.
58. *Ibid.*, p. 697.
59. Edward O'Brien, *Report on the Land Revenue Settlement of the Muzaffargarh District (1873-1880)*, Lahore: 1882, p.88; *Punjab Government Records (1847-1849)*, Lahore: 1915, Vol. VI, p. 414.

60. Barkley, 'Land Tenures', p.12; Baden Powell, *Land Systems*, II, pp. 636-39.
61. F.W.R. Fryer, *Final Report on the First Regular Settlement of the Dera Ghazi Khan District (1869-1874)*, Lahore: 1876, p. 77; H.St.G. Tucker, *Report on the Settlement of Kohat District (1875-1882)*, Calcutta: 1884, p.86.
62. Barkley, 'Land Tenures', p.12.
63. Indu Banga, 'Formation of the Sikh State, 1765-1845', *Five Punjabi Centuries: Polity, Economy, Society and Culture, c. 1500-1990*, New Delhi: Manohar, 2000, p. 103. The actual cultivators were preferred irrespective of their 'social and religious affiliations'.
64. Sharma, *Peasantry and the State*, pp. 80, 82, 162 and 171. The *malik-i-qabza* was entitled to 'full ownership of the land he occupied but not to any share in the communal rights in the village'. Banga, *Agrarian System*, 205.
65. W.E. Purser, *Final Report of the Revised Settlement of the Jullundur District (1860-1887)*, Lahore: 1892, p. 86.
66. Sharma, *Peasantry and the State*, p. 83; Harish Sharma, *Artisans of the Punjab*, p.89 'A good proportions among the artisans' are shown as 'owner-cultivators' in the census reports of 1921 and 1931. *Ibid.*, pp. 89-94. It is likely that this was a continuation of the developments of the pre-colonial period.
67. Indu Banga, 'Social Mobility', *Maharaja Ranjit Singh: The State and Society*, p. 267.
68. Respectively, Baden Powell, *Land Systems*, II, p. 670; *Gazetteer of the Jalandhar District, 1883-84*, p.29; E.B. Steedman, *Report on the Revised Settlement of the Jhang District (1874-80)*, Lahore: 1882, Appendix I.
69. *Foreign/Political Proceedings*, 7 January 1853, No. 228, NAI; *Punjab Government Records, (1847-1849)*, Vol. VI, p.312.
70. Banga, *Agrarian System*, pp. 132-36, 173-76 and nn.
71. Banga, 'The Formation of the Sikh State', p. 100.
72. Banga, *Agrarian System*, pp. 91-97 and nn. 9. In 'river-villages', which were 'liable to suffer greatly from diluvian', the cultivator was generally 'relieved of his share of the liabilities of the village for revenue and other charges'. Barkley, 'Land Tenures', p. 12. For a specific order of Ranjit Singh allowing 'lenient terms' to the villagers suffering from river action, see Goswamy and Grewal, *Mughal and Sikh Rulers*, Document XV, pp. 191-94.
73. *Gazetteer of Lahore*, pp. 5-6 for the renovation under Ranjit Singh of the Hasli Canal (old Shahnahr) and the Khanwah and Sohag inundation canals. See also, Gurdit Singh, 'Irrigation in the Punjab', pp. 149-50.
74. Habib, *Agrarian System* p. 36 and nn. The construction of the Shahnahr in Shah Jahan's time is well known, but the appointment of an officer called *mir-i-ab* in the *sarkar* of Multan is particularly significant. The draft of the order of appointment requires him 'to "dig new channels

- (*nala*), clear the old channels, erect bunds on flood-torrents (*band-i-sail*)" and to see to the equitable distribution of canal water among cultivators'.
75. Sharma, *Peasantry and the State*, p. 82.
76. *Gazetteer of Gujranwala*, p. 47.
77. *Punjab Government Records (1847-1848)*, III, p. 235. See also, Gurdit Singh, 'Irrigation in the Punjab', p. 151.
78. Habib, *Agrarian System*, p. 347 and Indu Banga, *Agrarian System*, p. 152. The term generally used for such a piece cultivable waste was '*zamin-i-banjar uftada*'.
79. *Ibid.*, p. 130 and n. 57.
80. Sukhwant Singh, *Agricultural Growth*, p. 45.
81. Sharma, *Peasantry and the State*, p. 68.
82. For example, a well with Persian wheel required an initial expenditure on digging and masonry lining, and a recurrent expenditure on the wooden gear, stout long ropes, earthen containers and several pairs of strong bullocks or buffaloes. A first class (*kamil*) well irrigated about 40 acres and was worked by 8 pairs of bullocks. In general, 4 pairs were needed to work a well, except in the uplands where 6 pairs were required. *Gazetteer of Gujranwala*, p. 50. The cost for constructing a Persian wheel well was 500 to 600 rupees in the *bar* whereas, that of an unlined well was just 5 rupees, but it lasted just about a year or two. *Gazetteer of Gujrat*, p. 73. Furthermore, the average area irrigated varied according to the soil and bullocks, crops and harvests and depth of the water table. The optimum water table for the effective use of a Persian wheel was 5 to 10 metres. Chetan Singh, *Region and Empire*, p. 96.
83. Although the revenue burden in the state of Ranjit Singh was somewhat lighter than that under the Mughals, the rate of revenue in the Sikh dominions 'ranged from 33 to 40 per cent on the average'. In addition, the cultivator paid 5 to 10 per cent of the revenues as the cesses. Banga, *Agrarian System*, p. 110.
84. The most crucial role in the extension of agriculture in the British Punjab was played by canal irrigation and the railways. The majority of the cultivators continued with the traditional techniques of cultivation. See Sukhwant Singh, 'Agricultural Development in the Punjab', *Journal of Regional History*, Vol. I, 1980, pp. 88-106.