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**LOCAL INSTITUTIONS AND COMMON-POOL GRAZING MANAGEMENT  
IN POST-SOCIALIST MONGOLIA**

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**Common Property in Ecosystems under Stress**

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## Introduction

The period 1989-92 marked a second revolution in Mongolia, seventy years after the 1921 revolution that made it the world's second communist state behind the Soviet Union. In common with other hitherto centrally planned economies of the former Soviet Union, Eastern Europe and Inner Asia, the task of post-socialist economic and political transformation represents a shock of unprecedented proportions to which Mongolia is currently having to adjust. It poses threats not just to economic and political stability but also to the fragile ecosystems of central Asian steppe, mountain-steppe and desert-steppe grazing lands. The essence of this shock lies in institutional change. Almost overnight, Mongolians are having to learn new ways of transacting their economic affairs, both internationally and domestically. Efforts to bring about rapid and radical changes in land tenure and other property legislation in Mongolia, combined with new economic and fiscal policies that offer a wholly different set of incentives to livestock herders, are changing fundamentally the ways herders manage common-pool grazing land and are bringing about new stresses on local ecosystems.

The rural sector underpins the entire Mongolian economy, given its importance for urban as well as rural food security, export earnings (eg. cashmere, skins and hides) and income multiplier effects from employment. Pastoral livestock production accounts for the bulk of rural production by volume and value. This remains so despite four decades of urban-industrial development, financed by enforced surplus extraction from the rural sector under command planning. Prior to decollectivisation and the start of a major programme of privatisation of state assets including collective herds in 1991-92, herders made up 43 per cent of the total population. With the recent net flow of urban to rural migrants and a major ingress of newcomers to herding (following a shake-out of labour from the state sector, and the acquisition of animals by formerly non-herding state employees under privatisation) that figure is now estimated to exceed 50 per cent. Overall herd ownership has moved from 68 per cent state- or collective-owned and 32 per cent private in December 1990, to 30 per cent state- and 70 per cent privately owned by December 1992.

At the time of writing, all land remains state owned. The new Constitution of Mongolia, which came into effect in February 1992, recognises 'all forms of public and private property' (Article 5, clause 2), and the state reserves the right of eminent domain over all land (Whytock 1992). The Constitution allows for private land ownership but specifically excludes pasture land (79 per cent of the total land area) from this provision (Article 6, clause 3). A new Land Law, expected to be passed in June 1993, will provide for the transfer into private hands of, for example, arable land (less than 1 per cent of the total land area), and urban and peri-urban land for development. Designated pasture land will remain in state hands, under the control of the relevant local authorities at provincial and district levels, as *de jure* 'common' land. In practice, pasture resources fall under the effective control of local communities of herders in *de facto* common property regimes (Mearns 1993). However, there are significant ambiguities in the interpretation of the new land legislation, and contradictions between it and other planned and proposed policy and fiscal measures, that give less grounds for optimism that pasture land will remain in *de facto* 'common' ownership.

This paper offers a preliminary analysis of the institutional matrix at local level for managing common-pool grazing in Mongolia, and how this has been critically influenced by macro-level political and economic transitions at several key historical moments. The principal concern is with the contemporary context. In order to understand this however, it is necessary to examine the historical evolution of pastoral institutions under previous state formations: from feudalism (late 17th century to 1921) through socialism (1921-89), and now (just to frustrate Marxist theory) to capitalism.

'Local institutions' are understood not primarily as formal organisations of the state, but as the informal, kinship- and residence-based community groups that persist over time by performing socially valued purposes including (but not restricted to) regulating access to and use of common pasture land. The manner in which herders gain access to and control over

pasture, shaped by the expectations they form of the behaviour of neighbouring herders, is a principal determinant of the degree and quality of pasture management. The evolution of coordination norms in resource management at the level of local institutions, and their general acceptance by individuals within those institutions, is what has come to be known in the common-property resource management literature as the 'assurance problem' (Sen 1967). The local institutional context, and the enabling or disabling framework at the macro-level of state economic policies and legislative structures, therefore holds the key to assuring the sustainable management of common-pool grazing on which the rural economy substantially depends.

The structure of this paper follows the Oakerson framework for analysing common-property resource management regimes (Oakerson 1992). It describes the physical attributes of the resource base for common-pool grazing systems (ecological context); the attributes of local, community institutions which unite herders with respect to grazing management and other functions; the decision rules evolved for coordinating the use of pastures; the strategies adopted by herders and patterns of interaction between them; and outcomes and possible alternative scenarios for the near future, evaluated in terms of transaction costs (which have a bearing on efficiency) and ecological sustainability. Throughout this analysis, the framework is used dynamically, to examine the interaction between changes in external (political and economic) arrangements and those at local level (attributes of local institutions, rules in use, strategies and patterns of interaction, and outcomes).

### **Ecological context**

Landlocked between Siberia to the north and China to the south, Mongolia has a total land area of 1.6 million sq. km. Sixty per cent of the land area lies between 1,000 and 2,000 metres above sea level, with an average altitude of 1,580 m.a.s.l. Mongolian ecosystems are highly diverse however, and generalisations are difficult to make. The major ecological zones range from arid Gobi desert (15% of total land area) and desert-steppes (22%) in the south and south-west, through forest/mountain steppes in the centre/centre-north (Khangai-Khentii) (23%), a lake-filled depression in the north-west (5%), to mountain taiga and tundra in the north and west (Altai) (8%), with steppe grasslands making up much of the remainder (26%), especially in the east.

The climate is characterised by extreme continentality, with an annual range in the order of 40°C either side of freezing (0°C). The summer forage growth period is correspondingly short. There are only 80-90 frost-free days per year in the forest/mountain steppe zone, and up to 130 in the Gobi desert and desert-steppe zones where available moisture is the principal limiting factor. About 90 per cent of precipitation falls during the growing season (Chuluun 1992) but rainfall is generally very low and erratic. Average annual precipitation is between 100mm and nearly 400mm, declining along a rough gradient from north to south, which puts all of Mongolia's diverse ecological zones within the arid and semi-arid margin. Much of the sporadic precipitation is lost to evapotranspiration and cross-boundary surface flow.

Recent thinking in range ecology emphasises the non-equilibrium nature of ecosystems characteristic of arid and semi-arid lands. This challenges conventional notions as to the relationships between the animal and plant components of the system, calling into question the assumptions on which diagnoses of animal density-dependent 'overgrazing' are commonly made (Behnke and Scoones 1992; Behnke, Scoones et al. 1993). The dynamics of range forage production in non-equilibrium environments are determined principally by highly and unpredictably varying abiotic factors such as rainfall, rather than by animal grazing pressure itself (Ellis and Swift 1988). This underlying uncertainty is the defining characteristic of such grazing management systems, in which resource users' goals tend to be geared towards risk management.

Although yet to be tested, it is hypothesised that Mongolia includes both relatively non-equilibrium ecosystems and relatively more equilibrium ones, arranged in an approximate

continuum from south to north along the available-moisture gradient. Over 44 years for which there are continuous records, even the wetter north of the country experienced up to 6 years of successive drought, while the south experienced up to 14 successive drought years (MPR 1990). The main risk factors are drought; frost; snow or freezing snow covering pastures<sup>1</sup>; steppe grass fires; predators (especially wolves and snow leopards); and intense, desiccating winds that pose a serious threat to young animals during the spring parturition season, and to fragile soils exposed following the long winter (MPR 1991). Overall, ecological stress on livestock production is high - with spring as the period of maximum stress through forage deficiency coinciding with parturition - but the precise temporal and spatial pattern of particular environmental hazards is unpredictable. As others have also noted, such defining conditions of risk and uncertainty in ecological productivity tend to be associated with common-property resource management regimes, as a means of spreading risk within the resource user group (Runge 1986; Wade 1988; Mearns 1992a; Wilson and Thompson 1993).

### Attributes of pastoral institutions

Table 1 shows the main pastoral institutions at different scale levels during three historical periods: pre-collectivisation (pre-1930s), collectivisation (1930s-80s), and contemporary decollectivisation and transition (1990s-). The changing macro political and economic structure over the past century - through feudal, collectivised and emerging market-orientated forms - have meant the significance and functions of local institutions<sup>2</sup> have varied, but at no time have they disappeared altogether. The transition to the market economy during the contemporary period is marked by having to adjust to some of the distortions brought about under collectivisation, as well as by a significant re-emergence of customary institutions as a response to the 'rolling back of the state' in the process of decollectivisation. The primary focus here is on local institutions at herding camp and neighbourhood or community levels, although reference must be made to the formal organisations of the state which have shaped local institutional responses.

**Table 1 Historical evolution of Mongolian pastoral institutions**

<i>Scale level</i>	<i>Order of magnitude (households)</i>	<i>Pre-collectivisation (-1930s)</i>	<i>Collectivisation (1930s-1980s)</i>	<i>Decollectivisation &amp; transition (1990s-)</i>
<i>Herding camp</i>	1	herding family	herding family	herding family
	1-2		<i>suur</i>	
	2-10	<i>khot ail</i>		<i>khot ail</i>
<i>Neighbourhood</i>	20-80	<i>neg nutgiinhan</i>	team	<i>neg nutgiinhan</i> (cooperative)
	50-100	<i>bag</i>	brigade	
<i>Local administration</i>	100-250			<i>bag</i> (company)
	500-1,000		collective ( <i>negdel</i> ) & district ( <i>sum</i> )	district
	1,000-1,500	<i>khoshun</i>		
	10,000		province ( <i>aimag</i> )	province

Source: Mearns (1993)

### *Pre-collectivisation (-1930s)*

The *khot ail*, or nomadic herding camp, is traditionally the basic, independent social and economic unit of livestock production. It comprises a group of 2-10 households who are often but not necessarily consanguineal or affinal relatives, and who assist each other in production activities such as day-to-day herding, cutting wool and hair, making felt, nomadic moves and hay-making. The principal economic benefits of cooperation within the *khot ail* are in achieving economies of scale to make the most efficient use of scarce labour. Each *khot ail* has an acknowledged leader who is usually the most experienced male herder. Milking is normally carried out by women from each individual household from its own animals. The major benefits of mutual assistance come from combining the family herds, which would normally be made up of several, perhaps even all, of the five species (camels, horses, cattle (including yak in mountain areas), sheep and goats), and taking turns to provide family members to take them to pasture in species-specific herds (Bazargur, Chinbat et al. 1992). A diverse herd species composition has certain advantages for the efficiency of range forage exploitation, owing to the complementary grazing and browsing strategies of different species of animal. The social and ritual aspects of the *khot ail* community are also important integrative functions (Szynkiewicz 1982).

Over time since the thirteenth century there has been a gradual decline in solidarity around the kinship group as an integrative focus for local pastoral institutions. The *khot* community shifted from one based on a strictly patrilineal line of descent, to a broad kindred or extended family that included consanguineal kin on both sides of the family, and ultimately to a neighbourhood group of collaborating peers who may not be related to one another at all. The shortening of Mongolian kinship terminology over the last two centuries or so reflects this shift (Vreeland 1962; Szynkiewicz 1977). There are several variants on the basic nomadic camp, eg. seasonal arrangements such as the day-time swapping of suckling lambs to maintain milk production between neighbouring camps in summer, or dependency relationships between richer and poorer households at camp level as a form of social safety net (Mearns 1993).

It is at the neighbourhood or community level that groups of *khot ail* organise themselves informally to coordinate their use of pasture and hay-making land, water, and other natural resources, and to form search parties to look for lost animals (Bazargur, Chinbat et al. 1992). During hard winters or droughts these *khot ail* would tend to move as a group to a new pasture area. The neighbourhood group varies considerably in size (eg. 4 to 20 *khot ail*) and in the spatial area it covers, depending on water availability, topography, and forage yield and quality in different ecological zones. Known generically as *neg nutgiinhan* ('people of one place'), there are regional variants such as one-valley communities or individual water well-using groups, depending on local ecological conditions. The member families or their forebears may have lived close by one another for generations, having inherited or ascriptive customary use rights in specific seasonal pastures. Very often there would have been a religious focus (eg. a shamanistic shrine or Buddhist temple) in the locality, providing a symbolic, ritual and social identity for such a group. The neighbourhood group would also have an acknowledged leader, who would play an important role in the settlement of local disputes (eg. over land or water resources).

The term '*bag*' also originally referred to a customary institution at the neighbourhood level, but was later adopted to refer to an administrative unit under imperialist Manchu Chinese rule during the eighteenth and nineteenth centuries. The *bag* has recently been re-introduced (and enshrined in the Constitution of the Republic of Mongolia<sup>3</sup>) as the lowest level of administration, but it is not strictly a territorial unit. The *bag* may parallel neighbourhood-level groups in scale, although it is usually larger, incorporating several *neg nutgiinhan*. The term '*bag*' no longer refers to the customary institution at this level, since it has for so long been understood as a formal administrative unit of the state.

### *Collectivisation (1930s-80s)*

Following unsuccessful attempts at forced collectivisation in the 1920s, gradual steps were taken towards voluntary collectivisation from the mid-1930s, gathering momentum by the late 1940s and 1950s (Mearns 1991a). Cooperation between herding households - building on customary, neighbourhood-level institutions - was encouraged by pooling funds, supplemented by state funds, for such activities as boring wells, purchasing hay-making equipment and building winter shelters for animals (Rosenberg 1977; 1981). In 1955 the decisive measure of introducing a ceiling on private livestock holdings was adopted to further encourage the emerging collectives (*negdel*). Labour shortages were chronic, and wealthier herders found it in their interests to join the collectives and collectivise their herds as they found it increasingly difficult to employ wage labour to look after their private animals. By 1959 virtually all of Mongolia's herding households were members of collectives. The bulk of rural production was carried out in the pastoral collectives which, over the 1950s and 1960s, tended to increase in scale until most districts contained only a single collective.

Collectives were subdivided into brigades (2-5 per collective); brigades into teams; and teams into *suur*, the basic herding unit, composed of 1-2 households. In some respects the *suur*, the lowest-level production unit of the collectivised economy, was a modification of the traditional *khot ail* herding camp. The *suur* was smaller however, and more significantly, it was not an independent production unit. Efforts were made to prevent *suur* based on kin relationships from forming on the grounds that this would run counter to the interests of the collective, but these were unsuccessful, and the households of *suur* with more than one household were usually closely related (eg. brothers or parents with married sons).

The *bag* system was formally abolished in 1959 with the completion of collectivisation, and replaced with the brigade. But whereas the *bag* had been an administrative unit, the brigade was a production unit. Administrative decisions were made as to how many and which herders should be in each brigade. In many cases they were formed as groups that coincided roughly with the former *bag* or *neg nutgiinhan*. In other cases, often in more productive steppe areas, or where topography imposes physical limits on neighbourhood-level groups, four or five such neighbourhoods of *khot ail* would have been incorporated into a single brigade.

Under collectivisation, the accounting unit and locus of decision-making shifted away from the individual herding household and camp to the level of the collective itself<sup>4</sup>. This had the effect of undermining the cooperative functions of the *khot ail*, since economies of scale were - at least in theory - achieved at a higher level of organisation. The division of labour, by animal species and to some extent by task, was decided at the level of the collective. Collective members were paid a salary for looking after animals on behalf of the collectives or for discharging other allotted tasks. The marketing and delivery of all inputs and outputs was arranged by the collective, according to centrally determined, physical targets. Each *suur*, and sometimes each herding brigade, specialised in a particular species of animal or even a particular age class (Humphrey 1978).

To an increasing degree from the 1960s to the 1980s, the collectives provided various inputs and services for livestock production, including transport for making nomadic moves; supplementary feed for the critical winter/spring period; organising the building of winter/spring stockyards and shelters; the recruitment of labour to meet contingencies such as clearing snow from pastures; and veterinary services. This substantially greater degree of direct involvement in livestock production on the part of the socialist state under collectivisation, along with investment in health and education services and the provision of consumer goods at subsidised prices through collective-owned shops' led to a general rise in the standard of living for herders. At the same time it substituted for labour cooperation at herding camp and neighbourhood levels in activities such as day-to-day herding, clipping hair and wool (an especially labour-intensive task in the case of camels), Hay-making, felt-making and organising draught animal transport for moving base camp. As a result of the extension of the state into the direct affairs of herders, such examples of spontaneous collective action more or less ceased.

*Decollectivisation and transition (1990-)*

Mongolia's herding collectives began to be dismantled during summer 1991. The central issue in the pastoral economy has been the privatisation of formerly collective-owned animals. Other collective assets have also been privatised by means of auction and share-issue using coupons issued to all eligible citizens, including vehicles and agricultural machinery, and fixed capital such as winter and spring animal shelters, buildings and, in some places, wells. The collectives have been transformed variously into joint stock or limited liability companies, cooperatives, or disbanded altogether so that their members become sole proprietors or fully private herders with full responsibility for obtaining their own inputs and finding markets for their produce. Where companies have been established, their management structure has normally changed very little from that of the former collective, either as one enterprise, or as two or more based on the former brigades.

Regional variations in the pace and extent of decollectivisation can partly be explained by the degree to which herders' interests were being served by the collectives in respect of risk management. Broadly speaking, privatisation or decollectivisation appears to have proceeded most rapidly in the less risky areas, and much more slowly in regions that face higher risks from unpredictably varying climatic conditions (Mearns 1993). Many of the recently established companies have proven to be politically as well as economically unsustainable, partly owing to perceptions of misconduct on the part of their management during the process of privatisation. Some of the newly established companies lasted only a few weeks. At the start of 1993, fully private herding households made up over 50 per cent of all herding households, and that proportion continues to increase (Danagro 1993).

This pattern of reform in the formal organisational structure of the rural economy has had profound consequences for pastoral institutions at local level in the contemporary period of economic transition. Most obviously, the *khot ail* and neighbourhood groups have re-emerged in most parts of the country as a direct response to decollectivisation. Several reasons for the re-emergence of customary institutions can be elucidated. First, the centrally subsidised provision of goods and services through the collectives has become untenable as a result of economic liberalisation and the loss of something in the order of a third of national income previously obtained through subsidies and credits from the former USSR. Over the period 1986-90, the transport of winter fodder alone accounted for an average 10% of total transfers and subsidies in the national accounts (World Bank 1991).

Quite apart from liberalisation as a matter of economic policy, the harvesting of hay and fodder crops, the delivery of supplementary livestock feed to winter/spring pasture sites, assistance with transport for moving herders' base camps and the delivery of livestock products to urban markets have all become extremely difficult for the remaining livestock producing companies, if not practically impossible in some areas, as a result of acute fuel shortages and a virtual collapse of the formerly centralised transport and marketing infrastructure. Consequently, through force of necessity, herders have responded by reverting to making hay collectively within *khot ail* and neighbourhood groups using simple hand tools (since horse-drawn machinery has fallen out of use over the last 30 years or so); by re-training draught animals for moving base camps; and by organising themselves to process dairy products for urban markets. These represent instances of collective action within self-organised groups of herders to provide goods and services previously supplied through the collectivised state.

The retreat of the state from the direct provision of inputs and services to livestock producers, whether as a result of deliberate policy or of practical economic and logistical difficulty, has meant the burden of risk in livestock production is once again being borne by individual herding households, as it was prior to collectivisation. The re-emergence of the *khot ail* represents a return to cooperative labour management and risk-sharing within local institutions as a way of managing this increased risk burden. The shift back from species-specific to diverse herds at household level has made it important once again to seek economies of scale in herding labour by pooling herds for day-to-day herding at the level of the *khot ail* (Mearns 1992b).

In an unpredictably varying environment, the social distribution of risk is itself unpredictable. Richer and poorer herders alike face similar degrees of risk of livestock mortality through adverse weather conditions. Under these conditions, the spreading of risk through institutions of mutual assistance is a highly rational response, for example by means of the reciprocal exchange of animals in a system of social claims (Swift 1989). The twin factors of risk management and a high degree of dependence on the livestock herd as the primary livelihood source both strengthen the chances of successful cooperation in labour organisation and resource management at local level.

However, the capacity of richer and poorer herders to withstand the consequences of environmental hazards may be unequal. Despite the fact that all herders face similar degrees of environmental risk, this is not the only determinant of wealth distribution which, as a result, is by no means random. It is also associated with age and level of experience and skill in animal husbandry, as participatory wealth-ranking exercises confirm (Mearns, Shombodon et al. 1992). The greater the degree of structural inequality in asset (livestock) holdings, the lower the degree of shared or common interests between richer and poorer herders, and the lower the chances of cooperative outcomes in herding activities. Under collectivisation with restrictions on private livestock holdings, and relatively equal levels of salary paid to herders in return for the care of collective animals, inequalities in the distribution of assets and income were relatively small (Swift and Mearns 1991). With economic liberalisation, levels of inequality in the distribution of private animals and other assets are tending to increase, given the different abilities of herders and other people to command labour and other resources with which to respond to new economic incentives. This factor is one among several that can be expected to reduce the chances of successful collective action within local institutions, whether in organising labour for livestock product processing and marketing, or in the management and coordination of common pasture use.

### **Rules in pasture use**

It is possible to outline a set of factors that are mentioned consistently by herders in virtually all regions of Mongolia, that influence individual herders' choice of camp site, even though there is a degree of regional variation in this set of decision rules owing to variations in the limiting ecological factors. These operational norms have evolved over many centuries. Before making a move, the herder would make a reconnaissance visit to one or more pasture sites to assess forage quantity and quality, and the availability of water and salt deposits, usually in that order of priority. The nature of the terrain itself is also important during particular seasons, especially during winter/spring, when shelter needs to be sought from wind and snowfall. A less important but still significant consideration is the location of the pasture site in relation to the next expected destination, on an approximate route leading back to the customarily used (or allocated) winter pasture area. These decision factors are given by the patchy nature of the resource base itself.

Day-to-day decisions regarding pasture use also follow a clear set of customary principles, learned by all herders, and mutually respected by neighbouring herders. Pasture use is regulated according to distance from the camp. Normally, pastures 1-3 km from the camp would be used, or further depending on the type of animal. Near pastures are reserved for new-born animals, evening milking, night grazing for saddle horses, and a reserve for contingencies. More distant 'bad weather' reserves would also be kept, which are sheltered, relatively enclosed so animals cannot easily scatter, and which provide a good vantage point for observation (Purev 1991; Szykiewicz 1982).

At the level of the neighbourhood group, an identifiable set of rules or 'coordination norms' over pasture use can be identified which rely on a level of mutual expectation of the decisions of other herders using the common pasture (Runge 1986). The most important include operational rules specifying limits on the duration of grazing, usually by means of the seasonal deferral of particular areas of pasture. At least in most steppe and forest/mountain steppe and high mountain areas, neighbourhood groups of *khot* ail traditionally coordinate their inter-seasonal camp moves by agreeing on a date in advance, and by assisting each other to make the move on the appointed day.



Other rules in use include 'conditions of collective choice' (Oakerson 1992), in which individual herders are constrained in their choice of pasture or camp site by compliance with coordination norms evolved at the level of the user group. The most critical are those relating to winter/spring camp sites, over which particular herding families or *khot all* enjoy customary use rights. It is common knowledge within the resource using group which winter/spring pasture sites are customarily owned by whom, and priority is always given to the holder of those customary rights. If the customary owner or designated user intends to return to the winter shelter the following year, some mark will usually be left at the site to indicate this. The dung pile left at the site is considered the property of the herder who left it. However, if no such mark is left, or if it is known (through word of mouth etc) that the customary user does not intend to return, another herder may use the site on a 'first-comer' basis (Vreeland 1962).

Some of the most important data regarding conditions of collective choice might be expected to derive from examining (by means of oral recall methods) historical instances of conflict resolution, or at least instances in which sanctions against non-cooperating herders have been applied within the user group. This has been remarkably difficult to investigate in field research however. Indeed, as Szykiewicz comments, it is notable that such a potentially conflict-generating situation in practice caused virtually no friction, as may be deduced from a collection of 18th century laws, which envisaged penalties for theft of stock, improper use of wells, for camping on burial sites of prominent persons, but knew no such term as 'improper use of pastures' (Szykiewicz 1982, p23).

The changes in state formation and systems of local administrative authority from one historical period to another summarised in table 1 have had consequences at the local level with regard to rules in pasture use. The formal or external arrangements, and informal institutional structures, interact to form new configurations, the practical outcome of which cannot be determined with reference only to the formal administrative structure.

#### *Pre-collectivisation (pre-1930s)*

Under imperialist rule by the Manchu Chinese between the seventeenth and nineteenth centuries, Mongolia was divided into political-administrative fiefs known as *khoshun* (see table 1). The *khoshun* were introduced at different times in different regions between the 1640s and 1750s, and persisted as territorial units until the 1930s. Each *khoshun* was controlled by an hereditary overlord through whom the Manchu dynasty ruled. Land allocation and distribution within these territories was entirely at the discretion of the overlord, and specific areas were designated for grazing, agriculture, military frontier guards, horse relay stations, lamaist monasteries, the use of mineral deposits, and reserves for timber or wild animals (Shirendyb 1976). But even the feudal lords, Mongol or Chinese, faced restrictions under Manchu imperial law as to the use to which designated pasture land could be put. The tilling of pasture land for agricultural cropping, for example, was expressly forbidden and a punishable offence.

Under the high-ranking nobles and lamas were their feudal subjects who looked after their herds, and who had use rights over particular areas of pasture according to customary law (Mearns 1991a). The remaining, undesignated areas of the *khoshun* were used customarily by common herders as serfs of the state, self-organised in neighbourhood communities and whose freedoms were more closely circumscribed than those of the serfs of nobles or lamaseries. Any decisions that needed to be made to coordinate pasture use or settle disputes within these territories were made at the local level within these groups in the first instance. Only if this first level of dispute settlement failed were such decisions referred to a higher authority. By this time, the *bag* had been transformed into administrative units of the feudal state, and their leaders were answerable to the feudal lords, nobles or lamas.

Feudal subjects were forbidden, on pain of death, to leave the *khoshun* territory in which they were born (Bawden 1989). However, the large size of the *khoshun* meant that they often straddled several different ecological zones. Herders were able to practice long-distance seasonal transhumance, usually north-south, for example between Hangai mountain areas

and the Gobi desert and desert steppes, and thereby gain access to ample pasture for the animals in their care. Although this freedom of movement was enjoyed by some categories of herder more than others, the *khoshun* permitted considerable flexibility of movement between different resource patches, from year to year as well as between seasons, and patches of high-quality grazing could be reserved for use during emergencies (eg. drought or heavy snowfall).

#### *Collectivisation (1930s-80s)*

Following the 1921 revolution and the formation of the Mongolian People's Republic in 1924, all land became state property<sup>5</sup>. Two major changes in external arrangements took place through the period of collectivisation. First, under Soviet influence in the 1920s a new administrative unit was introduced: the district or *sum*, within which herders continued to be organised in local groups or *bag*. Second was the administrative involvement of the collective in decisions regarding who should use which pastures and when.

By the 1960s, winter and spring shelters were allocated by the collective to particular *suur*, in a way that did not necessarily respect customary tenure rights. In those regions where moves of the base camp are restricted to just one or two per season, the collective might specify the precise date on which a move was to take place, and assign the collective truck or tractor to assist with transport. This tended to reinforce locally evolved norms regarding the duration of grazing on particular pastures. However, the choice and use of specific pasture sites was, and to a large extent still is, made by individual herders according to the set of decision rules identified above. The herder would make a bid for the selected site to the brigade chief, or simply move to the site in agreement with other herders of the area according to customary principles. A request would normally have to be made to move outside the boundaries of the brigade, and ultimately the district/ collective chairman would decide on pasture allocation.

In cases of emergency (eg. lack of pasture owing to drought or heavy snow cover) a neighbourhood-level group would request permission from the district/ collective chairman to move outside their brigade area, and at times outside the district territory to inter-district reserve pasture land. There is also evidence that some neighbourhood groups moved outside their district territories regularly, in cases where the district has a shortage of pasture suitable for a particular season (Bazargtir, Chinbat et al. 1992; Mearns 1992a). Occasionally the entire collective needed to move to inter-provincial or state reserve pasture land.

A further change in patterns of mobility and pasture management practices relates to the more general decline in collective action within local institutions under collectivisation. In practice, it is likely that the time-honoured customary principles described above surrounding the coordination and use of pastures were observed most of the time within the neighbourhood-level group throughout the period of collectivisation. However, the official truth, at least in the eyes of those whose interests were aligned with the collectivised state administration, was that pasture allocation was a matter for bureaucrats and technicians employed by the collectives. This included animal husbandry specialists whose acquired technical knowledge was intended to substitute for herders' own experiential technical knowledge in the drive to modernise the pastoral livestock economy. As a result of the tension between these competing 'truths' as to how decisions in the pastoral sector were actually taken, customary mechanisms for arbitrating disputes were inevitably weakened.

#### **Pastoral strategies, patterns of interaction and possible outcomes**

The physical attributes of the pastoral resource base, the attributes of local community institutions, and locally evolved sets of decision rules in pasture use - as outlined in the preceding sections at least up to the end of the period of collectivisation - gave rise to characteristic patterns of pastoral mobility (transhumance or nomadism). These patterns are the most important among the strategies and patterns of interaction that individual herders adopt for coordinating their joint use of a physical resource subject to subtractability in use, and subject to a high degree of variability in ecological production. At this point in the

analysis, some illustrative empirical data are introduced to specify more precisely these attributes and patterns in contrasting ecological zones.

Some of the key attributes of local institutions in two districts representing contrasting ecological zones are summarised in table 2. More detail on the attributes of these institutions is given elsewhere, including their size, age composition, membership (including genealogies), and wealth differentiation (Mearns 1993).

**Table 2 Comparative data on informal pastoral institutions in two districts representing contrasting ecological zones**

	<i>Erdene district, Dornogobi</i>	<i>Tariat district, Arkhangai</i>
Ecological zone	desert and desert-steppe	forest/mountain steppe
Mean herding population density	0.1 persons/km <sup>2</sup> 8.6 km <sup>2</sup> /person	0.8 persons/km <sup>2</sup> 1.2 km <sup>2</sup> /person
Area of district	10,700 km <sup>2</sup>	4,650 km <sup>2</sup>
Number of <i>bag</i> in district	3	5
No. households in sample <i>bag</i>	Tsagaan Hutul 106	Booroljuut 237
Neighbourhood institutions in sample <i>bag</i>	4 <i>neg nutgiinhan</i> (neighbourhoods), subdivided into 9-10 <i>neg usniihan</i> (well-using groups, approx. 7 households each)	5 <i>neg jalgynhan</i> (valley groups, (approx. 20-80 households each)
Size of <i>khot ail</i> (camps)	up to 3 households	2-10 households
Number of nomadic moves of each herding household per year	up to 20: usually 1 each winter & spring; 4-5 moves summer and autumn	4-6; 1 per season, possibly with a 2nd move in summer and/or autumn
Pasture use	No specific seasonal pastures; key resources include browse trees, surface mineral deposits, springs and wells	Seasonal pasture deferral practised within valley communities
Approx. distance of moves	2-50 km per move	1-20 km per move; total 20-50 km/year
Approx. scale of ecologically viable pastoral resource unit (allowing margin for flexibility)	3,500 km <sup>2</sup> (area of <i>bag</i> )	200 km <sup>2</sup> (area of valley community)
Boundary definition	Resource unit is larger than user group boundary, allowing flexibility for ecological variability	User group and resource unit boundaries are congruent at the level of valley group
Need to alter household's customary grazing pattern in case of ecological hazard	4 years in 10 (approx.)	1 year in 10 (approx.)

Source: Mearns (1993)

Also summarised in table 2 are: the degree of pastoral mobility practised in each sample area (number and distance of moves per year); the pattern of seasonal pasture use adopted by herder groups that is shaped by operational rules in pasture use, and conditions of collective choice; the approximate scale of the resource unit required for sustainable grazing management, and its congruence or otherwise with the boundaries of the user group; and an indicator of the need (to varying degrees) for flexibility of movement as a response to environmental uncertainty.

A comparison of figures 1 and 2 reveals important differences between the two sample areas in these respects. Figure 1 maps the seasonal base camp movements of a single herding

household of Tsagaan Hutul *bag* in the desert and desert-steppe zone. The area shown covers virtually the entire *bag* territory (3,500 km<sup>2</sup>). The 'ideal' seasonal base camp cycle shown is a template which the herder will approximate as far as he is able, as forage conditions allow at the time in question. This represents his customary territory, also used by his father before him. The actual base camp moves between April and August 1992, a relatively dry year, are also plotted. These bear no relation whatsoever to the ideal cycle, but are determined wholly by the availability of forage. There is in fact no identifiable pattern between years in base camp moves in this ecological zone, except insofar as herders will always start from and return to their customary winter camp site.

The nomadic movements of all individual herders in the area overlap; specific seasonal pastures cannot be identified. As long as herder movements are not restricted so as to lead to concentration in particular places, ultimately subtracting from the use of the resource for all users, there is no need to enforce decision rules regarding, for example, duration of grazing at each camp site, since this is entirely determined by forage availability. The conclusion from tracking a number of herder movements in this way, is that each herder needs access to an area of the order of the *bag* territory itself to allow sufficient margin for ecological uncertainty. The boundaries of this resource unit, however, are not congruent with those of well-using herder groups or neighbourhoods. From research in other parts of the country, this situation in desert and desert-steppe areas is understood to be the exception rather than the rule (Bazargur, Chinbat et al. 1992).

By contrast, figure 2 maps the seasonal base camp movements of three households of Booroljuut *bag* in the forest/mountain steppe zone. The area of the *bag* shown is in the order of 1,000 km<sup>2</sup>. Herding population density is about eight times higher in this much more ecologically productive area, and potential congestion on pastures raises the relative importance of decision rules over the duration of grazing at each pasture site. A clear pattern of seasonal transhumance emerges within each valley group of herders, of which there are five within the *bag*, which is adopted voluntarily by virtually all members of the group. Higher altitude, more sheltered parts of the tributary mountain valleys are generally used for winter camps, and the more open main valley floor is used during the summer. The boundaries of the resource unit and of the valley communities are congruent in this case.

Until very recently in this zone, strong peer pressure was brought to bear on individual herders who failed to observe the agreed dates of movement to the next pasture area. Fines used to be threatened under the collective, but no cases of their actually having been levied have been heard by the author. By 1991-92 however, several instances were observed of a breakdown on the effectiveness of the evolved coordination norms over pasture use. Some illustrative cases have been documented elsewhere (Mearns 1992a; Mearns 1993). The underlying reasons for such a breakdown of assurance that other group members will comply with coordination norms at the present time are examined below.

#### *Collectivisation (1930s-80s)*

In the early stages of collectivisation during the 1930s and 1940s, a campaign to construct winter/spring livestock shelters had a powerful impact in winning herders over to the nascent collective movement, as the gains in reduced livestock mortality became obvious. This investment in fixed capital increased the tendency for herders to remain more sedentary during the cold months of the year. From interviews conducted with herders in the course of the author's own research in both Hangai and Altai mountain areas, the central and eastern steppes, and the Gobi, it appears that it has become more common in recent years for some herders to remain at their winter camps all year round rather than to rotate pasture use season by season, according to customary principles of pasture management. The frequency of camp moves is regarded by experienced herders as a measure of herding efficiency. During the decades of collectivised production, a general weakening of technical knowledge around sound pasture management practice took place (Purev 1991; Bazargur, Chinbat et al. 1992). State policy had the effect of relieving herders of the full burden of environmental risk in livestock rearing. As a result, herders' perception of the environment as a threat has been significantly diminished.

The existence of an alternative system of authority to the customary one provided better-'connected' herders (eg. those with friends or relatives in the brigade or collective administration, or those more articulate herders with relatively greater bargaining power) with an opportunity to 'free-ride' - ie. to ignore mutually agreed customary principles of restraint in pasture use - more or less with impunity. In the case of disputes in which the collective administration was brought in to arbitrate, the decision of the district /collective chairman was final, which may have favoured those herders with more power and influence, or who chose to cultivate good relations with the collective personnel. During fieldwork it has frequently been reported that the incidence of disputes over land, water and other natural resources increased during the period of collectivisation, which seems to support the hypothesis that customary mechanisms for resource allocation and dispute settlement had been weakened as a result of the increase in bureaucratic involvement. The hypothesis requires further testing in fieldwork, although preliminary findings do seem to vindicate this analysis.

As an extension of this hypothesis, it is suggested that the weakening of incentives for individual herders to cooperate with mutually agreed rules regarding common pasture use during the collective period was yet further undermined by the decline in collective action to achieve economies of scale through mutual assistance in herding and livestock product processing activities. It is likely that the strong incentives for collective action in the organisation of labour in the pre-collective period substantially strengthened the incentives to cooperate at the level of the community or neighbourhood group in the regulation and coordination of pasture use. As others have suggested in common-property resource management theory, the decisions of individual resource users within cohesive communities are contingent on those of other users not only for reasons of resource management, but also for the range of other economic, social and ritual activities in which community members participate collectively (Runge 1986). Under such conditions, an individual herder who chooses to free-ride on the cooperative decisions of others in pasture management runs the risk of losing more in the longer term through social ostracism than he or she might gain in short-run access to pasture. The general decline in labour cooperation through local institutions with collectivisation, as well as the rise of a parallel system of authority in the bureaucracy of the collectives, led to a relative decline in the potential costs associated with individual free-riding behaviour in pasture use.

#### *Decollectivisation and transition (1990s-)*

The generalised set of 'coordination norms' regarding pasture use and allocation outlined in the previous section continue to exert considerable influence over herder decision-making in contemporary Mongolia, in spite of the countervailing trends of the collectivisation period. In the period of economic and political transition following decollectivisation however, two trends in patterns of interaction between herders can be identified: one which threatens to undermine further the breakdown of coordination norms around local pasture use, and one which could potentially strengthen them. The likely outcome of this interplay of factors remains highly uncertain, but the fluidity of the situation could also be seen as providing an opportunity for positive action by means of policy instruments to secure sustainable pasture land management.

The first of these current trends is the condition of structural chaos or near-anarchy that prevails in contemporary Mongolia. The state of economic, political and social flux that characterises the reform process contrasts markedly with the rigidities and limited individual freedoms of centuries of hierarchical, feudal organisation, followed by seventy years of state-socialist command planning. The feudal state prior to collectivisation interfered relatively little with the day-to-day business of herd management, but provided a stable, ordered social formation within which it could go on. The benefits of collective action among herders in production activities and in land tenure arrangements were realised within this context. Similarly, under collectivisation - despite the existence of parallel structures of authority and legitimation in pastoral livestock production (customary/traditional, and scientific socialist/modernist) - the bounds within which herders operated were clear, known and predictable. It was still possible for neighbouring herders to form mutual expectations of each others' actions regarding the use of common pastures, and to make decisions on the basis of those

expectations, which is a necessary condition for developing local coordination norms so as to overcome a 'tragedy of the commons' (Runge 1986; Wade 1987).

Under present conditions of structural chaos however, the necessary degree of institutional stability required for the upholding of group norms regarding land tenure, and for the potential exercise of sanctions within local groups, is absent. This uncertainty makes it difficult for herders to form mutual expectations of each others' actions. It tends to heighten the assurance problem of not knowing to what extent other herders are likely to stint, or voluntarily exercise restraint, in their use of pasture. Other things being equal, individual herders are likely to perceive a lower threat of sanctions against free-riding behaviour and may expect to lose less by attempting to maximise individual gain from the available pasture. While economic and political conditions are changing rapidly, it is difficult to learn from past experience in order to anticipate the behaviour of others, since a particular conjuncture of circumstances influencing one's own and others' decisions may never be repeated<sup>6</sup>.

Recent changes in the structure of the rural economy have contributed to this trend favouring individual free-riding behaviour. Decollectivisation has cost many former employees of the collectives their jobs. Technical and support personnel in rural areas such as veterinary officers, animal husbandry specialists, drivers and canteen workers have managed to acquire formerly collective-owned animals in the privatisation programme and, owing to a lack of alternative employment opportunities, have turned to full-time herding for their livelihoods. Some continue to live in rural towns as absentee herders, in which case herding relatives or friends may care for their newly acquired animals, usually in return for a share of the products. Others look after their own animals, but remain close to rural towns, thereby increasing grazing pressure on pastures there.

Apart from former collective employees, there has been a more general net flow of urban to rural migrants in response to the relatively higher degree of economic deprivation in urban centres than in rural areas. Urban inhabitants were always more dependent on the market to meet their food needs than were their rural counterparts with private animals from which they were able to meet domestic demand for meat and dairy products. Recent data show the considerable extent to which rural households have withdrawn into self-provisioning, and are no longer able to purchase wheat flour and other purchased food products owing to supply bottlenecks and high prices (Cooper and Narangerel 1993). Against this background, many urban inhabitants who were eligible to receive a share of the former collective herds in their district of origin have left urban areas to take up herding. Such newcomers to herding represent an estimated 20 per cent or so increase in the population of the neighbourhood groups surveyed by the author (Mearns 1993). Many of them may be children of herders but who have never made a living at herding themselves, while others may have some limited experience of herding. It remains to be seen whether such urban-to-rural migrants will remain in rural areas over the long term, or whether their move was merely a temporary, opportunistic response to claim their entitlement to collective assets under privatisation. To the extent that the latter is true, a considerable rise in absentee herd ownership can be expected in the near future.

Such urban-rural migrants, as relative newcomers to herding, pose particular problems within herder community groups. Their eligibility to acquire animals in the privatisation programme has been a contentious issue in itself, particularly among long-standing herders. The newcomers are 'outsiders' to residence-based local groups within which a degree of coordination in pasture use is traditionally achieved. They have frequently become scapegoats for local discontent around the privatisation of collective assets, and are often held responsible for a perceived increase in grazing pressure on local pastures (Mearns 1991b). It is undeniably true that some of the newcomers are less skilled in pasture and herd management than herders of a number of years standing, and have a greater tendency to remain relatively sedentary. Their presence increases the range of interests represented within the community group, which further reduces the chances of collective action to coordinate and regulate the use of pastures. However, the severity of this problem may decline over time, as some newcomers return to urban areas as part-time or absentee

herdowners, and others see it in their interests to comply with locally agreed rules for regulating pasture use.

In opposition to this trend favouring individual free-riding behaviour is the re-emergence of local institutions, notably the *khot ail*, within which herders actively cooperate in herd management and livestock product processing. Under collectivisation, the decline of such labour-pooling arrangements, for the reasons enumerated above, was a contributory factor in the decline of customary mechanisms for coordinating and regulating pasture use and the arbitration of land disputes. Conversely, their re-emergence in contemporary Mongolia can be expected to increase the incentives for collective action in the management of common pastures. It is this second, positive trend which provides a key opportunity to strengthen pasture land management by building on and strengthening local community institutions as an integral component of land policy reform (Mearns 1993),

#### Ecological outcomes

Despite a certain continuity of customary land tenure arrangements at local level under collectivisation, significant changes in pastoral mobility and herding practices have taken place over the decades from the 1930s, and are thought to have had adverse consequences for pasture condition in particular localities. First, the district territories were much more restrictive overall than the *khoshun* had been, and provided less opportunity to make longer distance movements to use complementary sets of ecological resources. There have been over 330 districts from the 1930s onwards which, compared with the 100 or so *khoshun* that existed prior to collectivisation, implies an average restriction in territory by a factor of at least three.

Second, the move towards camp- or sour-level herd specialisation under collectivisation led to a decline in the complementary grazing strategies of different animal species on the same pastures. This is thought to have contributed to pasture degradation as a result of a change in forage species composition away from the preferred vegetation community, since heavier grazing pressure was placed on a more limited range of species. In Erdene district, Dornogobi province, for example, this is true of associations between *Stipa gobica* grass and the herb species *Artemisia frigida*. The latter is an 'increaser' species, which begins to dominate under selective grazing pressure, and to form a mat-like growth that suppresses the growth of more palatable grasses. Some observers regard pastures lying in the ecotone between the eastern steppes and the Gobi desert steppe as among the more seriously degraded in Mongolia<sup>7</sup>, notably associations of the protein-rich forb *Allium polvrrhizum* with shrubs such as *Caragana* spp. and *Salsola* spp. Although nutritious for animals, these vegetation communities are fragile and lacking in resilience. A diet of *Allium* alone is too rich, and needs to be complemented by browse from the fibrous shrubs. Under heavy grazing pressure however, the shrubs tend to decline. This is frequently exacerbated by wind erosion, leading to 'mounding', a condition in which the remaining shrubs stand up some 10-20 cm from the general surface of the ground on pedestals, occasionally exposing their roots.

Finally, the increasing provision of services, supplementary livestock feed and other inputs by the collectives tended to lead to a decline in mobility overall, and a tendency to remain closer to the growing district centres. For example, by relying on the collective truck or tractor for moving base camp, herders had little incentive to make more frequent moves (for rotating pasture use) using their own draught animals. Evidence from Övörkhangai province gathered in the late 1980s showed that *suur* locations were much closer to roads and tracks than they had been 10-15 years previously<sup>8</sup>. In a recent assessment of pasture land quality carried out by the Mongolian Research Institute of Land Policy in Erdene district, Dornogobi province, for example, 5 per cent of the total land area of the district was considered to be degraded through excess grazing pressure, and most of the degraded areas were concentrated around the district centre (Mearns 1993).

Although this estimation of environmental damage caused by animal density-dependent grazing pressure is called into question by new thinking in range ecology in such non-equilibrium environments, the proximate outcome of increased concentration of livestock

close to district and other urban centres caused by a decline in mobility appears incontrovertible. Worse is presumably yet to come, since statistics available from the State Statistical Board's 1992 end-of-year livestock count reveal that following privatisation (ie. over the calendar year 1992), animal numbers registered within the city limits of the capital, Ulaanbaatar, increased by 90% (Danagro 1993).

### What next? Alternative scenarios

A provisional attempt is made here to bring together the various threads of the analysis of the changing context of Mongolia's common-pool grazing systems, with reference to strategies of cooperation and non-cooperation between herders in relation to transaction costs and ecological sustainability. These elements are brought together in the model shown in figure 3.

The upper part of figure 3 is a development of an  $n$ -person prisoner's dilemma model elaborated by Wilson and Thompson (Wilson and Thompson 1993), itself derived from Schelling and Runge (Schelling 1973; Runge 1986). In this case there are multiple equilibria with two, non-dominant strategies. The payoff curve for cooperation (C) reflects the degree to which marginal payoffs to each additional herder increase initially as more herders choose to cooperate with agreed sets of coordination norms over pasture use. At this point however ( $0 < y$ ) it still makes more sense for each additional herder to free-ride on the cooperative actions of other herders (ie. the non-cooperation payoff curve (NC) lies above the cooperation payoff curve C). Beyond  $x$ , real benefits accrue to each additional herder choosing a strategy of cooperation. At the same time, the curve NC begins to decline as social peer pressure is brought to bear on non-cooperators within the herding community by the growing number of cooperators, and as non-cooperators perceive that they run the risk of being ostracised from various other benefits of community membership, such as labour-pooling arrangements to achieve economies of scale in herding. Beyond  $y$ , there are absolute gains to be had from cooperation in both CPR-related and non CPR-related collective action, which reach a notional maximum at  $z$ .

As  $n$  becomes large, so that the unit benefits from pasture use diminish for all herders choosing to comply with coordination norms as pastures become congested, the actual costs of coordination increase relative to benefits. The cooperation payoff curve (C) therefore declines beyond  $z$ , and the curve NC begins to rise. Beyond  $p$ , NC dominates once again, owing to opportunities for the 'capture' and *de facto* privatisation of key resources such as hay-making meadows. These opportunities arise as the costs of cooperation in resource management rise relative to diminishing returns, in which case it makes sense to try to maximise returns in the short run. This situation is exacerbated by a lack of assurance arising in an environment of economic and political upheaval. An alternative non-cooperative strategy may involve attempting to increase the number of one's private animals on the common-pool pasture by placing them with other herders under contract, if opportunities arise to acquire additional animals quickly (eg. through privatisation). In this case, a non-cooperator is not personally subject to social peer pressure or loss of benefits from non CPR-related forms of collective action. In all these cases, it can be said that the transaction costs of cooperation increase. In the case of the absentee herder leaving his animals with contract herders, for example, the increase in the number of animals owned by that individual on the commons is more difficult for other herders to detect than if he were resident in the community and herding all his animals himself.

A continuum between alternative types of property regime is also represented along the  $x$ -axis in figure 3, from effectively open access at low levels of cooperation (when  $n$  is small), through common property with intermediate group size and with high levels of cooperation, to private property (whether *de facto* or *de jure*) when  $n$  is large relative to the resource base (assuming fixed resource endowments). Once again, the transaction costs associated with each of these property regimes varies. Common-property resource management requires coordination, monitoring and the enforcement of sanctions between users in a way that open access does not; and therefore involves higher transaction costs. Equally, private property, if it is to be legally sanctioned, carries with it very high transaction costs indeed, especially in



contexts where the legal, administrative and economic framework to back it up has to be created virtually from scratch, as in the case of transitional, post-socialist societies. The capture of resources by individuals (*de facto* privatisation) also carries high transaction costs associated with the need to monitor or police one's resource from encroachment by others, since its very capture may raise its value to others.

In contexts of major and systemic institutional change - of which contemporary political and economic transition in Mongolia and other transitional economies is a particularly striking example - the transaction costs of interaction between individuals in general tends to increase, since it is not clear to any individual what set of rules other individuals are playing by. In this sense, to move too rapidly away from any resource-management system that appears to be doing its job effectively also incurs higher transaction costs. This alone gives an *a priori* rationale for supporting common-property resource management regimes in transitional economies where they are shown to exist and to be effective.

Finally, figure 3 includes the criterion of ecological sustainability on the x-axis. When  $n$  is small relative to the resource base ( $0 < y$ ), sustainability is not a pressing concern. In the intermediate range of common property regimes ( $y < p$ ), ecological sustainability can be maintained with successful coordination of resource use and management. Assuming low and unpredictably variable production from the resource base, assuring joint use by means of common-property resource management is quite simply the most efficient way to meet the sustainability criterion. However, beyond  $p$ , the selective privatisation of key resources ('resource capture'), may undermine the efficiency of the common-pool grazing system as a whole, and thereby lead to a decline in ecological sustainability. This proposition is supported by recent thinking in patch ecology as applied to grazing management systems, which suggests that the viability of the system as a whole is closely related to regulating access to and control over patches of key, high-quality resources (Scoones 1992),

This provisional model can be used to compare three alternative scenarios for the evolution of Mongolia's common-pool grazing systems in the near future. The current situation is suggested to be somewhere near  $x$  in figure 3:

1. A series of new policy and fiscal measures are about to be implemented, or are planned or proposed that will have profound consequences for pasture land management<sup>9</sup>. These include, for example, the introduction of fees for pasture use, based on an evaluation of land productivity, and assessed at the level of individual herding households. The stated intention of such a scheme is to use fees as a management tool for recommending changes in patterns of pastoral mobility and use of specific pasture areas, in response to the perceived incidence of pasture land degradation. The hidden agenda however, is to increase general tax revenues for the state. There are also parallel proposals, exploiting various ambiguities in the new Land Law, that would lead to the privatisation of key resources such as hay-making meadows within pasture areas, and perhaps winter pastures.

Leaving aside the question of internal contradictions in these proposals, the attempt to make herders *individually* accountable in the eyes of state administration with respect to grazing management will have the effect of undermining those aspects of cohesion within local pastoral institutions that are crucial to the assurance of mutual cooperation in grazing management decisions, and to overall sustainability. They can be expected to lower the costs associated with free-riding, and increase incentives for *de facto* privatisation. To implement such proposals effectively would entail enormous transaction costs for the state, in monitoring and enforcement, tax collection, etc. *Not to* implement them effectively (ie. an attempt to do so that will ultimately fail) also entails very large transaction costs in that it is likely to disrupt those aspects of common-pool grazing management that currently function well. Scenario 1 therefore entails a shift from  $x$  in figure 3 towards  $q$ .

2. Scenario 2 is the 'do nothing' or 'trends continued' scenario. An important trend identified in this paper is towards increasing heterogeneity within local pastoral institutions. This results from growing income disparities, the ingress of newcomers to herding, and a

general divergence in the economic interests of all these members with different abilities to respond to new economic opportunities (eg. absentee herding or involvement in foreign trade). Coupled with the structural uncertainty of economic transition, these factors are also likely progressively to undermine efficient and sustainable common-pool grazing management, even without introducing inappropriate policy measures. Scenario 2 also entails a shift from  $x$  in figure 3 towards  $q$ .

3. Scenario 3 recognises that existing common-pool grazing management in Mongolia's fragile and locally stressed ecosystems has a significant advantage over the first two alternatives, in that it has already evolved a set of institutional rules with which individual herders are relatively familiar. It is a much less institutionally risky task to develop ways of enabling newcomers to herding to learn these existing rules of interaction with other herders than it is to attempt to create a set of new rules from scratch. In other words, the opportunity cost of *not* adopting scenario 3 is high, since it carries high transaction costs and potentially threatens sustainability. This raises the possibility of a positive agenda for action to support the countervailing trend identified in this paper of a return to collective action within local pastoral institutions as a way of coping with the transition to a market economy. Scenario 3 entails a shift from  $x$  towards  $z$  in the model in figure 3.

### **Conclusion: an agenda for action**

The central argument of this paper is that the re-emergence of customary institutions with decollectivisation should be seen as a window of opportunity for the Mongolian state to support local-level collective action around grazing management. Given the need to manage and share risks in highly and unpredictably variable ecosystems, the efficiency, equity and sustainability of the grazing management systems in question require land to be held under common-property regimes. Attempts to enforce state control over land allocation under collectivisation led to localised ecosystem stress. The privatisation of key seasonal pastures currently being proposed by some is also likely to have similar effects.

The agenda for action with which this paper concludes is to seek ways in which the Mongolian state, with appropriate development assistance, can support CPR-related collective action indirectly by supporting emerging herder groups to engage in other, non-CPR related collective action. This is a prescriptive scenario, but not a normative one: it is *not* argued that collective action in non-CPR related activities is necessarily the best way to transact economic affairs in a market economy in the long run. It *is* argued that in the short run, such a strategy makes sense until such a time as pre-existing, appropriate patterns of interaction between herders have become more firmly re-established.

The continuity of informal institutions throughout earlier periods of political, economic and social transformation appears to have been a key factor enabling economic production and exchange to continue at least to an acceptable minimum level. The strength of contemporary political demand for rapid economic transition should not be underestimated. However, more incremental or piecemeal reforms tend to retain the essentials of antecedent institutions, thereby minimising transaction costs, and preserving options for future institutional innovation (Murrell 1992a; 1992b). For these and other reasons, a strategy of building on and supporting customary institutions represents an important opportunity for pastoral development.

Customary institutions in contemporary Mongolia once again provide for various types of collective action in the pastoral economy. Some forms of collective action persisted throughout the period of collectivisation, while others were displaced by the activities of the socialist state. Herders appear to perceive collective action explicitly as a mechanism for coping with the risks associated with structural reform as well as the risks of livestock production in a harsh environment.

Two types of collective action are distinguished here. 'First-best' collective action includes cooperation in land, herd and labour management. These forms of organisation serve to spread risk among individual herders within *khot ail* and neighbourhood institutions, and

make sense both now and in the long run. 'Second-best' or transitional forms of collective action includes cooperation in livestock product marketing and rural transport provision. In the long run it is expected that they would give way to market-based mechanisms, although during economic transition they do at least facilitate a limited amount of economic exchange.

Given the interdependence of activities within functioning herder communities, second-best forms of collective action may assist in re-establishing and supporting first-best collective action. This is especially important in the case of sustainable land management, which is otherwise potentially threatened by the unstable conditions of economic transition. On this analysis, it is possible to be optimistic about the prospects for successfully coordinating and regulating of pasture land use within corporate groups of herders. This would form the first tier in a cost-effective, integrated system of land management that would meet efficiency, equity and sustainability objectives.

Various ways of supporting re-emergent neighbourhood-level pastoral institutions are suggested. An appropriate agenda for action on the part of the state could include advice on the how local institutions may become legally incorporated so as to receive recognition on the part of the state, banks, etc; legal recognition of such groups as corporate land possessors; technical advice on business management, product packaging, marketing etc.; and access to credit with which to purchase equipment, seeds, etc. Further details of such a proposed agenda for action and its rationale are given elsewhere (Danagro 1993; Mearns 1993), and it is hoped that development assistance to the Mongolian government to implement such a strategy may be provided by DANIDA on the basis of these proposals.

## Notes

<sup>1</sup> During March-April 1993, a number of districts in three western provinces (Bayanhongor, Gov'altai and Zavhan) were severely affected by storms bringing freezing snow cover (*dzud*) to pastures at the time of seasonal minimum standing forage, only to be immediately followed by grass fire. Animal mortality through starvation exceeded 50 per cent of total numbers in the affected districts (over 700,000 animals).

<sup>2</sup> Institutions are understood here as 'the humanly devised constraints that shape human interaction' (North 1990, p3), or more precisely 'a complex of norms and behaviours that persists over time by serving some socially valued purpose' (Uphoff 1986; p8). These constraints take various forms ranging from informal norms and customs to formal laws. 'Local institutions' include self-identified groups of people with some common interest(s), normally in a small residential area; neighbourhood-level, relatively self-contained residential units; and sets of neighbourhoods at the level of the locality having social and economic relations (cf. Uphoff 1992). The term 'organisations' (plural) is here used to denote structures imposed by a polity external to local institutions (ie. by the state).

<sup>3</sup> Constitution of Mongolia, effective from 12 February, 1992, Article 57.

<sup>4</sup> Indeed, it could be argued that the effective accounting and decision-making unit was the national economy as a whole. Collectives were themselves bound by production targets derived from the centrally determined five-year plans, while at the same time benefiting from the provision of certain essential services (supplementary livestock feed and labour inputs) subsidised from the central state budget.

<sup>5</sup> 1961 Constitution of the Mongolian People's Republic, p7, par.10 (Shirendyb 1976).

<sup>6</sup> Much attention has been paid to refining theoretical models of such 'multi-person prisoners' dilemmas' (MPD) (eg. Russell Hardin 1982, Runge 1986; Ostrom 1990). In the language of game theory, contemporary conditions in Mongolia more strongly resemble one-shot MPD games than they do the iterated MPD game in which the players learn from past experience and develop coordination norms as a guide to future action.

<sup>7</sup> Dennis Sheehy, Oregon State University, USA, personal communication.

<sup>8</sup> C Shiirev-Adiya, Institute of Geography and Geocryology, Mongolia, and B Chinbat, Department of Geography, State University of Mongolia, personal communication.

<sup>9</sup> Further details are given in Mearns (1993) and Danagro (1993).

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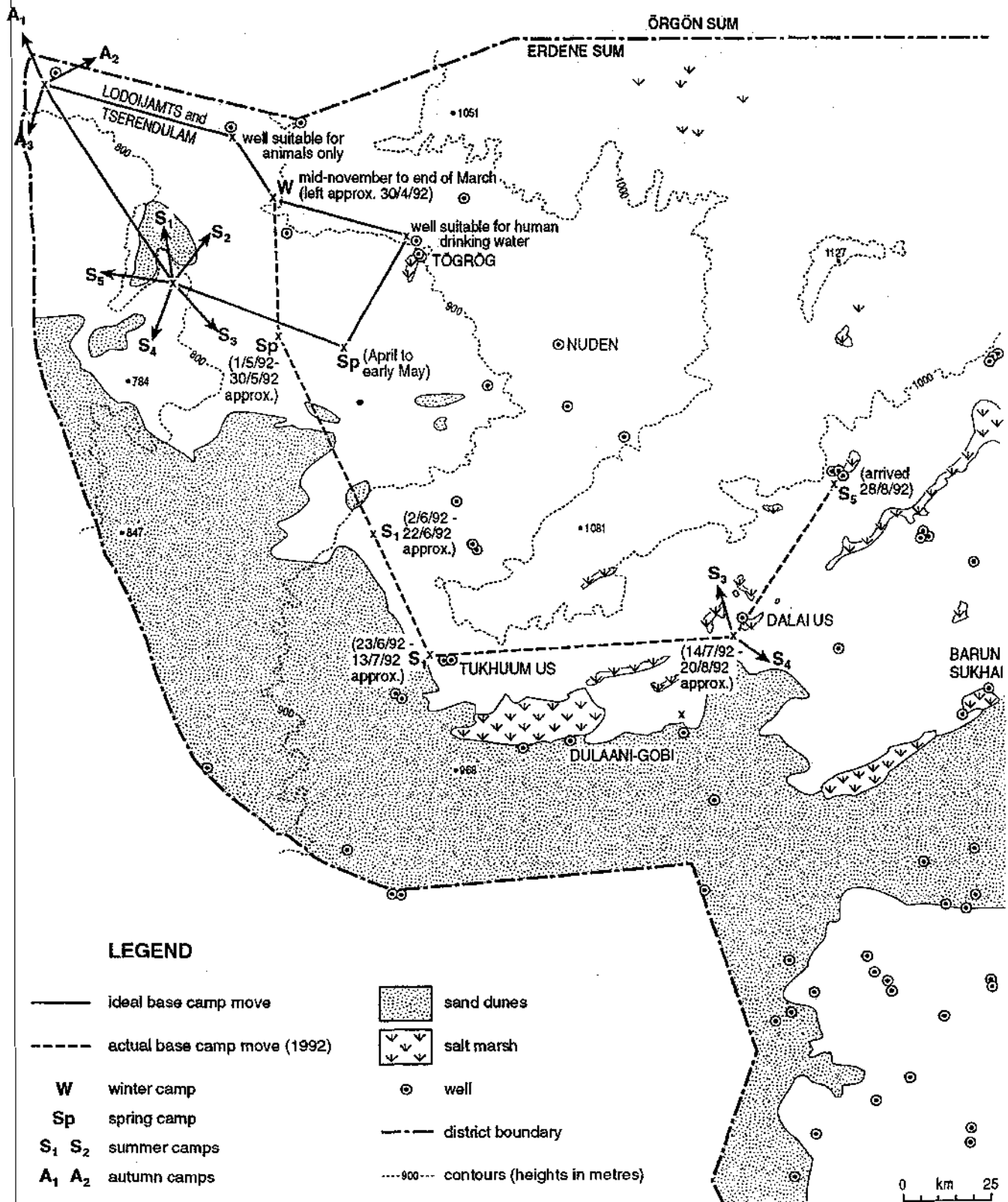
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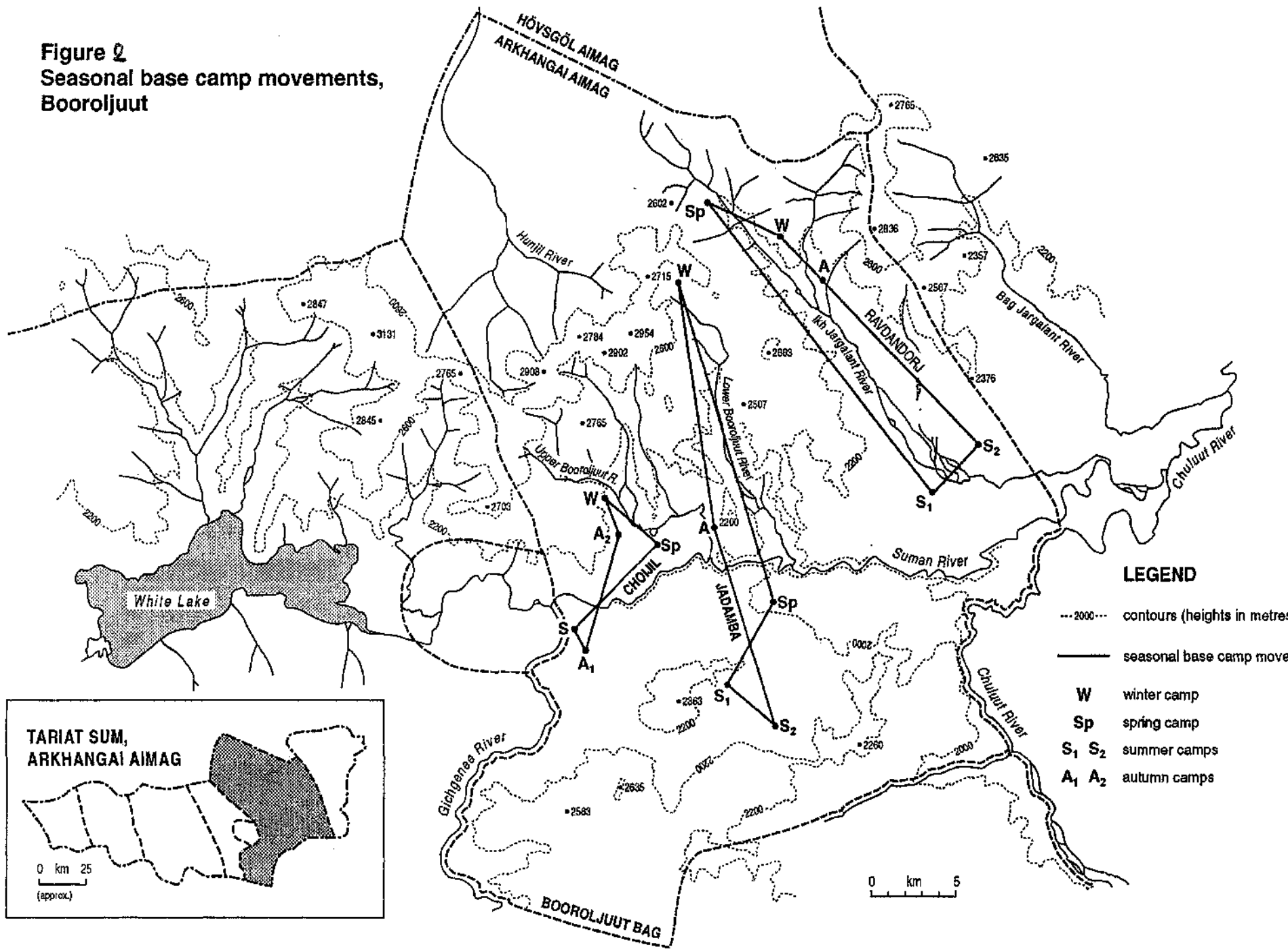
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Figure 1 Ideal and actual seasonal base camp movements, Tsagaan Hutul



**Figure 2**  
**Seasonal base camp movements,**  
**Booroljuut**





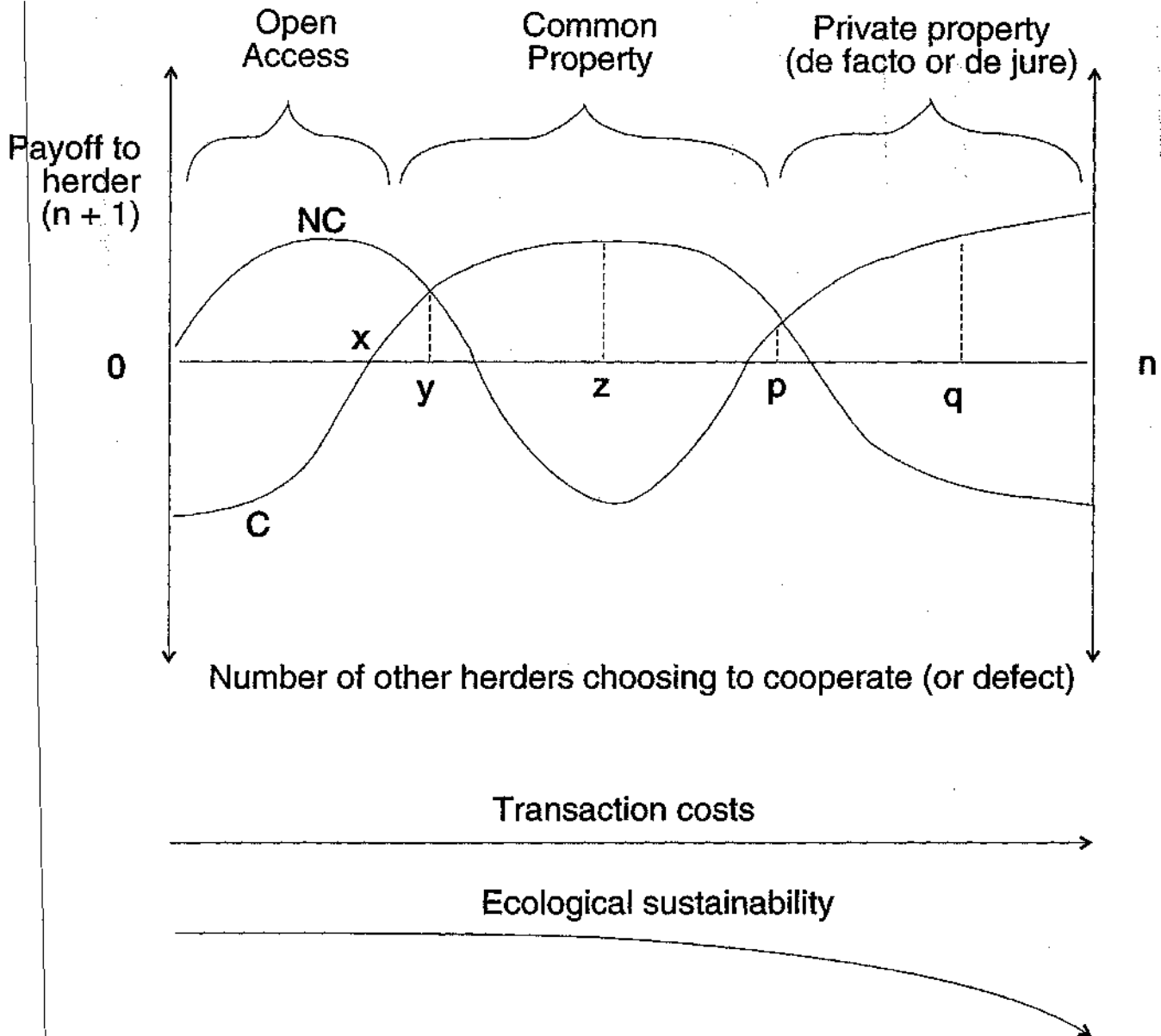


Figure 3: Multiple equilibria with non-dominant strategies in relation to transaction costs and ecological sustainability of alternative property regimes