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# Farming and herding after the drought: Fulbe agro-pastoralists in dryland central Mali

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## Introduction

Farming and herding in the Sahel are risky affairs. Because of the low rainfall and the great variations between the years, farmers and herdsman employ flexible strategies to be able to adapt to changing ecological circumstances. Life depends on the careful timing and spacing of the use of a large variety of natural resources. Often these resources are found in the same spatial unit, and use of these resources may be simultaneous or sequential depending on the strategies people have developed over the years. Because of the large variety in ecological conditions these strategies are extremely varied, ranging from cereal cultivation to livestock herding to the gathering of wild grains and fruits and so on. In many cases two or more ways of resource use are employed by the same family or even the same person.

For nomadic pastoralists these strategies have been fairly well documented. Mobility and herd diversification are key strategies that enable pastoralists to survive in bad years (Dyson-Hudson & Dyson-Hudson 1980, Salzman 1980, Carlstein 1982). The keeping of large herds by pastoralists can be interpreted as a survival strategy, because it is more probable that a number of animals will survive droughts in a large herd than in a small herd (Horowitz 1986). It has also been noted that pastoralists rely on non-

pastoral means of subsistence in times of crisis. They may give up herding temporarily and engage in cereal cultivation or even the gathering of wild grains and wage labour, in order to rebuild their herds and re-enter pastoral life (White 1984, Maliki 1988). Others may also sedentarize permanently and never return to the pastoral economy (Salzman 1980).

Cultivators in the Sahel are commonly regarded as sedentary populations employing some sort of in-field/out-field or permanent cultivation system (see Gallais 1965; Bouju 1984, Mortimore 1989, van Beek & Banga 1992, Toulmin 1992). Soil fertility in these cultivation systems is maintained by a combination of household refuse, manuring by stalling livestock on the fields during the dry season and the application of mulching material gathered in the bush. In the Sahel herdsman from other ethnic groups are often invited to stall their livestock on the fields of farmers to supply them with manure on their fields. In turn farmers supply herdsman with water for their animals, opportunities to market their milk and sometimes food grains. Each group thus exploits different resources, rendering each other's efforts more effective (Galloy et al. 1963, Gallais 1965).

Relatively little attention has been paid to strategies in which pastoralism and cultivation are combined (see e.g.

Gallais 1975, Marchal 1983, Holey 1988). Closer inspection of the literature reveals that pastoralists have always used the cropping of cereals as a permanent or temporary strategy (Salzman 1980, Thebaud 1988, Maliki 1988, 1990). In many studies of pastoralists, however, the importance of the cultivation of cereals or sources of income other than animals is underestimated. The pastoral way of life is regarded as the natural state of being for all those who label themselves pastoralists. All other engagement is regarded as a deviation from the norm, a cultural repertoire designed for crisis management only.

Most Fulbe (Fulani in English or Peul in French) pastoralists, however, do not exclusively rely on livestock for their livelihood, but cultivate and keep animals at the same time (Dupire 1970, Delgado 1979, Marchal 1983, Grayzel 1990), sometimes leading to an almost sedentary way of life (Bernardet 1984, Waters-Bayer 1988). A lot of their cultivating neighbours on the other hand possess and manage livestock, and sometimes even move with these animals (see e.g. Thebaud 1988, Toulmin 1992).

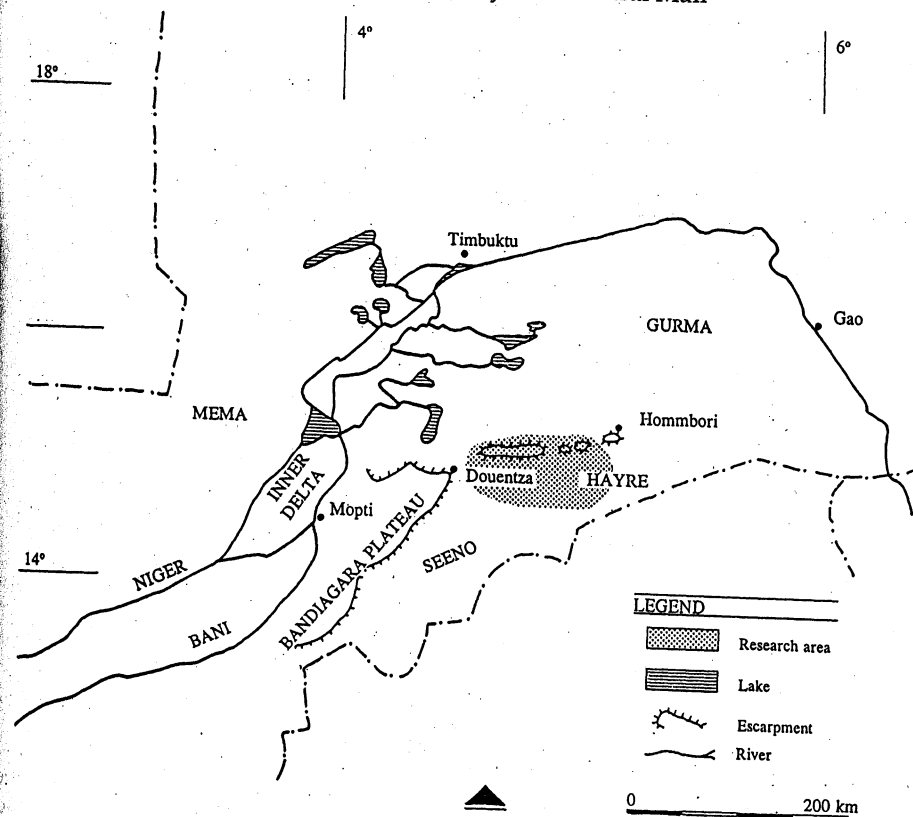
In this paper<sup>1</sup> I will therefore focus on the interaction of the cultivation of cereals with the keeping of livestock. It will be shown that this interaction is crucial to understand the impact of variable ecological conditions, notably the Sahelian droughts of the 1970s and 1980s in a dryland region in Central Mali in the district of Douentza, on the land use strategies of Fulbe (agro-) pastoralists and their former slaves, nowadays labelled Riimaybe. After a brief description of the research area, a short overview will be given of historical developments over the last century. Next I will sketch how agro-pastoral Fulbe and Riimaybe cultivators are dealing with drought and other variable conditions in this area. Special atten-

tion will be given to how their strategies take shape in relation to rights of access to resources and social relations of production (labour relations, co-operative relations).

## The research area

The research area is composed of the footslopes, called Ferro, of the Inselberge which extend from the Bandiagara plateau in the east, and a strip of fixed dunes, called Seeno-Manngo, south of these footslopes (see Fig. 1). Rainfall in the area is about 400 mm per annum and falls almost exclusively in the period July-September. The clayey soils of the footslopes of the Inselberge are characterised by laterisation and low permeability. The vegetation of this area consists of very thick bush (brousse tigrée, tiger bush) in alternating strips with land devoid of any vegetation. A herb layer is almost absent. The area yields good pasture for browsers but not for grazers. The main tree species of this tiger bush are *Combretum micranthum*, *Guiera senegalensis* and *Pterocarpus lucens* mixed with *Grewia* spp. and several *Acacia* spp. (see Serprokrylow 1934, Gallais 1975). The Seeno-Manngo (the great sands) is characterised by sandy soils which are highly permeable and are in general very poor in nutrients. The natural vegetation consists mainly of annual grasses yielding good pasture for grazers in most years. The main tree species in this area are *Combretum glutinosum*, *Acacia raddiana* and *Balanites aegyptiaca*. Due to the droughts of the last 25 years large tracts of tiger bush have simply dried up. In the Seeno-Manngo perennial grasses which were reported to have been abundant by herdsmen can no longer be found.<sup>2</sup> Tree species like Baobab

Figure 1: Location of the research area, Hayre in Central Mali



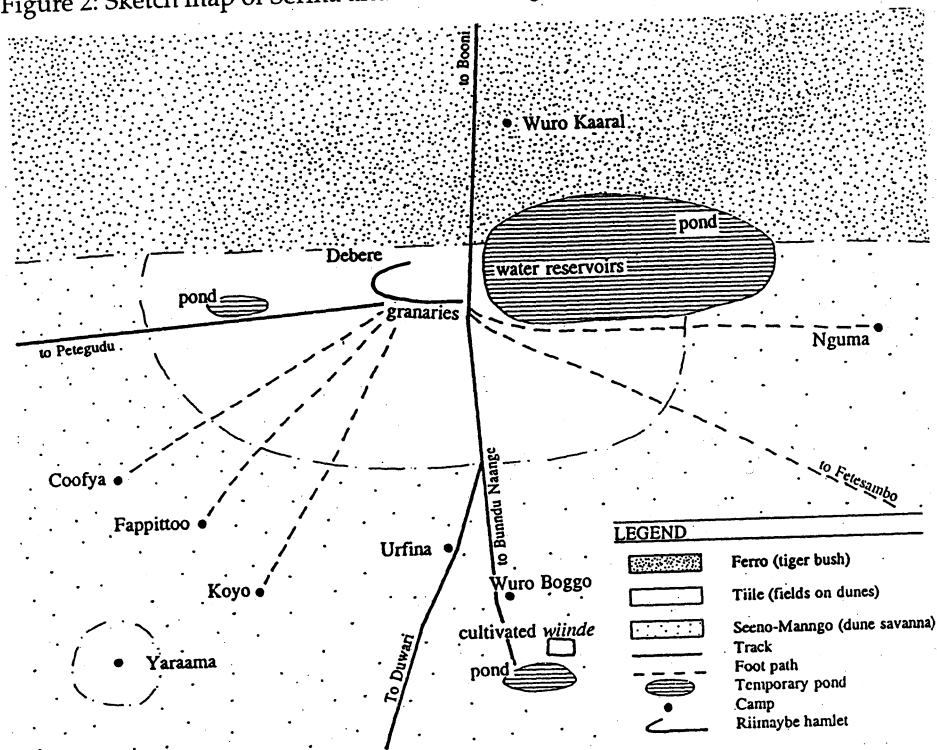
(*Adansonia digitata*), *Anogeissus leiocarpus* and *Sclerocarya birrea* have almost disappeared, while other species like *P. lucens*, *A. nilotica* and *A. seyal* are declining rapidly.

The region is at present inhabited by Fulbe agro-pastoralists, belonging to the Jallube clan (sg. Jallo) and descendants of their former slaves, who will be termed Riimaybe (sg. Diimaajo) in this article. Before the droughts population densities in the region were higher. During and after the droughts several individuals as well as families left the region to try their luck elsewhere. South of the Seeno-Manngo and to the west villages of the Hummbeebe<sup>3</sup> can be found.

Jallube and Riimaybe were part of the same political entity in the past. Both

groups were embedded in the political hierarchy of two Fulbe-chiefdoms in the region, which were vested in Dalla and Booni. The Jallube were free cattle herds-men, vassals of the chiefs. The Riimaybe could be the property of a particular individual, for whom their men performed agricultural labour or their women household tasks; alternatively they were subjugated as an entire village to a chief and his family. The latter category of slaves remained in their own villages and retained rights to land, but paid tribute to the chiefs and their families. Under the French colonial regime these relations of servitude were abolished, and many gained their freedom, but the law became truly effective for all Riimaybe around 1945. After the abolition of slav-

Figure 2: Sketch map of Serma and surroundings



ery the Riimaybe devoted themselves to millet cultivation. Subsequently, as a result of the lack of slave labour, the Jallube also started cultivating millet – in combination with livestock, mainly cattle, keeping – in the beginning of the colonial period. At present some Riimaybe have gained access to livestock as well, but entrust their cattle to Jallube herdsmen, because, as they say, they do not know how to deal with cattle.

Jallube are organized in patri-lineages. In some cases a man and his brothers and/or sons form a unit of production, though often a nuclear family is the basic organisational unit. Jallube may also keep their herds together while farming on an individual basis. The men are responsible for the management of their own livestock, of those of their wives and children;<sup>4</sup> they are also re-

sponsible for millet cultivation. Jallube women do not have access to land and do not cultivate; their domain is the milk that is produced by the herd. Young men work under the supervision of their elders (fathers, elder brothers), who often do not do any work at all. The social distance between a man and his sons, and the complicated communication between them are striking; messages are often passed via intermediaries, and fathers and sons do not eat or work together. According to Riesman (1977) sons run the daily affairs of the family, while the elders direct them from a distance. This particular relationship forms part of a whole range of social relations marked by shame and reservation, which form an important element of Fulbe culture (see de Bruijn, this issue). The Riimaybe are also organized in patri-lineages. Rela-

tions between agnatic kin are however less strained than among the Jallube. Riimaybe men eat and work together and communicate in public. Contrary to Jallube women Riimaybe women cultivate, and when they have given birth to one or two children they are given a piece of land by their husbands to cultivate for themselves (see also de Bruijn, this issue). However, land for cereal cultivation as well as other assets such as cisterns (see below) are inherited by male kin only.

In the rest of this paper the results of fieldwork in Serma will be discussed. This village is located at the border between the Ferro and the Seeno-Manngo, and is one of a number of villages along this border. It consists of a sedentary hamlet, named Debere, which is inhabited by Riimaybe, and surrounded by seven rainy season camps of Jallube herdsmen (see Fig. 2). This village is administratively part of the subdistrict capital Booni, where their chief, who reigned over the research area in the past, also resides. Next to the nuclear village there is a large pond which gets filled with water during the rainy season and holds it until November. A few kilometres north of the village is a small salt lick.

### Herding and farming in historical perspective

Land use in the region depends to a large extent on the availability of water for human and livestock populations. At the beginning of this century permanent settlements in the region existed only at two or three locations, due to the absence of surface water and the technical and organizational difficulties involved in reaching the water table (60-100 m). In the rainy season the area was used by Jallube herdsmen as pasture and to cultivate millet. As long as surface water

lasted herdsmen remained in the area feeding their animals with the fresh growth of perennial grasses, which were burnt after the rainy season, and with the crop residues of their millet fields. After the rainy season the herdsmen and their slaves, if any, left the village, as water resources were depleted a few months after the end of the rainy season. During the cold season the pastures of the Seeno-Manngo could also be exploited, because the herds had to be watered only once every two days, so that distant pastures could be reached. During the cold and hot seasons (December-June), when water was finished in Serma people migrated either to the north or the south. In the north, towards the mountains, well-water and springs were available. In the south they went to Hummbeebe villages 40-50 kilometres to the south of the Seeno-Manngo, where water from deep wells (up to 80 metres in depth) was available, and in the direction of Duwari. Most herdsmen have long-established relations with Hummbeebe families in these villages, who expected them every year with their herds to manure their fields. In return they gave some millet, a rope to draw water and often they helped watering the herds, which had to be done by hand. The women marketed their milk in the village. When the herdsmen went north, watering the herds was easier. They set up camp near Hummbeebe, Dogon, Riimaybe villages or in Booni, where their chief resided. In all cases the water table was less deep and often surface water was available in the form of springs. Here also the women marketed their milk in the villages. At the onset of the rains everybody returned to Serma to cultivate.

In the rainy season the basic organizational unit of the herdsmen was and is the rainy season camp mostly located on the dunes of the Seeno-Manngo. These camps are as a rule moved every three to

four years, leaving a field covered with a thick layer of manure from cattle, goats and sheep. This site called *wiinde*<sup>5</sup> was cultivated for three or four years until yields declined and the camp returned to its former location. The yields that could be obtained with this system were much higher than those with a bush-fallow system, both on the Seeno-Manngo and on the Ferro with its clayey soils. Moreover, the sandy soils were easy to cultivate and required little labour, compared to the soils of the Ferro. In addition to cultivating their *wiinde*, herdsman also practised a bush-fallow system. For this they claimed large tracts of land, which they cultivated intermittently. Probably they tried to apply manure to these fields as well, by settling on these temporarily after the harvest in October, if water resources were not yet exhausted. These fields are mainly located in the area which forms the border between the Ferro and the Seeno-Manngo.

A camp can consist of a single family, of members of one lineage or even members of different lineages. Any family may found a new camp. The rights of the founder and of his heirs on the soil of the camp and the *wiinde* are uncontested and non-transferable as long as he occupies the site. Only with his permission can new-comers get access to the camp, thereby obtaining property rights on part of the soil. The composition of the camp was and is highly flexible. People who leave retain property rights, but may grant the use of their part of the *wiinde* to others who were part of their former camp, or took their place, or even to complete outsiders. When too many original inhabitants of the *wiinde* have left the camp a new location is selected, and the old site is left.

People leave and enter the camps for several reasons. One important reason for leaving a camp is conflict. These conflicts between members of the families

involved, may result from differences of opinion about the coordination and timing of the shifting of the camp and the cultivation of the fields on the *wiinde*. These conflicts are, however, seldom expressed openly, for people just leave and enter another camp or establish their own. Another reason for moving is to form new alliances with their male kinsmen, both paternal and maternal. People move from one camp to another to live near a paternal uncle, parallel-cousins or brothers but also to go to maternal kin, such as maternal uncles and cross-cousins, who are often of another lineage.

After colonisation in 1893 important changes in the organisation of labour took place. The slaves, *Maccube* (sg. *Maccudo*), who were doing most of the herding and farming (males) and household work (females) were gradually liberated. Most of them, from then on called Riimaybe, disappeared from the area to escape the moral obligation to continue working for their former masters. Riimaybe from other areas (Dalla, Booni) entered Serma. They practised a bush-fallow cultivation system, both on the Ferro and the Seeno-Manngo. Because large tracts of land were already occupied, or under some form of tenure, they were forced to clear land further away from the central village. Although socially they were inferior to the Jallube herdsman, they were able to claim permanent rights to land use.

### The late colonial period and independence

Somewhere in the 1950s this farming and herding system underwent a radical change. There are indications that even before this the herds of the Jallube were growing in numbers, because of the introduction of inoculation campaigns and

the gradual suppression of intertribal warfare after the French colonial conquest. Other reasons for this change in the land use system were the relatively abundant rainfall in the fifties and the early sixties, and the opening up of new water resources in the area.

In the fifties someone in the village discovered underground water reservoirs (cisterns) in the bed of the pond. These were probably built by earlier occupants of the area, about whom, however, nothing is known, except that they inhabited several sites in the neighbourhood of the village. In the course of the years more than 200 such cisterns were rediscovered. They became the private property of the discoverers and have remained so up to now. The cisterns enabled Riimaybe cultivators and Jallube herdsman alike to remain longer in the village and even allowed a limited amount of permanent settlement in the area. It thus became attractive to have fields on the dunes near the Riimaybe hamlet, where livestock could be stalled on the fields, so that the manure fertilized the soil (see Fig. 2). This in turn led to a commercialisation of the land market. Whereas in the past land could only be inherited or occupied, it now became a commodity because of its extra value in those places where water was available during the dry season, and herds were passing to the cisterns. In practice no land was sold to outsiders, only to kin or people who were resident in the village, Jallube as well as Riimaybe. Some Riimaybe were able, by working hard, to obtain a considerable number of these cisterns. Nowadays these are important assets, because they enable them to attract herdsman with their cattle in the dry season to manure their fields. Subsequently water also became a commodity. At present cisterns may be bought, sold or hired. In times of water scarcity as in the dry season of 1991, passing herdsman

even pay up to 50 Francs CFA<sup>6</sup> per animal to water their cattle only once.

- Boy is a young Jallo. His father died some years ago, leaving no cattle. After the rainy season he wanted to leave for Tula, a Hummbeebe village to the west, to herd his few goats there and sell the milk to subsist during the dry season. Just before he left a trader from Dalla, whose cattle were herded by a herdsman in the village, wanted to buy the water of one of Boy's cisterns. The trader offered 2,000 Francs CFA. Boy wanted to have 3,500 Francs CFA to cover the expenses for the trip to Tula and to buy some cloth for his mother. Although the negotiations lasted for hours, they did not come to an agreement.

- Bura is a relatively well-off Diimaajo. Due to his own and his father's hard work he owns about 15 cisterns. He never sells any water. Instead he invites his nephews (classificatory brothers) to send their livestock to Serma, where he will provide water. The livestock in turn manure his fields.

In the same period some herdsman discovered flintstone on the Seeno-Manngo, which indicated an underground water reservoir. The villagers united and dug a well, which was cemented with the help of the government. The land around the well was divided among the lineages, and within the lineages among individuals present in the village, so that people could settle on this land during the dry hot season (March-June) when the water in the village reservoirs had dried up. This enabled the population to expand millet production considerably, while cultivating the same amount of land. This site was called Yaraama, which means "there has been drunk". The Riimaybe never cultivated the piece of land that was allotted to them at Yaraama. Although they participated in the digging of the well, and probably did most of the work, they were

given the worst piece of land, which was also near an important route for the herds.

A third water resource was opened up in the middle of the Seeno-Manngo in 1958. A borehole was drilled at a site called *edal* within the framework of a French government programme. On this borehole a windmill was installed, and the site was called Bunndu Hinndu (the well of the wind). Soon Jallube herdsman occupied the site and started cultivating, with permission of the local military commander. No sooner, however, than the millet started to grow, a conflict arose. As the well was not owned by these herdsman, others demanded access to this site as well, which was refused by the settlers. The conflict was suppressed by prohibiting cultivation. However, the borehole and windmill remained intact for some time and was a favourite site of Jallube herdsman to water and herd their cattle. The grass in the form of fresh regrowth of perennials and abundant pastures of annual grasses was of good quality. When the windmill broke down as a result of lack of maintenance the site was abandoned.

All this meant that by 1960 all natural resources were present within a relatively small area, so that permanent exploitation of natural resources was possible. A number of Riimaybe families settled permanently in the nuclear hamlet Debere and the Jallube herdsman settled in their camps for the rainy season. They moved to their fields near the water reservoirs in Debere after the harvest and remained there well into the cold season, depending on how many water reservoirs they possessed. When water from the reservoirs was finished they moved on to Yaraama to settle there for the rest of the cold and the hot, dry seasons. Only if the pastures around the village were depleted did people now move to Bunndu Hinndu, Booni, or the Humm-

beebe villages south of the Seeno-Manngo, whereas in the past these movements were made on a more regular basis. An important consequence of these developments was that contacts with outsiders became much more limited. Herdsman stopped going to Hummbeebe villages and the mountain area. This can clearly be deduced from the pattern of friendships of elder and younger Jallube. Older man have friends and hosts all over the region, including Hummbeebe and Riimaybe. In the most remote corners of the region we encountered friends of elderly people we knew in the village. Often we were asked to carry messages, pass greetings and give small gifts. Younger men have a distinctly different pattern of friendship relations. Their circle of friends is limited to herdsman from the village itself and visiting herdsman from as far as the Inner Delta of the Niger. Young herdsman from the region rarely visit Serma.

The growing numbers of cattle played a crucial role in promoting these changes. They were necessary for the intensification of millet production, because of the manure they produced. Their most important role was, however, in driving the cultivators, herdsman and farmers alike, to concentrate their fields around the water resources. Cattle remained in the vicinity of the village during the rainy season, because the Jallube herdsman established their camps in between the bush fields. The cattle were roaming free over the pastures. When their numbers grew the problem of protecting the bush fields increased immensely and became unmanageable as these fields were far away and difficult to oversee. Especially the Riimaybe, who depended more on cultivating in the bush, were suffering severe losses on their bush-fields. Politically and demographically they were easily outdone by the Jallube herdsman and they had no choice but to retreat to

the dunes south of their hamlet, where they had to buy cultivable land from Jallube herdsman and the family of the Booni chief, who owned considerable amounts of land there. The bush-fields, however, still remain their property and no Jallube herdsman dares cultivate these. So, though the Jallube herdsman chased the Riimaybe from their fields by rendering the cultivation of cereals impossible because of their large cattle herds in the vicinity of the fields, they did not violate the property rights of the Riimaybe on their fields. The most important problem for the Riimaybe in this conflict was that they were never given compensation for damage to their crops. A Diimaajo once claimed compensation and went as far as the administrative authorities in Douentza. Eventually he was compensated, but subsequently he was isolated in the village. No Jallo in the village will ever manure his fields or do any business with him after this conflict. As he has no livestock himself and no kin rich in livestock, he has to rely for manure on passing Bellaabe, former slaves of the Touareg, to manure his fields with their goats. Until today no compensation is paid for damage to crops by animals, when the livestock are owned by someone from the village; only when the damage is inflicted by an outsider is compensation demanded.

An important aspect of the period 1950s-1960s was the absence of state intervention in land use and land tenure. Although land use in the village was not compatible with French colonial law and all unoccupied land was officially nationalised by the French colonial government, the administration rarely intervened in conflicts, and then rather hesitantly as in the case of Bunndu Hinndu. Further the administration interceded only on the request of the population. Most conflicts were settled among the communities or with the help of the chief

of Booni. As is clear from the case of the Diimaajo, outside interventions were very much resented by the Jallube herdsman as they disturbed the established hierarchy between them and the Riimaybe, and undermined the power of the villagers to settle their own affairs.

Summarizing then, the changes were threefold. Land tenure arrangements changed. The basic transhumance pattern altered profoundly. Millet cultivation was intensified; the traditional itinerant cultivation systems were transformed into an agro-pastoral, permanent cultivation system. These transformations took place without outside interventions, and were the result of the internal dynamics of the system and the relatively favourable ecological conditions. It is important to note that all water resources are owned by the villagers, either communally or privately, so that people who had no ties in the village could not settle there without the consent of the inhabitants.

## The droughts

When the period of droughts began in 1968 the effects were hardly felt by the people in Serma, because most people disposed of capital reserves, herds and stocks of millet. Gradually however, it became more and more difficult to harvest sufficient millet and to keep the herds alive. By 1985 pastures and harvests yielded next to nothing after three consecutive deficit years. The human population was saved by food aid, but at least 75% (probably more) of the cattle died. Numerous persons who lost all their cattle left the region, alone or with their families to look for work in the south of Mali, or to seek a herd and fields from urban cattle owners. Others stayed behind and tried to survive on the meagre means of existence that remained.

The ecological situation hardly improved. The harvest failed in four out of the six years between 1985 and 1991 due to droughts and pests, though pastures were in general sufficient.

In the region three processes are at work: ecological degradation, social change, and political transformations. A combination of these three processes may explain the present state of affairs, which is characterised by a very marginal existence, permanent cereal deficits for most people and the absence of sufficient capital in the form of livestock to fill this cereal gap. These processes render the resource use strategies, as described before, obsolete.

#### Ecological degradation

The most direct manner in which people are affected by the droughts is of course in the domain of ecology. Ecological processes operate in three ways. In the first place the amount of livestock has diminished dramatically, reducing the capacity to cope with the cereal deficit through the intake of high quality food like milk (and, less important in the daily diet, meat), and by selling livestock. The droughts have also had a disastrous effect on cereal cultivation. No one dares to cultivate on the Ferro any more, because these soils have insufficient water storage capacity in relation to fertility. Although the sandy soils of the *biile* on the Seeno-Manngo ensure a more efficient use of precipitation, they are not cultivated any more. Because of the high concentrations of manure on the small fields of the *biile* crops grow very well when the rains are sufficient and timed correctly. When, however, the rains are delayed, the crops 'burn' faster than on fields which are less heavily manured.<sup>7</sup> On the other hand the fields under permanent cultivation near Debere and Yaraama, which are manured during the dry season receive too little manure, because livestock numbers have

decreased and because a lot of people are absent during the dry season to look for food elsewhere. These fields are by now, six years after the drought, exhausted. So the productivity of cereal cultivation is undermined both by lack of rainfall and lack of livestock.

The second way in which the droughts affect resource use strategies is through the quality of pasture. High quality forage species (perennial grasses, annual grasses, specific tree species), have been replaced by drought-resistant, often less palatable species (cf. Marchal 1983). Milk production per cow is declining, especially in the dry season, and livestock is more prone to diseases which are caused by nutrient deficiencies (e.g. tick-born diseases like "waterhart"). This is aggravated by the fact that more and more livestock has to be sold to bridge the cereal gap. Finally, bush products like fruits, wild grains and grasses to build huts and make mats, and fuelwood are becoming scarcer. Although the Jallube do not gather most of these products, they obtained these from Riimaybe, women (see de Bruijn, this issue).

The following examples illustrate how people cope with these difficulties.

- Aama Babel is 44 years old and already bent by life. No man in Serma is as skinny as he is. Most of the time one can find him under the hangar in the Riimaybe village playing *cokki*, a local variety of draughts, with the other men. When his father died 33 years ago, he left 10 head of cattle, a field and three cisterns. After the first drought there were five animals left. After the second drought there was only one animal left. His children on the other hand multiplied from 0 to 7. His oldest son, 17 years old, looks like 12. The reason for this, Aama Babel explained, is lack of food.

The family survives by a multitude of activities. Right now they have five head of cattle at their disposal. The only cow

that survived the droughts is still there and provides some milk. One calf is sold every year to cover the expenses of the family. In addition Aama Babel has two more cows plus two calves at his disposal, which belong to the pharmacist of the livestock service in Booni. The goats, totalling 10 are herded by his sons. In the rainy season he works as a wage-labourer for the better-off Riimaybe, who in times of need sometimes provide him with millet on credit. To pay off his debts and to earn some money to buy millet in the village he works on his own field one day, and as a labourer the next. His four sons, small and malnourished as they are, help him. He deliberately did not cultivate part of his field, for the plants will go wild and mature early, so that he would have millet to eat before the harvest.

Last year, with no millet at all in his granary, Aama Babel left the village with his livestock to go to Hummbeebe villages in the west. The family tried to live on the sale of milk. Unfortunately the cows went barren after a few months and the family had to return to Serma and to sell goats to survive.

- Bubaare is 57 years old and one of the oldest men of the leading lineage of the Jallube in the village. His eight brothers all died during the past decade. Because he is the only surviving brother he has to take care of a lot of people. His first wife and adult daughter live with him. This daughter is married, but her husband is not able to support her. Often his son-in-law is also on his charge, which is very unusual. He married his second wife a few years ago. She is the sister of his deceased second wife. She brought with her two daughters from an earlier marriage. A son of one of his deceased brothers, who herds his cattle, is also on his charge. Finally, he has three more children of his own, including his eldest son,

who is able to herd the cattle and do some cultivation.

Compared to others<sup>8</sup>, Bubaare, or his family as he puts it, owns a reasonably large herd: about 30 head of cattle of which the majority consists of milch cows. Over the year he has on average 9-10 cows producing milk. Each member of the family has his/her share in this herd. In addition he has a small herd of goats and sheep. In the rainy season he cultivates four fields. Due to lack of rain and manure, these fields do not yield enough to support his family for more than three months. To save the harvest for the next rainy season, when cereal prices are at their highest, the family treks southward after the harvest to a Hummbeebe village, Duwari, where they settle on a field of a Kummbeejo farmer, who has been the host of Bubaare's family since their grandfathers' time. They obtain millet there by bartering milk.

The last two years the milk trade did not yield enough. The harvests in the whole region were bad. The pastures around Duwari were quickly depleted, because large numbers of Jallube herdsmen sought refuge near the village, as this particular village was among the best supplied. The only option left then was to return to Serma and to survive either on the harvest or by selling livestock to buy millet imported from the south of Mali. Over these two years Bubaare sold about 20 young bulls and heifers that were destined to form the basis of the future herds of his children.

Due to the regular absence of his herds from Serma, his fields are almost exhausted and have ceased to produce. This year he decided to stay in Serma and manure his fields. This means that he will have to sell even more animals, depleting the means for the long-term survival of his family. In the rainy season of 1991 Bubaare said to the inhabitants of his cat-

tle camp that it would be a good idea to cultivate an old *wiinde* of this camp. The *wiinde* had been uncultivated for three years after they left it with their cattle and there would not be any problem with the amount of manure, according to Bubaare. All families cleared their part of the *wiinde* and sowed their millet. The rains were abundant and the millet grew incredibly fast. Everything went extremely well until the beginning of September, when the plants were 10 cm high. In September however, the rains failed completely. Some of the harvest matured, but the taste of the millet was bitter, because it dried out and did not mature properly.

- Gado is a Diimaajo in his mid-forties. We met him only in the second year of our fieldwork, because he was not in the village before that. In 1989 he left Serma after a plague of locusts destroyed the whole harvest. He took his family to Tula, where he and his wife worked for the Hummbeebe for some time. When there was no longer any work, Gado left his wife and four children in Tula and went to Douentza, the district capital. He repaired houses, worked as a porter and earned some money. The next rainy season (1990) he did not return to Serma, as he heard that the rains were insufficient there. He and his wife worked as wage-labourers in Tula, where the harvest was good. The following dry season they lived off wage-labour and the left-overs of the Hummbeebe of Tula. Only in the rainy season of 1991 did they return to Serma to cultivate their fields, which however yielded next to nothing, because of lack of manure. This dry season Gado will stay in Serma, where he hopes to obtain some work in house construction.

#### Social change

The examples given above clearly indicate that temporary migration is a fre-

quently adopted strategy. After the harvest most people leave to gain a living elsewhere, although both Jallube and Riimaybe would prefer to stay in Serma. The reason for this is that the opportunities to subsist, when on migration, have become limited. Riimaybe have only their labour power to offer, which has become overabundant in the Sahel, due to the general economic crisis. Jallube have much less to offer because they no longer have any livestock.

Let us now first return to Bubaare and his family to see how they fare in Duwari.

- Bubaare's host in the Hummbeebe village is not so enthusiastic any more about Bubaare. He would rather have a more reliable herdsman with more livestock. In the past he would have given Bubaare money, clothes and millet to persuade him to stay on his field. Now he would rather see him go than come. Bubaare's daughter who markets the milk in the evening and morning is often maltreated in the Hummbeebe village; people tell her to go to her own village. It is said that other Fulbe girls are molested so that they spill their milk. Moreover, the Hummbeebe have abandoned the barter system and have started paying in cash instead of giving millet in return. The money received was next to useless for the Fulbe, as no Hummbeebe wanted to sell millet.

- Aljumaa and his family go every year on transhumance to Duwari with their herd of six head of cattle. There they camp on the field of Abulo. Their relationship dates back from their grandfathers' times. In the past Abulo would give millet, a rope for the well (which is quite costly as the well is 80 metres deep) and he would even send his sons to help Aljumaa's son water the animals. Nowadays Aljumaa has to provide everything himself. When he has no milk to barter or sell he has to beg his son-in-law, who

lives in Duwari, for some food in order not to starve.

So, age-old relationships have begun to crumble and the exchange of food has become increasingly monetarized. These changes are part of a more general process of social change, which influences other spheres of life as well. In the foregoing examples inter-ethnic relations were the subject of change. Internally, within Fulbe society, such changes are also beginning to have a great impact, especially in the field of command over labour. The abolition of slavery at the beginning of this century is an old example: no Diimaajo will now work for a Jallo unless he is paid. A modern variant is the breakdown of the control of elders over young men among the Jallube. An important incentive for young men to work for their fathers is the prospect of gaining control over their father's herd at some point in the future. As the herds are depleted fathers no longer control their sons, because they have little to offer. Lots of youths leave the village to look for employment as herdsman or wage-labourers in the Inner Delta of the Niger or in towns.

- Haidu just returned from the Inner Delta of the Niger. He left Serma last year in October and has now come back to cultivate his father's fields. Proudly he shows us his new ghetto-blaster, the only thing he brought back from his stay abroad. To his surprise we are not enthusiastic at all. In the meantime his wife gave birth to his first son, who has not yet been baptized because Haidu's father did not have the means. In fact Haidu's parents, younger brothers and sisters nearly died of starvation.

His father is very angry, but does not express his anger, as is the custom among the Jallube. He explains later on that he is afraid that Haidu will leave again and never return. Two of his older sons dis-

appeared in this way. A few days later Haidu is sent to the market to sell the ghetto-blaster and to buy goats for the money. The goats are slaughtered in order to have a proper baptizing ceremony for the new-born child. It takes months to completely re-socialize Haidu into village life. He was even speaking another dialect of Fulfulde, the language of the Fulbe.

This father was lucky, for his son came back to cultivate his field and did not leave again (as far as we know). Often however, youths do not come back, and leave their parents uncared for.

- Allay's son returned this year after he spent 10 years in Mopti, the capital of the fifth region of Mali. His parents who endured a lot of hardship during the last years and were taken care of by a richer relative, were very pleased, because they did not even know if he was alive or dead. The other elders in the village were mocking, because he did not bring any money with him, only the inevitable ghetto-blaster.

The boy could not get used to village life again. He behaved impolitely, missed his tea and urban amenities. He decided to leave after a couple of weeks. To console his father he invited him to come to Mopti and promised him money if he would come. However, he left without leaving money for the transport. The father was at a loss. How to get to Mopti without identity card and money. Finally, we took him to Douentza and provided him with pocket money, money for the transport and arranged a permit of the police to travel without identity card. The old woman was left in the village.

#### Political change and land tenure

Although droughts are by no means a new experience for the people, the duration and severity of this drought were unsurpassed in this century, with the



probable exception of the drought of 1913-1914. The most important difference is, however, not the nature of the drought, but the changes in the political and institutional spheres. These changes were of course gradual, but their effects became visible only in this period. For the first time in their history, herdsman and farmers in Serma were confronted with an intervening state and world community: a pasture management project was organised to improve the management of pastures; a tree planting programme was started in the village; a villager was educated as a bare-foot doctor and to teach reading and writing in the local language. New legislation was also drafted in the capital of Mali to combat desertification. The clearing of land became subject to taxes and close supervision of government services. The forest service was enforced at the level of the district Douentza and the arrondissements to better control and 'guide' the population towards better natural resource management. All this was done with money given or lent by the international community.

In central Mali the livestock service was upgraded with a loan from an international donor consortium. The development organization, the *Opération de l'Élevage dans la région de Mopti* (ODEM), created with this loan initiated a project for the rational management of pastures 12 kilometres south of Serma.<sup>9</sup> For this pasture management project 12,000 ha of pastures were set aside in 1979, just south of Serma. In the middle of the block a borehole was drilled and a solar pump was installed; this installation was called *Burndu Naange* ('well of the sun'). Exploitation of the area as pasture or for cultivation was forbidden, except for the three months of the hot dry season (April-June), when 3,000 head of cattle were allowed to graze in the area upon payment of a contribution towards the

costs of maintenance. In addition cultivation in the whole Seeno-Manngo was forbidden, to stop cultivators from clearing new land in the area. The problem of encroachment by cultivators was created by the livestock service itself. After the first drought several wells were dug at the northern frontier of the Seeno-Manngo. As no-one could claim exclusive rights on these government wells, cultivators occupied land next to the wells, so that they would be assured of manure from the herds coming to these wells in the dry season.

In the beginning the inhabitants of Serma were happy with the pasture management project. Their cows fattened in the dry season and they were assured of pasture and water in an area that could not be exploited in that period of the year. There were hardly any costs involved; they only had to pay a guard-technician for the solar pump. After 1985, however, their opinion began to change. The herdsman lost their cattle, so outsiders were admitted to the project; this they resented because they felt the pastures were theirs, as they were responsible for the prevention of fire. Moreover the project became a costly affair. The solar pump broke down, because of bad maintenance, and a motor pump was installed by the livestock service. Herdsmen now have to pay 300 Francs CFA per head of cattle per month, which by far exceeds the real costs. Rather they would now like to exploit the area in the rainy season to fatten their animals for the arduous dry season. The chief of Booni, who is the president of the committee of pastoralists, objects however, for he has now reliable pasture for his herds in the dry season, for which he probably does not pay anything.

As will be clear from the preceding example the state has claimed authority to manage pastures after the droughts. In the rainy season this gives rise to another

problem. After 1985 herds from the Inner Delta of the Niger began to enter the region. These cattle herds are not the property of the accompanying herdsmen, but of urban traders and civil servants, who bought them during the drought at extremely low prices. These herds are beginning to create a nuisance. The herdsmen are irresponsible and let the herds enter the fields and damage the crops. In the day time they come to the Riimaybe hamlet to amuse themselves; they have cassette-players, drink tea, buy cigarettes. The money for this is often given to them by their patrons, to prevent them from stealing their cattle. The boys of Serma, herdsmen and farmers alike, prefer to amuse themselves with these herdsmen, instead of working on the fields. The outside herdsmen are also seducing married women in the village, causing a lot of unrest. A long-term consequence of these visits is that young herdsmen from the village, leave the village wishing to gain access to this life of herding, amusement and modern amenities.

It can then be concluded that the Jallube face several problems. Their herds are decimated, which means that they are unable to manure their fields sufficiently for permanent cultivation, and this in turn leads to declining yields. As a result they have to sell more livestock, depleting their herds once more. The Riimaybe have less problems in this respect. They cultivate at the border of the Ferro and the Seeno-Manngo, where heavier and more fertile soils can be found. No-one dares to cultivate on the Ferro any more, because the crops on these fields are too vulnerable to drought. Too much manure is also a problem. The Jallube have given up cultivating their deserted campsites (*wiinde*). If there is sufficient rainfall, the millet grows very well on these fields, but dries up/'burns' within a short pe-

riod when the rains come late. Yields are reduced not only by the lower rainfall figures, but the range of soils to select or which to cultivate has also become narrower and with this the amount of millet that can be produced in a normal year (whatever that may be). A possible solution to this problem would be to clear bush land in the border area between Ferro and Seeno-Manngo and on the Seeno-Manngo, cultivate this for one or two years, manure a little if cattle are present and then move on to a new piece of land. This would imply a return to the ancient bush-fallow cultivation system and would require a much higher input of labour. It is difficult to assess if the inhabitants of Serma consider this an option. The men, especially among the Jallube, have grown accustomed to cultivating small fields and obtaining high yields. Besides, they despise cultivating, which they consider unworthy of nobles. For the Riimaybe, however, this would not be a problem. Their physical condition is in general also better than that of Jallube men (see also Hilderbrand 1985). In any case the feasibility of clearing land is, according to our informants rather academic. As mentioned earlier, the area south of the village is closed except for grazing cattle in the hot dry season. In other areas land clearance is virtually impossible. Illegal clearing is punishable with high fines, and the legal clearing of land is a costly affair. Representatives of the administration, livestock service, agricultural service and forest service have to be invited to the plot, and a *tax de défrichement* (and often also bribes) have to be paid. The applicant has to pay for fuel for the car of the civil servants, lodge them, supply them with food, tea and milk. Apart from the logistic difficulties in getting them all together, most people also lack the means to invite these people. In the not so distant past people would only have to ask

the chief in Booni, and if the land was not located on corridors for livestock or near rainy season watering places, such as ponds, permission was automatically granted.

## Conclusion

It has been shown that the cultivation of cereals is an integral part of the land use strategies of Fulbe pastoralists in dryland Central Mali. There are not only physical interactions between livestock keeping and cereal cultivation in the form of flows of manure and crop residues, but also institutional and social interactions. The institutional interactions take the form of land tenure arrangements which allow people to make efficient use of soil fertility and agricultural production, to appropriate the manure produced by their own livestock, and the careful spacing and timing of herding and cultivation. In times of crisis the cultivation of cereals becomes the most important means of survival, and people remain pastoralists only in an ideological sense. In principle temporary cultivation would allow people to rebuild their herds, and re-enter the pastoral economy after some time.

However, the combined effects of droughts and changes in resource tenure have had a disastrous effect on the productivity of the land use system. The effects on the women's economy have been equally severe (see de Bruijn, this issue). These effects will not disappear in a few years when rainfall has recovered. It is clear that the inhabitants of Serma are losing ground. Farming and herding strategies are not only undermined by drought, but also by political developments that impinge upon resource tenure. Through the combined effect of all these changes indigenous coping strate-

gies are rendered ineffective. In this process the pastoralists are marginalized. In the long run this will also have consequences for the Riimaybe who provide the Jallube with all kinds of services.

## Notes

(1) The research project which yielded data for this article was made possible by a grant of the Netherlands Foundation for the Advancement of Tropical Research (WOTRO, grant W 52-494). The project entitled "Fulani society in a changing world Central Mali" was carried out as a Ph.D. student at the departments of Agrarian Law and Forestry, Wageningen Agricultural University, together with Mirjam de Bruijn, at the time Ph.D. student at the Department of Cultural Anthropology, University of Utrecht. Fieldwork was undertaken from April 1990 to February 1992 in two villages in the cercle Douentza in Mali. The data used for this paper were gathered by both researchers. The project resulted in a joint Ph.D. dissertation entitled "Arid Ways: Cultural Understandings of Insecurity in Fulbe Society, Central Mali" (1995) (Utrecht University and Wageningen Agricultural University). A draft of this article was presented as a paper at the CERES Summer School Seminar "World Systems and Ecosystems: Biological and Cultural Diversity in the Global Community", Utrecht, The Netherlands, August 24-27, 1992. I want to thank the participants of the seminar, especially Anton Ploeg, Mirjam de Bruijn and an anonymous referee for the detailed comments on the contents of this paper.

(2) In 1995 in a year of abundant rains they returned in some places (Douma *et al.* 1995, own observations).

(3) Hummbeebe (sg. Kummbeeje): free

cultivators in the region, who are said to belong to the Dogon.

(4) See van Dijk (1994) for information on the inheritance and transfer of cattle between individuals and groups.

(5) The most literal translation of *wiinde* (pl. *biile*) is 'deserted campsite'. Alternatively Gallais (1984:85) describes the *wiinde* as a 'mound', a place where the animals rest at night. It becomes a *wiinde* only when it has been deserted. The following description in the text is in the present tense, because it may also apply to the present situation.

(6) At the time of field work 50 Francs CFA was 1 FF. After the devaluation in January 1994 100 Francs CFA equals 1 FF.

(7) In addition the millet on the *biile* has to be sown later in the rainy season because of the manure. In the beginning of the rainy season rainfall is less regular and the young plants run a higher risk of withering away than on less heavily manured fields (cf. Marchal 1983, Toulmin 1992).

(8) In a wealth ranking exercise of all family heads in Serma he always figured among the richest 20%, see Grandin (1988) for further information on the methodology used for this exercise.

(9) A more elaborate description of this project can be found in van Dijk and de Bruijn (1995). The special project (ODEM) was terminated in 1991. All operations, including the pasture management project described here, have been taken over by NGO's, which have especially been created for this purpose. These NGO's are also funded by the former donors of the consortium.

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concernant la flexibilité et la mobilité lesquelles sont nécessaires pour qu'un système de production agro-pastoral soit viable. Par surcroît ces restrictions entraînent l'amélioration de la situation.

## Resumen

En este artículo el autor discute cambios recientes en el uso de tierras por parte de los Fulbe, un grupo agro-pastoril en las tierras áridas de Malí. Se muestra que bajo el impacto del colonialismo y de las sequías de los años 70 y 80 ha disminuido la productividad de la agricultura y del pastoreo, llevando al deterioro de las condiciones socio-económicas. La situación se agravó con la migración de hombres jóvenes y cambios en la tenencia de recursos impuestos por el gobierno. Consecuencia de esto son la falta de trabajo y restricciones en la flexibilidad y la movilidad requeridas para un sistema agro-pastoril de aprovechamiento de tierras viable.

## Résumé

Cet article traite des changements récents dans les systèmes de production des agro-pasteurs Peul au Mali Central. Il est démontré que sur l'impacte de la colonisation et des sécheresses des années soixante-dix et quatre-vingt, la productivité des cultures et des troupeaux a diminué, et que les conditions socio-économiques sont en déclin. Cette situation a été aggravée par la migration des jeunes gens et par des changements imposés par le gouvernement dans le domaine foncier. Ces tendances ont abouti à un manque de main d'oeuvre et à des restrictions

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