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LAND TENURE AND DEVELOPMENT IN THE ISLAMIC REPUBLIC OF MAURITANIA: FUUTA TOORO AND THE GORGOL REGION

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Note on translation

Chapter 1 (by Eli Salem Ould El Hadj) and Chapter 3 (Mamadou Baro) were originally written in French and have been translated into English by Dr.Thomas K. Park.

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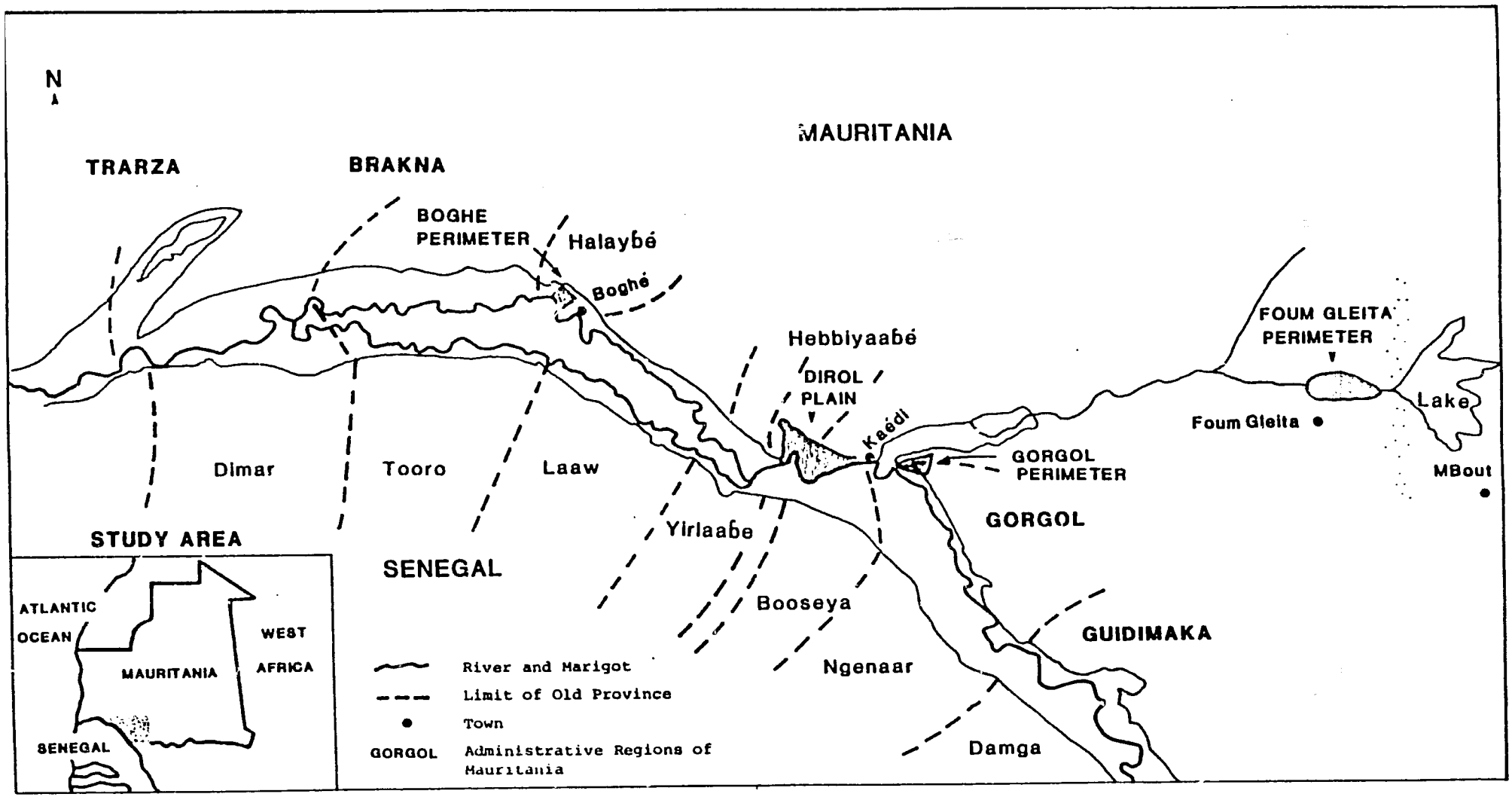


MAP 1. FUUTA TOORO AND THE GORGOL REGION

Introduction
Thomas K. Park

Land tenure in Mauritania continues to evolve in response to the sahelian drought and the demands of modern economic development. It would be fair to say that the joint study of land tenure and economic development forces one to reflect on all the problems associated with economic development. Clearly one must consider at one and the same time equality before the law, the future well-being of the State, criteria of economic efficiency, and the different bases for land tenure rights.

Other than the chapter written by Mamadou Baro, the studies included here have been financed by USAID at the request of the Ministry of Rural Development of the Islamic Republic of Mauritania and were done under the direction of Dr.Thomas K. Park for the Land Tenure Center of the University of Wisconsin-Madison. All the studies try to respond to the Government of Mauritania's need for precise information on land tenure. The reader will find that each chapter confirms the variability of land tenure in Mauritania as well as the cultural richness of Mauritania. Although there is a significant variability, the studies as a collection show that those who wish to direct future development in Mauritania must deal with land tenure problems.

An important part of the land tenure diversity in Mauritania is not even briefly examined here because our chapters study only pulaar and maure land tenure systems on the basis of our research in four sites where economic development projects are in the process of being implemented. Thus, we have not considered either the tenure system in Wolof areas or the traditional tenure system in Soninke areas (although the chapter by M.Baro deals with the Périmètre Pilote du Gorgol where many Soninke have parcels). Our studies deal both with traditional land tenure systems and with the development of irrigated perimeters or other economic development efforts. The four development projects at Boghé, in the Dirol Plain, at Kaédi, and at Foum Gleita, which have served as foci around which we have done our research, are a core sample for which discussion of land tenure in Mauritania. We hope that our research will be useful to those who are concerned with these issues.

Historical background

Land tenure in the Senegal River valley must be understood in its historical, cultural, and ecological contexts. Historically, land tenure in each part of Fuuta Tooro has been somewhat different; there are significant differences in terminology from area to area and socio-political developments have had slightly different results in each area. Different

ethnic groups (Wolof, Pulaar, Soninke, Haratine, and Bidane) have applied Islamic principles to traditional land tenure practices in a substantially different fashion. In this book we deal primarily with the land tenure of the Halpulaar-en and the Maures (Haratine and Bidan). Though many of the details would be different in Wolof or Soninke areas many issues are significant throughout the greater Senegal River valley.

Political Chronology

Perhaps the most appropriate place to begin a historical summary of the basis of current land tenure patterns in the Senegal River Valley is with the Peulh Jawobé chiefs who ruled the Tekrour Empire in the tenth century.[1] The Jawobe exercised control over property in the Senegal River including uncultivated lands on the right bank but their control was based on their superior power and was not based on any type of developed legal control. During this period, there were no doubt various forms of land tenure but they did not correspond to a secure system: new groups were invited in and land expropriated or payments extracted much as the dominant Jawobé chose (Minvielle 1977:7-16). Juridically based tenure systems developed during the Denianke/Fuutaanke period after the conquest of the valley by Koli Tenguela Ba from 1512 to 1515 (Minvielle 1977:8). The political, social, and cultural character of Fuuta Tooro, the successor state to Tekrur really took its form from the 16th to the 19th centuries.

The first change was to give lands to companions of the conquerors rather than simply to immigrants from other lands as had formerly been the case because the Diawobé peulh were not themselves interested in cultivating. Initially, the system that was established focused on extracting a part of the production, had little to do with land per se, and was still justified in terms of the "protection" provided by the nobility. Payments made to a militarily superior class in return for protection have substantially different implications from payments made to a landowner as some form of rent. This was both an important change which developed in the 16th century and a distinction which is sometimes relevant in later years as well in the context of payments to the Emirs or to the French colonial governments.

In the Denianke/Fuutaanke period the gifts of lands were without reciprocal obligation, the rulers or Satigui had difficulty controlling their beneficiaries, and there were similarities with the feudal system including personalization of relations, decentralization and fractionization of power. In contrast with the following period, during the Denianke/Fuutaanke period Islam was the religion of a minority of the population and actively repressed by the rulers though there was little overall control from the center.

The following period beginning with Sulayman Ball's conquest of the Denianke/Fuutaanke dynasty in 1778 and ending when the

French occupied the Senegal River Valley is generally referred to as the Almamy period after the title assumed by the first ruler (Almamy Abdel Kader). During this period virtually all flood plain (waalo) lands were distributed, peace was established (in areas not affected by Maure raids) and Islam established itself as the religion of the Senegal River Valley. The religious character and Islamic law of the Almamy period also diminished the movement of people and helped fix them on the land.

The old system of military "prélèvement" had discouraged clearing of land because cultivated land was an invitation to the dominant military class to come and collect part of the harvest. In the Denianke/Fuutaanke period people fled when warriors came to collect because the amounts seized were arbitrary (in comparison with the amount prescribed under the Almamys. With the Almamys the basic payment was the one tenth prescribed by the shari'a and referred to in the Senegal River Valley as "assakal". The main difference between payment of assakal and payment of zakat was that the former was paid to those higher up the social hierarchy (land owners, lineage heads, the Almamy) while the latter was prescribed as a payment by all muslims to the poor. Yet, while nominally quite different in intention assakal payments were not so distinct since they were intended to be used by those in positions of power to help the needy and benefit the community.

Most of the traditional pulaar tenure in the Senegal River Valley developed during the Almamy period from the base established in the Denianke/Fuutaanke period. There are thus some extended families who claim land based on distributions during the Denianke/Fuutaanke period but most old claims date from the Almamy period and many claims are based on more recent developments.

The Emirates of Trarza and Brakna were the dominant military force on the right bank of the Senegal River during the 19th century.[2] In fact raids by the Beni Hassan initially drove the Halpulaar-en from the right bank of the river shortly after the formation of the Almamyat in 1778. The Emirs benefited from control of the right bank in several ways: they were able to control trade along the river (primarily in gum arabic), they could raid cultivators on either bank, they could establish their Haratine vassals as cultivators on the right bank and receive substantial parts of the latter's harvest, and finally they could allow Halpulaar-en to come back and cultivate designated areas in return for payment of various tithes.

Throughout the 19th century many Haratine cultivated many areas of the right bank of the river under the protection of the Emirs of Trarza and Brakna while during the same period only in a few areas did Halpulaar-en cultivate significant amounts of land on the right bank. Halpulaar-en were most successful in regaining or negotiating use of land in Lao but in most parts of the right bank Halpulaar-en cultivated only sporadically and ever at the mercy of the Maures until 1890 when the French definitively conquered the valley.[3] It was only after 1900 in

most areas that Halpulaar-en began to re-establish cultivation on a continuous basis in most waalo areas of the right bank.[4]

Shaykh 'Umar Taal led a reformist movement (based on the Tijaniya religious brotherhood) in west africa in the years after his hadj to Mecca in 1830. By 1852 he had a strong base in Dingirai and was beginning to recruit extensively in Fuuta Tooro for his movement. He never called for a jihad against the muslim almamyat of Fuuta Tooro but in 1858, after a brief unsuccessful confrontation with the French at the Medine post on the Senegal river, led as many as 25% of the pulaar population out of the valley in a drive eastward to spread the Tijaniya brotherhood to the Niger valley (Masina and Timbuktu). This outflux of people (men, women, and children) left large areas uncultivated. Most of these people only began to come back to the Senegal Valley in 1891 after the French conquered the area and found both that others had in the mean time cleared their lands and that the French were eager to take advantage of their lengthy absence and so (in 1904) declared their tenure rights null and void.[5]

The french government passed a number of laws and decrees which are relevant to understanding 20th century land tenure between 1830 and Independence in 1960. Chronologically, the most important laws, decrees and treaty arrangements are listed below:[6]

-5 November 1830: The French Civil Code is delared applicable to A.O.F.(Afrique Occidentale Française) along with its corollaries having to do with land tenure. It almost goes without saying that this code was completely inappropriate and makes no provisions for muslim or customary tenure.
-1 January 1861: the Damel of Cayor (north west part of Senegal) grants France rights "en toute propriété" to all lands it is not using.
-1894: Governor de Lamothe has the idea that captives (for life) become tenant farmers after 10 or 12 years of work accepted in principle. There are no known cases of this ever being put in practice but it appears to pre-date the development of the rem-peccen contract. See below.
-Circulaire Ponty of 1st February 1901: suppresses the right of pursuit (droit de suite); abolishes the right of a master to recuperate a former captive.
-Decision de 1903 forbids the payment of <u>assakal</u>.
-Decree of 23 October 1904 confirms the appropriation by the French state of "toutes les terres vacantes et sans maitres" without any details on traditional forms of tenure.
-Decree of 12 December 1905: establishes fines and imprisonment (for 2-5 years) for any one concluding "une convention ayant pour but d'aliener la liberté d'une tierce personne".
-Decree of 24 July 1906, article 58: recognizes the existence of traditional forms of tenure and provides for their transformation into legal property in French law by

immatriculation. The problem with this was that the indigenous people saw no reason to immatriculate land since they viewed their traditional rights as superior to what was being offered: the French immatriculation was individually based and negated all collective forms of tenure.
-Decree of 8 October 1925: attempted without modifying traditional tenure to publicize it, legalize it and record it. Due to complications of procedures required this also met with no success.
-Decree of 15 November 1935: made more precise the meaning of "terres vacantes et sans maitre" as lands not immatriculated in accordance with earlier decrees (1925 & 1932) or lands not exploited or occupied for more than 10 years.
-Decree of 20 May 1955 (promulgated 7 September 1956) instituted the "livret foncier" and accepted traditional tenure provided it was exercised on non-immatriculated lands (lands not appropriated according to the civil code) and provided that no concession of lands was allowed if traditional tenure rights on it existed. The key implication here was that this reinforced power of jom jeyngol (those with usufruct rights or "maitre de culture) at the expense of property owners (joom leydi: maitre de terre).
- The Law of 2 August 1960 (just prior to Independence) established the right of the state to appropriate land in the public interest provided just compensation was paid, confirmed traditional tenure (article 3), and provided procedures for registration (immatriculation) of lands under individual customary tenure (article 4). But the state was primarily limited in its actions to the domain of "terres vacantes et sans maitre".[7]

The main land tenure legislation of the Islamic Republic of Mauritania is Ordinance 83.127 of June 5 1983 and its implementation Decree 84.009 of 19 January 1984. This legislation is considered briefly below and in more detail in the first chapter.

General remarks on land tenure

Land tenure can perhaps best be understood as referring to bundles of cross-cutting rights in a piece of property. Thus, tenure may include the rights of nomads or cultivators and many rights can be held simultaneously or consecutively in a single piece of property. Nomads may have grazing rights, cultivators may have various rights in ground crops, tree crops, infrastructure, and the land itself. Some may have the right to alienate land others only a usufruct right. The usufruct right itself may be heritable or temporary in varying degrees. Distinctions in inheritance can be made; in some societies one

person may inherit for life but not inherit the right to pass the land on to an heir; the latter right being reserved for another. Even in Great Britain many wills before the 20th century precluded the right to sell from the normally inheritable rights in order to keep land within a family come what might. In British law the inheritance for life without right to pass on to heirs has been called "life estate", full inheritance including the right to sell and the right to pass on to heirs has been called inheritance in fee simple, and the inheritance of only the right to pass on to direct heirs but not the right to alienate from the family has been called inheritance in "fee tail".[8] Many other variations were possible throughout Europe but it was the needs of the capitalist economy which made "fee simple" forms of inheritance predominate in Europe and North America.

Land Tenure and Irrigation projects

Inheritance and land tenure are closely related both in the past and in the present. One of the pressing issues which development efforts in Mauritania must confronted is how to deal with inheritance and land tenure in the context of both development projects themselves and a developing economy outside the projects. Within a project there are conflicting options centered around whether to encourage individual investment of time and energy by allowing inheritance or whether to prevent fragmentation of holdings by forbidding inheritance. In most cases the apparent conflict between different goals of the project is primarily a manifestation of the need to keep the project economically viable in the narrow sense of making it capable of meeting a loan repayment schedule. Estimates of the ideal size for a holding vary depending on whether the goal is to maximize standard economic goals such as efficiency of labor productivity and productivity per holding or per hectare, or whether the goal is to maximize welfare for the greatest number of the country's citizens. Clearly, in each case the time perspective taken (long or short term) and the numerous assumptions made in any actual calculations are significant as well.

The four sites (Boghé, The Dirol Plain, Kaédi, and Foum Gleita) examined in this book are each different in many ways but have a number of things in common as well. All four are areas where outside financed development has taken place or is beginning to take place (in the case of the Dirol Plain). All have Halpulaar-en in significant tenure roles and all are beginning to feel the impact of the new Mauritanian tenure legislation. As the reader will discover, there are major differences between every case and this is not entirely by chance. In 1984, I selected Boghé, Kaédi, and Foum Gleita as cites for future research by a team of Mauritanians, who were studying in the US as part of a proposed future office for land tenure studies in the Ministry of Rural Development, because I felt the three areas would provide an interesting contrast and

perhaps at least partially represent the variability of mauritanian land tenure. The team itself was only able to complete studies of Foum Gleita and Boghé but we have been fortunate to include two recent studies of the Kaédi region (the Dirol Plain and the Grand Périmètre).

One of the least expected tenure facts to be discovered was that in the Foum Gleita or Mbout region Haratine had been the recognized owners of the majority of the arable land inundated by the Foum Gleita reservoir. The Qadi of Mbout (Qadi for forty years in 1985 and member of the local Chorfa tribe) took great pains to convince the team that indeed since he arrived on the scene Haratine had regularly sold land at market price to each other and to members of the Bidan groups dominant politically in the region. His explanation was that, unlike those areas where Haratine continued to cultivate lands which they had cultivated before being freed, in the Mbout region most Haratine had come to settle (at the urging of nomadic Bidan groups) after becoming free men. In consequence, though many had regularly paid tithes to the Bidan these tithes were protection money not rent and since the Haratine had, on arrival, cleared unused land to cultivate they had, as would any muslim, acquired the right of ownership to the lands the cultivated (due to the principle of indirass and the fact that brush and trees had covered the land prior to their arrival and thus obliterated any trace of prior cultivation).

The Qadi's discussion has implications for Haratine cultivation in other areas along the right bank of the Senegal where the Emirs of Brakna and Trarza installed Haratine to cultivate the lands left vacant by Halpulaar-en who had fled to the left bank due to raids by the Beni Hassan after the formation of the Almamyat. Nevertheless, the most important point to consider in any tenure discussion is the probability that shari'a would favor recent occupation and cultivation over rights derived from the past yet not maintained into the present (see below in discussion of theory and practice).

Ecological constraints

The ecology of recession agriculture has a distinct influence on land tenure in the Senegal River Valley. This is brought out clearly when it becomes apparent that, despite the adherence of all the valley's inhabitants to Islam, there is substantial variation in the degree to which certain standard parts of Islamic shari'a are followed by the inhabitants of the main recession areas of the Senegal River Valley. Two divergences stand out: that women rarely inherit land and that the failure to use agricultural land for 10 or more years is usually not understood to mean that title to the land lapses.

The latter practice is contrary to the Islamic principle of indirass according to which unused/abandoned land becomes "dead"

and reverts to the Muslim community and then may be acquired by whoever clears and develops it. This point is discussed more fully below but here it is important to note that this latter divergence of custom from shari'a is perfectly understandable in the flood recession areas of the Senegal River valley because the flood is variable and there is therefore a rational argument to be made for not insisting that ownership of land lapses when a particular piece of land is not cultivated for such a short (climatically) period as the standard 10 years.

It is quite normal in muslim practice for certain key concepts from the shari'a to be replaced by local custom in different ecozones and Islamic law has always admitted that there was room for both shari'a and custom ('urf). The recent implementation of irrigated perimeters in the valley and the initial attempts to implement new land tenure legislation in the modern era can perhaps best be seen as adding, by means of modern legislation, a third level of law relevant to the land tenure situation.

Another characteristic of pulaar land tenure is a tendency to hold land jointly at the family level (jowré).[9] In practice, jowré can exist at several levels; going from the lineage (liñiol) down to the level of the extended family (galle). Today there is an evolution toward joint (jowré) holdings at the family or bottom end of the scale which has ecological and economic reasons. One of the problems associated with joint ownership is the associated prohibition on individual investment which seems to impede economic development. This will be discussed in more detail in Chapter 11, but it should be said here that the problem has been exaggerated and considered outside of its ecological context.

Summary of the economy and demography of the region

One of the few serious attempts to look at the demography of Fuuta Tooro was done by the Mission Socio-Economique du Fleuve Senegal (MISOES) in their La Démographie du Fouta Tooro (Toucouleurs et Peulhs) in 1959.[10] Nothing comparable has been done since though the censuses in Senegal and Mauritania provide some of the same data. MISOES focused on the area between Dembakane and Dagana: a zone of about 400 km. containing at time about 200,700 individuals on Senegal side and 72,300 on Mauritanian side (Peulh and Toucouleur). These people were distributed in 800 villages. A small amount of space is also devoted to Haratine who cultivate in the valley: MISOES recorded 52,420 Maure residing in area (but did not distinguish Bidan from Haratine) and about 36,000 Wolof and 19,000 Soninke live in the area studied.

Age pyramids showed that about 2/3 of the men between 20 and 40 and over 50% of men between 15 and 54 were absent due to migration. Professionally about 80% of the population were cultivators, fishermen or pastoralists with the remaining

distributed among artisanal, laborers, commerce, religious, administration and no employment. About 68% reported agriculture as their primary activity but MISOES points out that the Thiouballo caste really have two principal activities; fishing and agriculture which vary by season so their figures do not adequately represent the proportion involved in agriculture or fishing.

For the whole riverain zone, recession agriculture is only possible on limited areas while very large areas (almost unlimited) are in principle available for rainfed agriculture. Consequently, the people of the river have always distinguished lands of recession agriculture (waalo or holaldé, faalo, and fondé) from those used for rainfed agriculture (jeeri). The pulaar land tenure system discussed below applies exclusively to the zone of recession agriculture because cultivation of jeeri lands is more or less free.

Mauritanian Land Tenure

The MISOES study of land tenure in Fuuta Tooro (MISOES 1961) is the only comprehensive attempt to study land tenure both qualitatively and comprehensively so far.[11] Its goal was to answer such questions as whether the land tenure system inhibits or encourages development, whether inheritance laws cause fragmentation of land (morcellement des terres), in what direction does the tenure system tend to evolve, and are tithes (redevances) still paid, at what levels and on which lands. At the time of the study fondé lands occupied 16.8%, Hollaldé lands 62.5%, and Falo lands 20.7% of the cultivated area.

MISOES distiguished three basic strata of ownership in terms of time of establishment:[12]

a) dating from before XVI century: derived from territories of the (Jawobe) peulh nobility or from donations given to them by descendants of Lam Terness in Laaw, Yirlaabé-Hebbiyaabé and Booseya regions; these land owners often have the title of Farba.

b) The majority of large properties however date from the time of the Fuutaanke kingdom following the conquest of the valley by Koli Tenguella around 1515. These owners bear titles such as Ardo, Joom, and Kamalinku.

c) Ownership dating from the revolution of Souleymane Ball and the establishment of the Almamyat. The French literature tends to stress the precariousness of titles from this period since the Almamy was an elected official and so distributed lands only as a representative of the community and not a hereditary king. The French seem in practice never to have been able to derive much advantage of this distinction beyond the implication, presumably inspired by

the colonial effort in North Africa, that this was an indication that it was the state which really owned the land and hence the French government could claim to be the new state and new owner of all state lands.

d) Ownership bestowed by the French administration at end of 19th century and after the two world wars when it also distributed some lands. Presumably, these distributions were based on the arguments mentioned in (c) above.

The MISOES study found that the normal tenure situation was one in which the cultivator had usufruct rights and another person or group had ownership rights. The owner or joom leydi usually simply represented a kin group (communauté familiale), a lineage or a segment of a lineage and it was this group which actually owned the land.

The distinction between the rights of these two (joom leydi and jom jambere) have been summarized by Robineau and Woillet in their study of Boghé in terms of rights and limitations on the joom leydi as follows:[13]

The most important prerogatives of the joom leydi are:

a. to receive tithes from those with usufruct rights or who are renting
b. to regulate tenure conflicts
c. to be able to take back lands from someone who does not pay tithes
d. to be able to take back lands cultivated by a mathioudo when latter dies
e. to be able to lease out collective lands left vacant
f. to receive for his own use lands called lamorba (hollaldé) or lamorgo (falo): for the one who reigns as compensation.

The major limitations on these powers are:

a) that the joom leydi is only a representative of collectivity
b) that he must redistribute tithes
c) that many conflicts go to qadi/courts not settled by the joom leydi
d) that the joom leydi can not take lands from someone who pays tithes regularly
e) that he rarely takes lands on death of user
f) that vacant lands are rare
g) that the joom leydi cannot transmit lamorba/lamorgo to his heirs
h) that his title can be revoked since he is elected
and i) that collective lands are inalienable

The MISOES study also distinguished four basic types of tenure:[14]

1) fields in personal property usufruct and ownership in one person
2) fields in common ownership (indivision familiale): jowré at level of lineage or segment of lineage
3) fields held under usufruct right with payment of tithes to owner
4) fields rented (donnés en location) i.e. usufruct is provisionally rented out.

On average type 1 occupied 32%, type 2 occupied 11%, type 3 occupied 21.5%, and type 4 occupied 37% of the total fields.[15] This average however conceals considerable variation in the valley. The following table summarizes the situation better:[16]

Distribution of tenure rights in the valley in percent

Type of tenure	1	2	3	4
SENEGAL SIDE	32.0	12.0	20.0	36.0
Upper	24.0	8.5	27.5	40.0
Lower				
East	36.0	15.0	15.5	33.5
West	51.5	17.0	3.5	28.0
MAURITANIA SIDE	27.5	18.0	24.5	38.5
Upper	24.0	7.5	27.0	41.5
Lower	44.5	18.0	13.5	24.0
UPPER Senegal & Mauri.	24.0	8.0	27.5	40.5
LOWER Senegal & Mauri.	42.0	16.0	10.5	31.5

MISOES noted that that it was at the lower end of their study area (lower west; aval occidental) that most land was in private hands or held in indivision at the family level with few large land holdings and few lands rented.[17] They suggest that this may reflect a possible Wolof influence. The larger land holdings on the Mauritanian side occurred in the area between Boghé and Guidimaka; in this area 70% of the lands were either rented (40.5%) or held under usufruct (31.5%). In addition many people had no access to land.

Hereditary claims to land have a great deal to do with caste membership in Fuuta Tooro. The following table summarizes the data MISOES collected on caste and tenure for all the areas surveyed:[18]

Links between caste and tenure rights

TYPE of tenure	Average		1		2		3		4	
	#	%	#	%	#	%	#	%	#	%
CASTE										
Toorodo	2.25	100	.74	30	.40	16	.55	21.5	.56	22.5
Ceedo	2.00	100	.42	21	.25	12.5	.75	37.5	.58	29
Cuballo	2.92	100	1.58	54.5	.30	10.0	.55	19.0	.49	16.5
Nienbe/Artisan	1.72	100	.60	34.5	.06	3.5	.34	20.0	.72	42.0
Maccudo	2.01	100	.15	7.5	.04	2.0	.25	12.5	1.57	78.0
Total	2.30	100	.70	31.0	.25	11.0	.50	21.0	.85	37.0

A number of points need to be made; first that the Cuballo caste has far and away the greatest number of fields per individual and most of it is in categories (1) or (2). Second, though MISOES counted the number of fields it is unlikely that they surveyed all the land (they give an average size of a hollalde field as 1.4 ha and an average for a falo field of 0.31 ha). It is always possible that if all the figures were available in hectares the situation would look substantially different. Third, the maccudo caste rarely if ever had land in categories (1) or (2).

The fields surveyed were 62.5 % Hollaldé, 20.5% Falo, and 17% fondé (p.20). The following table gives the distribution of lands by tenure type and soil type:[19]

Distribution of land by tenure type and type of soil

	1		2		3		4		TOTAL
	#	%	#	%	#	%	#	%	#
fondé	71		18		23		56		168
Hollaldé	146		72		163		244		625
Falo	87		21		-		70		207
Total	304		111		215		370		1,000

One can see from this table that fondé and Falo lands were generally either owner cultivated or rented while hollalde lands were less skewed. The hollalde lands are about 2/3 of the fields and the vast majority of usufruct is on hollalde land with a bit (1/9th) on fondé land but none on Falo. The MISOES authors note that despite the generally low value of fondé when there are high floods lots of it is cleared and cultivated. They explain this as a relative preference over some of worn out hollalde lands. In fact our own recent interviews[20] suggested that this preference was because animals traditionally grazed on fondé lands and this meant an accumulation of fertilizer and consequent

high yields whenever there were sufficiently high floods.

In their survey of property owners and possessors of usufruct rights (joom leydi and jom jambere) MISOES 1961 focused on three tithes (redevances) paid by those cultivating lands. These (as defined by MISOES) were: a) n'dioldi: right of entry b) assakal: 1/10th part of harvest and c) cootiqu: repurchase (rachat) on death of owner by son: a payment for the right of inheritance (redevance pour le droit de mutation). They noted that a number of other payments were also made but provide statistical data on only these three. The following table sumarizes their findings:[21]

Frequency of payment of various tithes based on average per 1000 owners or possessors of usufruct rights surveyed

TITHE	b	a+b	a+b+c	b+c	total
Fonde	47	-	18	3	68
Hollaldé	344	68	55	306	773
Falo	94	10	42	13	159
Total	485	78	115	322	1,000

When they expanded their view to include all cultivators MISOES focused on a different set of payments as well as a different group of people and produced the following table:[22]

Fields and payments by category of soil

Payment Type	Assakal	Rem-ita-guié	Assak. +Tiogou	Assak. +Doftal	Rempetien	Total
SOIL TYPE						
Fonde	104	5	12	16	--	138
Hollaldé	363	48	71	58	155	683
Falo	94	--	26	33	25	179
Total	561	53	109	107	180	1,000

In general the Maccudo received les advantageous terms than the Toorobé (a probability two times higher of being rem-peccen and only 2/3 the probability of paying only assakal).[23]

MISOES found that in practice almost all land was still inalienable and that in addition to the basic usufruct rights such as jom jambere there were four variants of rent regularly paid:[24]

a) cugu: a contract for a period of years

b) lubel: loan: meaning no payment required: almost non-existent for waalo lands in all cases person pays assakal.

c) rem-peccen: rem = cultiver, peccen = divide equally

d) rem-ita-guié: cultivate and remove thorns (enlève les epines): a contract for 3,4,or 5 years on fields that have been abandoned.

They felt that the primary determinant of which form of rent was used was the situation of the field in relation to the flood. The better the situation the more onerous the rent and vice-versa. That tenure practice conformed to ecology is a point that will be dealt with further in the section on tenure and ecology. At the time of study rents were about 400F a ha for hollalde (av.1.4 ha) and 2.86F for falo (av. of 0.31 ha).

In addition to receiving various payments the mawdu of a lineage usually received a grant of lineage land for his use while mawdu (referred to as lamorba if hollalde or lamorgo if falo land). Collectively held lineage lands are referred to as jowré in pulaar and were often referred to by french writers during the protectorate as being held in "indivision familiale". These lands can not in principle be alienated since the current holders held them in trust for future generations. In addition their lineage nature basically precluded inheritance of rights by women. MISOES noted that in the Yirlaabé/Hebbiyaabé area women's inheritance rights were virtually non-existent.[25]

In their in discussion of the advantages and disadvantages of jowré tenure the MISOES study notes only the disadvantages:[26] the cutting off of women from inheritance of land, the complexity of inheritance, the rigidity of customary rights which perpetuates indivisibility at family level and makes lands inalienable, that the frequency of indivision and the inability to sell land discourages every attempt to improve or develop land and that the inalienability and collective ownership are inconceivable in the context of an irrigated perimeter ("amenagement hydroagricoles (irrigation)"). In their conclusion they suggest that there are two possible solutions: real collective ownership or true individual ownership. They also note that there is recent a tendency for tenure to favor holders of usufruct at the expense of the land owners.

New Legislation

The Ordinance and Decree provide a framework for dealing with land tenure in the context of modern development efforts. This framework has the principle advantage that it provides an unambiguous way to settle conflicts between the state's needs and the tenure rights of lesser entities whether the latter are based on custom, shari'a, or modern legislation. One of the perceived

disadvantages of the legislation from the perspective of many Halpulaar-en with whom I have talked is that the legislation has the potential of being used in the interest of particular factions to obtain land in the Senegal River Valley on which otherwise no claim could be defended. This is a much discussed question and not one which this book proposes to answer. All laws can be used in different ways and whether this legislation is used in the public interest or against it depends on the actions of all Mauritanians and the Mauritanian government. At this point all that can be said is that the studies in this book were completed only a few years after the 1983 and 1984 Ordinance and Decree became law and certainly at the time of the studies there was no convincing evidence that the legislation was being used systematically to allow groups that had no traditional claim to waalo lands to acquire such a claim.

The ordinance sets forth the main principles of the new tenure legislation. The most important are:

a. Article 1: This article states that all Mauritanians have an equal right to be land owners. It therefore sights in particular the Haratine who in some areas of Mauritania are not considered to have full ownership of the real estate they cultivate. It also refers indirectly to the traditional presence of slaves who by definition owned no lands. Slavery has been outlawed in Mauritania but there are nevertheless many former slaves and descendants of slaves who are not generally viewed as land owners and do not view themselves as owners of the lands they cultivate.

b. Article 2: This article declares that the state recognizes private property as the standard form of ownership. The contrast here is between private property and lands held collectively by each lineage or fraction of an ethnic group. The purpose of this article, and related articles in the Decree, is to encourage the individualization of property. Its effect may be to undermine the current economic basis for the political power of the major clans and fractions of clans but new economic bases may develop.

c. Article 3: This article abolishes traditional land tenure in principle. While it states unequivocally that traditional land tenure is abolished, the rest of the law makes it clear that what is really abolished is the right to appeal to traditional land tenure against the state when the state decides to declare particular lands as Domain lands. The law actually leaves traditional land tenure alone except when it comes in conflict with the development effort. It also provides a land registration procedure as the simplest way of establishing individual ownership. Registration is encouraged but does not entirely replace the standard shari'a procedures.

d. Article 9: Explicitly recognizes the continued relevance of the principle of indirass (loss of rights to land because all traces of development have disappeared). The legislation recognizes the right of former owners and their heirs to oppose the loss of land due to the principle of indirass in some cases but not in the case where the land has subsequently been registered by someone else. Thus if an individual acquires rights to land formerly owned by someone else on the basis of the principle of indirass no recourse in law is possible for the former owners once the new owner has officially registered the land. The state, in particular, may acquire unused lands, justifying the acquisition by appeal to indirass, concession the lands out to individuals and the latter need not fear legal pursuit by former owners once the procedure of concession (defined as legally equivalent to registration) is finalized.

e. A series of articles refer to the continued validity of islamic shari'a in areas where it does not conflict with the current law. Article 9 and following articles set up two ways for land to leave the jurisdiction of shari'a: by being officially registered as private land or a legal cooperative and by becoming Domain Land (which may then be given as concessions to individuals or corporate entities).

f. A series of articles set up the basis and procedures for declaring lands Domain lands and the procedures for making concessions of those lands to individuals or corporate entities.

g. The Ordinance also states that the "essential space" of every community will be decided upon. Land outside this limit must be owned by private parties or legal cooperatives. If not, it is open to being declared Domain land. In particular, boreholes and wells which are built in lands not owned by their builder become public utilities and the builder only has a right of priority (Article 22).

h. The decree adds that a declaration of Domain status is to be issued within six months of ascertaining that land is vacant and a period of two years must pass before the land can be concessioned to a private party. In the meantime the original owner, if there was one, may produce proof of ownership and recover the land (Article 73). The delay need only be for two months when the declaration is based on a formal demand to vacate the premises rather than on assumption of vacancy (Article 14 of the Ordinance).

The Decree adds a number of details to each of these points and notes that collective lands can be preserved as collective

lands only by forming a legal cooperative that meets the criteria for cooperatives; all members have equal rights and equal duties. It is important to note in connection with these criteria that they are clearly based on what would be feasible and appropriate for pastoral activity but do not in any way take into consideration the needs of recession agriculture where collective ownership has an important role in the minimization of risk and all members have distinctly different rights and obligations. One definition of a legal cooperative is unlikely to be appropriate both for pastoralism (with its traditional equal access oriented collective ownership of land and private ownership of livestock) and recession agriculture (with traditional collective ownership of land combined with unequal individual use rights in that land).

A number of administrative procedures are set forth which are to be followed when lands are declared Domain lands but the main principle on which the procedures are based is that of indirass. This principle, which implies that land which is not used for a certain period of time reverts from private ownership and becomes available to the Islamic community for private or public acquisition, has many things to recommend it. It is clearly more just than allowing the holder of an ancient title to reject current occupants from land to which the old title holder has recently paid no attention and made no contribution. It favors the current muslim community rather than at all costs defending the rights of past propertied classes as is the case with most traditional European land tenure. Not least, as its current application shows, it proves itself flexible in the face of needed social change. It its most basic form, the principle relies on the absence of signs of cultivation or occupancy to determine the time when former ownership lapses (the term indirass means obliteration). In Maliki doctrine ten years of neglect is considered sufficient even if signs of former use remain. Because the essential determinant of indirass is absence of any trace of cultivation, irrigation works, or constructions, the principle has a great deal of flexibility. The Qadi of Mbout in 1985 claimed that in the Mbout region indirass applied after two years of neglect under present ecological conditions (interviews of March 1985).

Indirass is a key to understanding the new tenure legislation because with present climatic conditions jeeri lands show little or no signs of cultivation after two years. This is true as well for waalo lands, where no construction or irrigation infrastructure has been erected. This means that a major part of cultivable land in Mauritania could legitimately be declared Domain land. As the law is written this must be done in specific cases and not generally. Further, the former owners are given a grace period of two months to produce evidence that the land is theirs and in use before a declaration that specific lands are Domain lands can take effect. In practice such a declaration is not likely to prove as straight-forward as one might think. The shari'a emphasizes the priority of oral testimony over written

documentation so in principle a land owner need only produce honorable testimony that the lands are his and are currently in use. In addition, even should the lands not be in use it might suffice to produce testimony proving that they had been in use until forces beyond the individual's control such as ecological change (force majeur) removed them from production. This means that for most jeeri and waalo lands, when the state decides it is necessary in the context of a development project to declare lands Domain land, it will have to follow the procedures for just compensation provided by the new land tenure law.

Practice and Theory

Minvielle has suggested that the form of sharecropping referred to as rem-peccen dates from the 1901-1905 period when many slaves were freed by their masters. Many slaves went to Dakar or St.Louis while others simply left their local area but within a few years many returned to their masters' lands looking for employment and were given rights to cultivate under a sharecropping arrangement. There appears to be inadequate evidence to substantiate this claim at present, but it appears that the rem-peccen contract was substantially more advantageous to the land owners than the more traditional arrangement for cultivation by slaves. J.Suret-Canale thus writes about not so distant Fouta Jalon: "On aboutit dans le Fouta Djalon, à ce resultat paradoxal de transformer les captifs de case des Foula en libres métayers payant des redevances quatre à cinq fois plus fortes, à la grande joie des maîtres dépossédé".[27] Apparently many former slaves renounced their liberation and returned to captive status in which they had use of a piece of land in return for traditional payments to their master.

The difference between tenure theory and practice can be made easily with the example of Boghé. Boghé is a transition area between small holdings downstream and large holdings upstream: the Boghé plain has a mixture of holdings. Robineau & Woillet[28] feel that the Subalbé and Sebbé in the area have rights which may predate the Satigui period (pre 1515). Most claims to land by the local Halpulaar-en (Halaybe) date however from the two succeeding periods. Yet in reality the non-continuity of tenure claims in the area is well known.

As Robineau & Woillet describe it; when the Beni Hassan descendants of Maghfar Ben Andoi Ben Hassan in the persons of the two brothers Terrange and Boukani formed the two Emirates of Trarsa and Brakna they began raiding the Halaybé area and the Halpulaar-en fled to left bank of river. In the following years they occasionally tried to continue cultivation of right bank but this did not amount to much because of the insecurity of the area. Soon they were asked to pay part of the harvest in return for protection and in some years did do cultivation under these circumstances. In 1886 Ahmedou the Emir of Brakna insisted on regular annual payments and the Halpulaar-en began to come back

to cultivate and even clear new collade. This period, however, soon developed into the complete extinction of traditional Halpulaar-en tenure rights in the area after a man named Demba Amadi of the Bababé refused to pay the traditional pulaar tithes and had his lands confiscated. In revenge he went to a merchant of the Emir, one Ibrahim Ly who persuaded the Emir to revoke all the tenure rights of the Halaybe. In 1898 M.Allego, adminstrator of the Cercle of Podor convoked the Halpulaar-en, who did not show, and so M.Allego declared the Emir the owner of all the lands on the right bank from Podor to Boghé. The result at the time was that the Haleybé had to pay tithes to the Emir's tax collectors; including the aforementioned Ibrahim Ly.

During the French administration matters got even worse. The juridical disappearance of the tenure rights of the Toucouleur is attested in a report by Lt.Cheruy dated October 1909 existing in the archives in Boghé in 1964:[29]

> "A cette date les seuls Toucouleurs qui peuvent invoquer un droit de propriété sur les terrains sont ceux, qui appelés par les Tolba et Harratines Tanack, pour les aider dans leurs cultures, ont reçu comme salaire de leur travail, une donation de terrain à défricher. Par contre ceux qui basent leurs revendications sur des cadeau parfois fort élevés faits à Ahmedou ou à ses collecteurs n'ont aucun droit sur les terrains, ces cadeaux n'étaient offerts que pour obtenir un droit d'usage".

In 1903 due to the dissidence of the Emir of Brakna Ahmed Ould Sidi Ely all these lands were declared "Bayti" or part of the French state and a text ruling on these lands declared:[30]

> 1. - The Boghé Residence, as representative of the Mauritanian government is the only entity qualified to dispose of these lands. (La residence de Boghé, en tant que representant du Gouvernement de la Mauritanie a seule qualité pour disposer de ces terrains.)
> 2. - Ownership rights can not be granted for these lands; only usufruct rights can be granted. (Il ne peut être accordé un droit de propriété sur ces terrains mais seulement un droit d'usage.)
> 3. - This right is only given on the condition that the beneficiary cultivates the land himself. (Cette jouissance n'est accordée au bénéficiaire qu'a condition expresse qu'il cultive lui-même.)
> 4. - The lands can neither be rented, ceded or sold in any form. (Les terrains ne peuvent être ni loués, ni cédés, ni vendus sous quelque forme que ce soit.)
> 5.The lands can be transmitted through in heritance only if the transmitter cleared the lands himself and has left direct male descendants. (Les terrains peuvent être transmissibles par voie d'heritage dans un seul cas particulier celui ou le cujus serait le premier défricheur

du sol et laisserait des héritiers mâles directs.)
6. - A right to cultivate obligates the beneficiary to cultivate the lands without interruption. (L'autorisation de culture implique obligatoirement la mise en valeur des terrains concédés sans interruption.)
7. - Each cultivator must have an authorization of the form attached signed by the Boghé Resident. (Chaque cultivateur devra être muni d'une autorisation de culture du modèle joint, délivré par le résidant de Boghé.)
8. - In the case of a contravention of one of the above rules, the bayti land will be withdrawn from the transgressor and may be given to another cultivator. (En cas de contestation à l'une des prescriptions ci-dessus, le terrain bayti est retiré au contrevenant et peut-être concédé à un autre cultivateur.)

The point to stress in all this is that since this time most of this has been ignored in practice, people have re-enacted the old tenure system to a large degree, and tenure continues to evolve. The right of the French to rule on Halaybé tenure can certainly be questioned and, despite the regular acceptance in the shari'a of the right for muslims to acquire tenure rights by conquest, the reoccupation of lands by the Halaybé can also be seen as justifiably establishing tenure rights in Islamic law even if a French administration did not recognize it as such. The Boghé case is not unique and what one may learn from studying it is precisely how many conflicting claims may exist to given pieces of territory. Without wishing to suggest a too general application of the principle to other areas of the world (the Middle East for example) the principles of just compensation and expiration of tenure rights (indirass) promise a more rational basis for the resolution of tenure conflicts than argument over priority or relative legitimacy of conflicting claims.

Summary of following chapters

It would be difficult to summarize all the original contributions of the following chapters because each chapter is the result of original research in an area where little other research has been done. Yet, the reader will benefit from some guidance on the subject matter of the chapters. Thus, it should be said here that in order to avoid repetition we have left to Tidiane Ngaide (chapters 5-10) to explain the traditional pulaar tenure system, and we have tried not to repeat in the other chapters details which though valid elsewhere have been well summarized in Ngaide's work on Boghé. All the pulaar tenure terminology is thus explained in Ngaide's chapters. Other than

that, each chapter is independent and complements the others. Ely Salem ould el Hadj summarizes in an elegant fashion all the juridical questions linked to land tenure and economic development in Mauritania. Glenn Rogers has contributed an economic analysis of the impact of land tenure on local revenues in Mauritania. Mamadou Baro has contributed a penetrating study full of recommendations for improving irrigated perimeters in Mauritania. Mohamed Lemine ould Mohamed Salem has provided us with a study of the social and medical problems linked to economic development and to changes in land tenure in the irrigated perimeter of Foum Gleita. The chapters by Tidiane Ngaide include a study of the traditional pulaar land tenure system as well as an insightfull study of the irrigated perimeter at Boghé. The last chapter (Thomas Park) attempts to summarize the economic and tenure problems linked to the potential development of a dike and irrigated perimeters in the Dirol plain.

The contributions of Tidiane Ngaide and Mohamed Lemine ould Mohamed Salem are part of their Masters theses in, respectively, agricultural economics and sociology at the University of Wisconsin-Madison. The contribution of Mamadou Baro is part of his Thèse de Maîtrise in anthropology at the University of Dakar. The chapter by Glenn Rogers is based on his doctoral thesis (Ph.D.) in agricultural economics at the University of Wisconsin-Madison.

NOTES

1.Many authors have summarized the history of the Senegal valley but one of the best recent efforts is that of Minvielle (1977:8ff). See also the bibliography of works on land tenure in the Senegal River valley at the end of the book.
2.Minvielle 1977:37 ff.
3.Vidal 1924:31, Gaden 1935:412.
4.MISOES 1959:16.
5.Pelcot 1961:73, Minvielle 1977:37ff.
6.Minvielle 1977:37ff.
7.Crousse 1986:63.
8.Riddal 1974.
9.For a more general study which examines ecology and land fragmentation see Bentley 1987.
10.MISOES 1959.
11.MISOES 1961.
12.MISOES 1961:3-11.
13.Robineau & Woillet 1964:140.
14.MISOES 1961:12-17.
15.MISOES 1961:13.
16.MISOES 1961:15.
17.MISOES 1961:17.

18.MISOES 1961:18.
19.MISOES 1961:24.
20.Park, Ngaide & Rogers 1986.
21.MISOES 1961:34.
22.MISOES 1961:45.
23.MISOES 1961:47.
24.MISOES 1961:41-48.
25.MISOES 1961:39.
26.MISOES 1961:58.
27.J.Suret-Canale 1964:89.
28.Robineaut & Woillet 1964.
29.Robineau & Woillet 1964:136.
30.Robineau & Woillet 1964:136.

1. The Reorganization of land tenure and domain land in Mauritania

Eli Salem ould El-Hadj

As begun by Ordinance 83.127 of 5 June 1983, and completed by Decree 84.009 of 19 January 1984, this reorganization follows the virtual neglect of the law of 2 August 1960 whose objective was to regulate land tenure rights in general. The new legislation responds to two fundamental objectives:

1. Provide the State with legislation which could assist it to rapidly acquire lands necessary for its development effort without being hindered by refusals or speculative demands of particular individuals.

2. Protect legally and with the maximum of precision the individual rights currently existing in the context of a social structure which is not always receptive to efforts toward economic improvement.

Before broaching the tenure and domain reorganization of 1983, I would like first to discuss the traditional land tenure system and secondly to discuss the question of domain land in Mauritanian law prior to the reorganization.

I. The traditional land tenure system

Mauritania remained closed to outside influences during many centuries and this isolation was accompanied at the juridical level by the regulation of the virtual totality of public and private life by Islamic law. Thus, traditional land tenure remained entirely regulated by Islamic law. From its foundation at the beginning of the 20th century, french colonization passed numerous legal measures which pertained to land tenure; but these measures generally have not had any practical significance. The independent government of Mauritania, for its part, contributed a dualistic system inspired both by Islamic law and french law (droit positif français).

A. Land ownership

Customary ownership derives from the Islamic shari'a: in this section we will consider the bases for land ownership and the guarantees linked to these bases.

1. The bases: The position of Islam on land tenure rights is clear: the land is the common good of the community which no one may alienate. Every individual has the right to draw his nourishment from land. The prophet Mohammed, pray for him, said in a hadith reported by Aiché:

Men ihya bi-'ardh laysat li-ahad fa-huwa ahaqqu bi-ha

which is to say that whosoever develops a land which does not belong to someone becomes the owner. The principle of the development of property in order to obtain possession of it is discussed in detail by Cheikh Khalil in his book titled Mawat

al-'ardh. In this book Cheikh Khalil talks of four cases in which land is the private property of an individual or group. The first three cases concern land ownership for the purpose of habitation and the fourth case concerns land owned for the purpose of cultivation.

Lands for the purpose of habitation

1.EL IMARA or construction: In this case the person who constructs a permanent habitation in order to live in it or to store grains in it is the owner of the land. This construction must be done on land which in principle is not already privately owned; and more precisely on land which is not cultivable.
2.HARIM EL IMARA or the immediate surroundings of a building: The immediate surroundings of a building are defined by the shari'a and have as their objective to give to the owner of a building used for residence a reasonable space around that residence. The area of this space depends on the placement of the building and is generally determined according to a number of criteria including local usage and the needs of the family.
3.EL IGHTA' or allotment: In this case there is obligatorily a central power which proceeds to allot land for residential use. An individual is the owner in this system when he has obtained a parcel from the central authority as a result of an act of that authority.
-Cultivable lands: Cheikh Khalil mentions EL IHYA as the original means of appropriation of land.
4.EL IHYA or development of land. El Ihya is based on seven conditions on which doctrine, jurisprudence, and practice agree as well as on three conditions retained only in part by doctrine and jurisprudence. It is important to note that each of these conditions alone suffices to establish El Ihya.

The conditions on which doctrine, jurisprudence, and practice agree are:

1.Irrigation: irrigation is a legal justification for ownership of land, when an individual practices it on a land which has never been developed or where former development has left no trace. This is to say in this last case that if it had been developed the former owner has to have abandoned the land for a sufficient period of time; generally ten years.
2.Drainage: in this case a person must by his own means drain water from lands which were formerly inundated in order to render it cultivable.
3.Clearing: in this case one has to be the first to clear the land; if the land has been partially cleared by someone else that individual's rights will continue until trees have regrown on the land unless he declares before witnesses that he no longer has any intention of exploiting the piece of land in question.
4.Development: in this case the soil must have topographic

characteristics which are inappropriate for cultivation. Appropriation then is justified by removing the obstacles to the land's development.
5.Arboriculture: in this case the individual, who has found land which has never been cultivated or whose exploitation has left behind no traces, must plant trees (fruit or other) and becomes the owner because of this effort of improvement.
6.Agriculture: here as well the land must either not have been in production or its exploitation must not have left any traces. Ownership is established by sowing seed.
7.Enclosure: here the land must be vacant, that is to say that within memory their must have been no act which would confer current ownership on another. In these circumstances ownership can be established merely by enclosing the land.

Conditions adopted by only a part of doctrine and jurisprudence.

1.Wells for pasture: part of accepted doctrine and jurisprudence recognizes the ownership right to the immediately surrounding lands of anyone who digs a well.
2.Provisional enclosure: part of accepted doctrine and jurisprudence recognizes the ownership right of anyone who has provisionally enclosed land. The doctrine intends in this case to give the poorest segments of society the possibility of becoming owners by putting pieces of wood or other limits around a piece of land.
3.Non-intentional clearing: part of accepted doctrine recognizes the ownership right of someone who has cleared land without the intention of appropriating it. This position is particularly dangerous in a country like Mauritania where people everywhere cut trees for erecting their tents or for cooking. The intention of appropriating land in order to cultivate it is completely lacking in this case.

In Mauritania cultivable lands are in general either private (mulk) or tribal. Mulk lands are those which have been appropriated by an individual or by a community according to one of the legal procedures prescribed in islamic law. The owner in this case enjoys all the ownership rights (abusus, usus, fructus). Mulk lands are however under customary restrictions in certain cases; this is the case of mulk lands within tribal territory on which members of the tribe have the right of pre-emption should the owner wish to sell the land.

Tribal lands are those which have historically been seized by muslim conquest from non-muslims and have become the common goods of the conquering community. They in general are not divided between the different members of the tribe, who can in case of need cultivate the lands themselves or give them to someone else to use. In traditional society the tribe installs its slaves on these lands and at harvest each member of the tribe gets his part of the harvest from his slave.

Historically in Mauritania ownership of land has not

corresponded to social status except among the negro-african groups of the south; among the Maures, who are basically pastoralists and merchants, the importance of land was entirely secondary. We can see how this last point manifested itself by looking at the case of land tenure in the MBout region. In this region, in fact, not only the Maures of warrior or maraboutic origin are land owners but in addition the Haratine, freed former slaves, control between 40% and 50% of the cultivable lands.

The reason for this is clear for we know that a freed slave becomes a free man who can enjoy all the rights associated with this freedom and among these rights there is obviously the right to develop a piece of land in order to appropriate it. According to the interviews which we had with the peasants of this region, 90% of the Haratine land owners had inherited their lands over at least two to three generations. The qadi of MBout, M. Mohammed El Hassan Ould Monane, generously demonstrated this to us by presenting numerous documents attesting the ownership right of particular Haratine or adabaye (Haratine villages) to particular river valleys (oued). He also showed us certain land tenure transactions made in his presence between local Maure chiefs and their Haratine.

The inscription of lands in the cadastre of MBout in the name of tribes or of their chief was simply linked to the fact that the chief or the tribe represented in the eyes of the colonial french power the entity to which the different owners were socially attached. The qadi also confirmed for us the declarations which we collected affirming that the river valley lands registered in the names of the tribes were actually mulk lands in the strictest sense of the word. That is to say that each member of the tribe knew in a precise way the limits of his property and no one among them, whatever their rank, could use the property of another without his express permission.

It is important as well to note that there is at the heart of the tribe an institution for arbitrating conflicts over boundaries between individual properties. It is worth remembering that in the MBout region land tenure is based on the cadastre, the judgments of the qadi, and in some cases by documented cession. Those who do not have any of these proofs of ownership can, according to all the statements we have collected, prove their ownership by means of witnesses; this means has great weight in islamic law - an exception must be made for the quasi-totality of the peulh who in fact have never been land owners in the region where they have been transhumants only since 1942.

The guarantees: These days one can distinguish two types of guarantee attached to land tenure in Mauritania:

1.Traditional guarantees: In a muslim society without a central power, such as the Maure society in Mauritania, the system of guarantees for private rights was based on a general consensus recognized by all. This consensus took many forms from simple arbitration to the most complex systems of adjudicating

conflict. In the MBout region, where I did my interviews concerning this system, people made it clear that one had to distinguish between tenure conflicts which arose between members of the same tribe and those which arose between members of different tribes.

Conflicts between members of the same tribe are generally resolved within the tribe, either by a commission charged with arbitrating the dispute or by the tribe's own qadi. The parties to the dispute generally swear to abide by the decision of the qadi. In the case of disputes between members of different tribes, either one of the parties agrees to abide by the arbitration of the tribe in whose territory the land in question occurs or the two tribes decided to abide by a mixed arbitration or the arbitration of a third party.

In the case where the tribes can not agree (very rare), and in the case of a situation threatening the security of the region, the other tribes will arrange to bring the two tribes to an agreement the terms of which will be guaranteed both by the tribes in dispute and by the other tribes bringing about the agreement. For basic principles, islamic and local customary law are urged on the disputants. It is important to note that the customary rules applicable concern the good of the contested property. It is also important to note that, as before any muslim tribunal, witnesses have a deciding force and are more important than written proofs in most cases.

2."Modern" guarantees: These are the guarantees that were introduced by french colonization which from its arrival extended all texts dealing with land tenure in French West to Mauritania, its last acquisition in the region. It also introduced registration of lands in a property register and the cadastre of a region which provided a title to land; the only significant proof in the eyes of the colonial power. It is important to note that the traditional tenure system based on Islam resisted vigorously this colonial practice which in the end remained without any significant impact.

In effect, if one takes the whole MBout region, the only registrations of land are those at the tribal level without any reference to the individuals who are the owners of the land within the tribe. It appears as well from the archives of MBout and the declarations of his eminence qadi Mohammed El Hassan Ould Monane, that the colonial authorities tried to generalize this system by demanding that every individual who contested tenure rights bring a judgment from the qadi on the basis of which a registration would be made and the individual's definitive ownership would be recognized. This initiative had very little impact on the population who were in the habit of following their traditional system. The introduction of registration for property titles had apparently two objectives: the first was financial for in fact the colonial authorities wanted to know who owned what land in order to impose taxes on the owners. The second objective materialized in the form of the decree of 1937 which encouraged small scale european colonization ("petite

colonisation européenne").

This decree of 1937 conferred fiscal, financial and material advantages particularly significant for europeans who wished to settle (in Mauritania). The qadi of MBout informed me that one of the reasons for which all the lands in the region were registered in the name of tribes or of their chiefs whether cultivated or not was that these chiefs, knowing what had happened in Algeria, did not want there to be any lands left vacant on which foreign communities could be established. The government of independent Mauritania, for its part, tried to make titles the sole legal justification for land tenure, but just like the french colonialists the government encountered fierce resistance and support for practices derived from islamic law. It is important as well to note that land titles finally succeeded in establishing themselves in urban zones as the legal justification for land tenure. Cultivable lands found in rural zones are still under the jurisdiction of the traditional tenure system.

B.Traditional tenure:

The traditional land tenure system in Mauritania is extremely complex and can vary from one region to another or from one tribe to another. We will talk in this section about traditional tenure in the MBout region. In the MBout region, which is one of the most important agricultural areas of Mauritania, practically all of the cultivable land is privately owned by individuals or by groups (tribes). Historically, this region did not have a (developed) tenure system due to the abundance of land and the economic and social security offered by the basic social and political unit, the tribe. Colonization and the droughts which have struck the region have led to the development of a tenure system. In effect, with colonization land owners had to pay taxes and in order to do this they rented out part of their lands to immigrants or slaves who had just been freed. The drought for its part severely hurt certain populations who had immigrated to this region in order to find cultivable lands. We can distinguish in the MBout region two tenure systems: one is based on dividing the harvest in "fractions", and the other is symbolic.

A)The system of fractions: This system functions on the basis of fractions of the harvest which the peasant agrees to turn over to the owner at the end of each harvest. This agreement is generally not written and is simply arranged according to local practice. The peasant in general goes to the land owner and proposes the proportion to be paid and how and when it is to be paid. Once the land owner agrees, the two parties go find two witnesses before whom the peasant promises to turn over the agreed upon part of the harvest on the terms agreed to and the proprietor agrees to put the land in question at the disposition of the peasant. In certain cases the owner agrees to provide the

land, seed for planting, and nourishment for the peasant during the three months preceding the harvest. The proportion of the harvest turned over to the owner varies according to a number of factors including the assistance provided by the owner to the peasant and the social relationship which exists between the two parties.

Now we will consider the principal types of fractional system used.

1) 'Usher (a tenth): This was for long the only type known in the Gorgol region. It consists of making a piece of land available to the peasant in exchange for one tenth of the production. This is a very favorable arrangement usually made between a land owner and his former and newly freed slave. In this arrangement the former master gives his former slave the basis for establishing himself. The 'usher contract ends when one or the other party wishes it to end. To end the contract it suffices to make known before witnesses the date on which the peasant must return the land to the owner. In general the owner of the land is not obligated to provide nourishment or inputs to the peasant during the duration of the contract; and if this is required the peasant must return the inputs to the owner.

2) Khums (a fifth): - This is a contract by which the owner provides the peasant not only the land but also inputs and encloses the field. The peasant on his side agrees to turn over to the owner one fifth of the harvest. This arrangement is witnessed and ends when one of the parties cancels it. The end of the contract is also witnessed and the peasant is obligated to return the field and the inputs in reasonable condition. In most cases the peasant must also reinforce certain parts of the enclosure.

3) Thulth (a third): - This is a contract in which the owner puts at the disposition of the peasant a field, nourishment, and inputs. The peasant on his side turns over to the owner a third of the harvest. This arrangement is witnessed and the peasant must return the land and inputs in reasonable condition. It is important also to note here that as far as nourishment is concerned it consists of a quantity of millet or wheat, a bit of sugar and some tea which naturally are not sufficient to satisfy the needs of the peasant and his family during the work season.

4) Nuss (a half): This is a contract by which the owner puts at the disposition of the peasant an enclosed field, inputs, food, and a milk cow. The peasant on his side agrees to turn over to the owner half of the production. The contract is made through agreement of both parties before witnesses and ends when one of them rejects it. The end of the contract is witnessed and the peasant must return the land, inputs, and cow he has received from the owner. In cases where the cow is lost the peasant is not released from obligation until the cow is found or proven to be dead.

It is important to note that the tenure system in the Gorgol region seems to have evolved as pressure on available cultivable land has increased. In effect at first people knew only the

'usher (a tenth) arrangement, and then as more people arrived fleeing their former lands because of the drought the system evolved into one more advantageous from the owners perspective.

B.The symbolic system: This is a system by which the peasant turns over something particularly symbolic to the owner, something by which the peasant recognizes the rights of the person who installed them on the land.

In the Gorgol region we have found three categories of symbol based tenure.

1)Kra' (rent): This is a contract by which the owner puts at the disposition of the peasant a field in exchange for a sum of money which in general does not exceed 2000 UM. The terms of this contract become effective when the two parties solemnly declare it so before witnesses. It ends when one of the parties rejects it.

2)Arya (loan): In this case the owner puts at the disposition of the peasant or of a group of peasants land which they will exploit in return for written recognition of the owners right to the land. In Gorgol we encountered only one example of a contract of this type between Melanine (a maure chief and politician) and the Peulh of the region. The cultivable lands included in the contract are in Var Jerk. I personally think that the reason for this very symbolic contract was the search for a political clientèle.

3)The third form of symbolic contract which we have encountered in the Gorgol region does not have a local name. It involves a tripartite convention made in 1929 between the maure chiefs, the french Commandant of MBout, Lieutenant Lot, and the inhabitants of MBout Liberté who were basically former soldiers for France originating from African lands. In exchange the inhabitants of MBout Liberté had to turn over 4 to 5 mouds (16-20 kilos) of grain per field. It is stipulated in the convention that the fields return to their owners when the owners reclaim them. It must however be noted that to this day none of these lands has been returned.

The greatest drawback of the tenure system as described is that it does not provide any rights to the cultivator after the end of the contract. In effect the peasant is dispossessed of land which he cultivates at the will of the owner and the contracts do not insist on a valid reason which the owner must demonstrate before dispossessing the peasant. It is important to note that in the 40 years of jurisprudence (1944-1985) which we have examined in the archives of the qadi of MBout, there is not a single decision relating to litigation for damages and interest due to the termination of a contract, although according to our interviews certain ruptures have caused real damage to peasants.

II. The Domain Concept in Mauritanian law before 1983

The reference text here is the law of August 2nd 1960 which

conferred a domain status on lands which are either "vacant and without owner" or unexploited or unoccupied for ten or more years. This law accepts customary rights but subordinates their applicability to evidence of permanent and evident possession.

A.Vacant lands without a owner. The first article of the law of August 2 1962 provides that vacant lands without owners belong to the state. The law specifies that for there to be vacancy it is sufficient that there be no construction, cultivation or arboriculture. It is thus a state of affairs based on the absence of any real rights. Can one conclude at this level that the 1960 text rejects customary tenure rights which do not involve any evidence of permanent and evident possession of the soil? The response must be positive. This is perhaps one of the fundamental reasons for which this law remained without impact. In effect, it must be said that the legislation had been very strict on this point and had not taken into consideration the social, economic and political context of Mauritania at that time. There was, to my knowledge, no jurisprudence relative to the application of the 1960 law which could better clarify for us the sense given by the various legal jurisdictions to the term "vacant land without owner" (terre vacante sans maitre). The legislation even went further in specifying that the lands developed after the promulgation of the law remained domain lands.

By this step the legislation put an end to the very important rule in islamic law of El Ihya according to which the individual who develops land which belongs to no one is supposed to become the owner. The law foresees the possibility for citizens to exploit domain lands as arranged by the State in the form of a concession whose forms and basis are also prescribed. The law also specifies that lands on which evidence of permanent and evident possession exist within a zone that the State wishes to use for a development project will be appropriated by the State, which will indemnify people either at prices mutually agreed upon or through normal procedures for expropriation; even if the individuals do not possess property titles.

B.Unexploited lands or lands unoccupied for ten years. The domain status of unexploited lands or lands unoccupied for ten years or more had already been introduced in Mauritania by the decrees of 15 November 1935 and of 12 January 1938, two colonial texts which remained without any practical significance. The introduction by mauritanian legislators of the domain status of unexploited lands or of lands unoccupied for ten or more years is a response in my opinion to the need to respect the principle of indirass in islamic law according to which dead lands (mawat) are the property of the muslim community, today represented by the State. Nevertheless, it must be added that individuals who take possession of dead lands (mawat) may appropriate them by exploiting and developing them in a concrete manner. The 1960 law does not seem to have given individuals this possibility of

exploiting and developing lands without prior permission from the authorities. This is perhaps a way for the administration to avoid the concentration of lands in the hands of those who at the moment of the law's promulgation had the opportunity to exploit and develop lands.

The problem which would come up in my opinion if the government had tried in 1960 to take possession of unexploited lands or lands unoccupied for ten years or more would be to find the means to prove that the land is really unoccupied or unexploited. In a country like Mauritania where there are very strong tribal and social solidarities, it would be particularly difficult for the government to prove its claims in its own courts which are particularly influenced by islamic law, law in which oral testimony is a more important source of proof than written testimony. It is important also to note that at the time the notion of State was very little understood by the citizens, who would very certainly have viewed the appropriation of lands by the state as the confiscation of their wealth by a foreign entity.

The reorganization of tenure and domain land of 1983

Ordinance 83.127 brought some new elements to the resolution of tenure questions compared to the law of 2 August 1960. This text, much more adapted to the Mauritanian context than the preceding law, could be summarily analyzed into five parts: the first will concern the relationships between economic development and domain land, the second will concern existing tenure rights and their security, the third will concern traditional tenure, the fourth will be devoted to litigation likely to arise from the application of the Ordinance and the fifth will treat how a text such as this one could be applied in the context of social and economic development such as that in Foum Gleita.

A. Economic development and domain status

People are generally agreed that three conditions must be fulfilled in order for development efforts not to be delayed by difficulties tied to tenure or domain status.

1) The State must have authority over the soil, that is to say it must have the legal means which permit it to take possession of indispensable lands, without being obstructed by the refusal of individuals or by their speculative efforts. This first condition is the object of the domain legislation.

2) Lands must be legally identified with precision, that is to say that both the State and individuals have an interest in knowing with precision the possessors of tenure rights and the obligations and liens which are tied to real estate. This second condition is the object of the land tenure system.

3) Lands must be identified physically. This is to say that all lands must appear on a cadastral plan which in order not to be an approximate record must be based on triangulation and surveying. This second condition is the object of the cadastre.

The basic principle of Ordinance 83.127 is that land belongs to the Mauritanian nation, that is to say to all Mauritanians to the benefit of whom the first article proclaims that all have the right to be land owners provided only they conform to the law. This conformity to the law means simply that to attain ownership of land is to agree to use the land in question for an economic purpose, more precisely to develop it. In order to concretize this provision the article refers explicitly to dead lands which it defines as lands never having been developed or lands on which no traces have been left. These lands belong to the State. This definition of dead lands approximates the theory and tenure prescriptions of the doctrine of indirass which this article cites in its second clause where it specifies that "the extinction of property rights by indirass is applicable both to the initial owner and his heirs but does not apply to officially registered lands". Reading this clause brings up a number of questions.

1) What would be the solution in cases of irth land, that is to say when a land was cultivated by someone right up to his death and then left uncultivated by his heirs either because they were not informed of its existence or because of any other reason which could have weight before a qadi?

2) How would one deal with the situation of lands which fit the characteristics of land to which the principle of indirass is applicable, but whose non-exploitation is the result of forces beyond the control of the individual (force majeur), for example lands abandoned by their owners because of the drought?

3) What is meant by registration. Is this registration limited only to land registers maintained in certain urban centers or does it extend to all types of documents prepared by the territorial administration which deal with property. In the latter case the inhabitants of the region to the west of the Gorgol have all their rights preserved by the registration of their lands in the cadastre of MBout.

4) What would be the status of non-registered lands which have been the object of a legal decision by the qadi, or which are legally private property according to 'urf (customary law).

Once in possession of lands by means of the legal apparatus with which it is provided, the State can concession large areas on condition that the projected investment (in this land) will have an appreciable social and economic impact, and to the extent that the legitimate interests of the small land holders are preserved, as provided for in Article 20. The two conditions provided for in Article 20 require some elaboration.

1) The appreciable social and economic impact - what does it mean? Perhaps that it is a large investment which could provide work and contribute to the self-sufficiency in food of the country, but the result of an investment of this sort may also be the inequality in distribution of revenues which the government as the promoter of development must avoid.

2 The legitimate interests of the small land owners must be

preserved: how can these interests survive alongside those of the large land owners, who with their greater means have easier access to the market, to credit, and to fiscal advantages. Here also there is the risk of concentrating agricultural lands.

Finally it is important to note that Article 21 provides that "property rights can not impede the development of a project of national interest and in particular can not obstruct the harmonious development of an urban agglomeration." This is a serious restriction on property rights which is to a large extent attenuated by the second clause of the same Article which provides that "no one can be forced to cede their rights except for public utility and then only with just compensation". The extent of this limitation on property rights will depend to a large degree on how the courts will interpret the term "public utility" as well as on the interpretation the judge will put on "just compensation". Will he take into consideration the market value? Or will he choose some other criteria?.

B. Security of existing rights.

Article II of Ordinance 83.127 specifies that former property rights are recognized and guaranteed on condition that they conform to the shari'a and to the economic and social development of the country. The security of these rights which have existed prior to the promulgation of this Ordinance will be subordinated to what the judge understands by this imprecise notion of "economic and social development". Will the judge follow the government each time that it provides an interpretation? Or will the judge provide a careful and precise definition? It is important to note that due to the social and political circumstances specific to Mauritania, the greatest part of the cultivable lands are the property of tribes which internally are proceeding to forms of individualization according to a certain number of criteria based on the shari'a. The Ordinance recognizes in its Article 5 the rights of collectivities to lands registered in their name or in the name of their chief, but Article 6 specifies that it is only the members of the collectivities who have participated in the development or in the perpetuation of legitimate exploitation who are owners, and this article continues by affirming that individualization is the norm within these lands and that when the populations can not agree on the division, the operations of redistribution will be carried out by the administration.

This article is particularly clear on the legislative intent to individualize land tenure. The question now is to know if the tribes will accept this idea, especially if one knows that according to the Ordinance they will have the possibility of continuing to exploit their lands as common property under the form of cooperatives. As for those members of the tribes who by virtue of the current occupation can not now develop their part of the collective territory, will they be simply excluded from property rights in the future?

This is apparently the intention of the legislation.

Article II of the Ordinance modifies the acquisition of lands as domain land of Article 10 of law 60.139 by providing that vacant lands without owners are acquired by the State in conditions subject to conformity with the shari'a. It is important, finally, to discuss the second clause of Article 21 which gives those with land tenure rights a clear guarantee against the risk of expropriation by specifying that they can not be expropriated except for public utility and with just compensation. Registration is a guarantee which is optional by virtue of Article 24 whose second clause however makes registration obligatory on the occasion of certain property transfers tentatively enumerated in the tenure legislation.

C. Traditional tenure.

The principle proposed by Article 3 of the Ordinance is that the traditional system of land tenure is abolished, which could be interpreted as a legal means of destroying feudal property rights. In fact, in light of the articles, if the large land owners can not themselves develop their lands they will lose them. I find that the pure and simple abolition will not be something that everybody will agree upon. The solution to my way of thinking would be to improve the traditional tenure system so that it could play an important role in providing equal incomes, or introduce a code for rural labor which would provide significant economic and social protection for agricultural laborers. The solution available to the large land owners who read the legislation is to invest a great deal in the hundreds of hectares which they may possess; and to make a large investment in agriculture in a country such as Mauritania can have some drawbacks:

1)The physical and economic infrastructure currently in place does not support an adequate market for the produce which could be expected from a substantial investment.

2)A substantial investment could easily lead to mechanization of agriculture and thus to the loss of employment possibilities for all those who earn their living from the traditional tenure system.

Traditional tenure really does not favor renters, but I believe its abolition could be even more disadvantageous to them.

D.Litigation

The first thing to mention is that the Ordinance nowhere mentions the Malikite rite followed by all Mauritanians. The Ordinance contents itself with saying shari'a which is to say shari'a in general (all four orthodox islamic schools). The authors of the Ordinance may perhaps have thought that this juridical subtlety might be used to the government's advantage whenever it was litigated against by an individual. Yet, I believe that if this was their intention there are very few chances that they will derive any benefit because both the judge who decides the litigation and the litigants will be Malikite. The Ordinance gives the State exclusive jurisdiction over any

land which could be domain land; in effect Article 16 provides that "courts must declare themselves incompetent whenever a claim bears on domain land" and this is not all according to Article 15 the State is "obligatorily called as intervening party whenever it is a question of making known to individuals questions of land tenure".

Article 14, for its part, stipulates that "The State proceeds by administrative means to preserve its rights over Domain lands. It is up to whoever contests these rights to obtain legal council and to prove that the lands are not Domain lands." The second clause of this same article stipulates that "The contestation must obligatorily be introduced, under pain of forfeiture, within a delay of one month after the notification of the formal demand to vacate the premises". The third clause of the same article is even more severe; in effect it provides that "The litigant has only two months to produce his proofs; this delay in the resolution of the case can not be extended. The decisions reached about the litigation are not appealable. Contest of the decision does not have the effect of delaying its execution.

It has to be admitted that these provisions are really severe. I believe that it should be pointed out here first of all that these procedural delays are extremely short for normal litigation considering the existing means of communication and the distances between the people involved. If, for example, the State based on Article 14 decides to make a particular disputed land domain land, this decision of the State could not be examined by the supreme court which is the final judicial administrative authority in the country. This will certainly require a lot of time and money for the poor citizen, who will consequently feel purely and simply exploited. The reasoning also holds each time a piece of land might qualify as domain land since Article 16 abolishes the competence of the courts. In these cases the citizen may wait for a long time for the administration to make a decision in order to decide whether or not to attack it (legally). What one can say on the subject of litigation is that the prerogatives of the public power have been too widely developed to the detriment of the potential litigants.

E. Practical Application.

The objective of this section is to see to what extent this Ordinance may still have a practical influence on economic development projects of national interest such as Foum Gleita. Initially, we will look at the history of land tenure in this region and then at the consequences of the development of the project on land tenure.

a) History. Cultivable lands in the region of the river Gorgol have been mulk (private property) for at least three generations. This is what we can conclude from our interviews with more than 120 people among whom there were notables, intellectuals (oulema) and peasants; this is what we can also conclude from the cadastre kept at the MBout Prefecture and done

by the colonial authorities at the beginning of the 20th century. This is also what is suggested by the jurisprudence of the official qadi of MBout, the local mouslih (arbitrators), and the different administrative decisions signed by the representatives of the colonial powers and now kept in the archives of MBout.

Judgment no.4 of 21 May 1953 which delimits the areas owned by the different Chorfa tribes is an example of a decision which concerns the greater part of the lands which today are in the Gorgol Noir project. This decision made more than thirty years ago by the current qadi of MBout is still considered by the populations concerned as the core judicial decision. It is important to note that by Chorfa fraction we mean not only the Maure (Bidan) Chorfa but also the Haratine who also are without question land owners in the region.

On this point I believe it would be appropriate to cite several examples proving that Haratine are really land owners. The first would be the testimony of the qadi who provided us with some contracts made between Haratine and notables of the region among whom were Melanine the chief of the Chorfa. The second example is the decision no.141 of 20 July 1944 which resolves a dispute over tenure between two Haratine. The judge based his decision on the islamic principle according to which the first person to clear and develop a field is the owner, and on this basis recognized Mohammed Lemine ould Blal as the owner of the disputed property. The third example which we will cite comes from the cadastre of MBout where many lands are registered in the names of Adabaye. It is important to remember that only Haratine live in Adabaye.

Finally, we will say a few words on the collectivities who have arrived recently from Senegal (1940-44) and who cultivate today lands in the region and in particular in the zone of the project. According to the archives of MBout, where one finds the correspondence exchanged between the french Commandants of MBout and Matam, the Peulh settled in the region from 1940 on, not as cultivators but as pastoralists. At this time all the cultivable lands in the river valleys of the region were already private property. Nevertheless, the Peulh were able to find lands to cultivate; in particular after the drought, even if they had to borrow them. This is the case as it appears in Convention no.40 of 17 August 1967 signed between Abd Dayem ould Ndah and Modor Samba Selly, a convention made before the qadi and registered by him and whose import is to give the use of the land to Modor Samba who expressly recognizes the ownership of Abd Dayem.

It is worth noting that far from the region of the project there are lands registered in the cadastre of MBout in the name of a Peulh group (the Fashbé Bocar Bouyal). In the course of our interviews in the region we asked a number of questions to more than 150 people, which would allow us to know clearly who was legally a land owner and who was not. In addition at the level of villages and camps we asked for how long the collectivity had inhabited the region, who had a field and how it was exploited, who owned henna or palm trees, who helped build wells, and

finally, what legal arguments would people use should they have to make a legal defense in a court of law.

In the context of responses to this last question it is important to say that the role of the tribe is clearly important. Individuals often reply that the river valley as a whole is registered in the name of the tribe whose chief or alem (notable) has the documents and that as far as they individually might be concerned they could bring in all members of the tribe and of the neighboring tribes in the region to testify before the qadi that they have cultivated the land between designated limits.

b) Consequences of the development of the project on land tenure. The development of the Gorgol Noir project has been, it must be said, totally confused on the juridical level. In fact, everything was begun by the MBout Convention of the 17 and 18 February 1981, to which many references are made but which one never sees. This convention was followed by a public hearing (procès verbal de réunion) on the 6th of April 1982 which said that it would "regulate definitively the discussions coming out of various interpretations of the Convention". What is certain is that all these "modus vivendus" had as their objective the establishment of a irrigation project whose primary beneficiaries will be, let us say, the collectivities concerned; that is to say the land owners. The last public hearing made provisions for employment linked to construction of the dam. After all the arrangements SONADER (Société Nationale de Développement Rural) began to administer the zone. This société presented itself not as administrator of private (mulk) lands but as owner of the lands. SONADER introduced a written agreement (cahier de charges) according to which one had to be from 18 to 55 years old in order to receive a parcel, thus excluding from their property rights not only those who are owners but older than 55, but also those who receive parcels and then reach 55 years of age. It is hardly worth mentioning that the text does not provide for compensation or retirement pension.

In the second clause of the cahier it puts as a second condition that people "move to the site of the pilot project within the delay fixed for that move by the project", which eliminates the rights of those who are absent or for other reasons have not wanted to move within the time limits; such as the inhabitants of N'Doula. The third clause of the cahier imposes a third condition which is that people must "have participated in the construction and development work as arranged for the population and defined by the project. Clause 4 of the first article imposes a fourth condition which is that people must be from the villages defined by the project as priority villages. The fifth clause excludes salaried people and bureaucrats from benefiting. SONADER in no case implicitly or explicitly imposed the condition of being a land owner in order to benefit by receiving a parcel.

The spirit which motivated this institution is to develop empty lands and to distribute parcels to those who are natives of the département and who have contributed to the development work.

The consequence of this has been to distribute the greater part of the lands to people who never were land owners, and to cut out those who have proofs that they are land owners and who could thus cause problems for the project. Certainly some of the old owners have received parcels, but first of all these parcels do not economically compensate them for what they have lost and secondly, they have been given to them not because they were land owners but simply because they were natives to the region and participated in the development of the project.

The Convention establishing the project was signed between SONADER, the government and the representatives of the tribes (essentially the chiefs of whom three today benefit with a monthly salary of 3500 UM). This convention is itself contestable on legal grounds. In fact none of the dignitaries (chiefs of the tribe or notables) can produce today a document signed by each land owner giving him right of legal representation, and even if the notables had been designated by the community to represent them, the communities would have the right to revoke that power.

It is important as well to say that at the level of the tribe there are orphans and those incapacitated whose representation by virtue of Article 102 of the civil, administrative and commercial code of Mauritania must be represented by the Public Prosecutor (parquet public). The Public Prosecutor was not, however, represented in the convention. It is worth noting as well that SONADER did not give priority to the former owners in the distribution of the parcels as agreed upon. Finally, it must be said that today things are favorable for the owners due to the introduction of Ordinance 83.127 which explicitly recognizes private property and the right to just compensation of those who for reasons of public interest have their land expropriated. The Ordinance also recognizes explicitly the type of rights existing in the case of the Foum Gleita. That is to say that of collectivities to the land which they exploit. The lands of Foum Gleita, having never been declared domain land, thus remain private property.

In consequence one can rightly ask to know what may come of this project which has cost the government so much money. Will the government compensate the owners at market price and leave the lands as they are currently? Will it try to reach a compromise with the owners such that giving them half of the area before distributing the rest to the peasants who had no land. These two questions and many others will certainly by asked in the future and the solution will be progressively more difficult. It is important finally to note that in other existing development schemes (Boghé and Kaédi) the tenure problem was settled at the outset. The land owners received land in the project in proportion to the land they had formerly cultivated.

In Foum it is quite the opposite. The only general implication that one can draw is that in Boghé and Kaédi the owners are all black (Peulh and Soninké) who cultivate for themselves and usually have no other activity than agriculture.

At Foum the owners are either Maure (Bidan) or Haratine, who often have an activity such as pastoralist or merchant in addition to their ownership of arable land. SONADER, a parastatal directed by Maures, may have thought it appropriate to include in the project the Peulh who are not land owners in order to avoid charges of racism, but if this was the case it reflects a purely negative and thus indefensible attitude on the part of the directors of SONADER.

The implementation of the Gorgol Noir project has neither influenced the land tenure system, nor has it affected the traditional distribution of power in the region. Traditional power in the Gorgol region was based on control of land, water and education. In order to make this point more clearly I will consider the traditional power base in the three most important communities of the region.

1) The Chorfa: - These were the first to establish themselves in what is today the Gorgol Noir project zone. They were the first to develop lands and in consequence appropriate lands. There are some four or five fractions which make up the tribe. Each fraction has at its head a family which is descended from the cherif Hacheur, the rest are either Haratine or other members of the tribe who have chosen to reside together. Decision no.4 of 21 May 1953 divides the lands of the Gorgol between the different fractions of the Chorfa. The Chorfa have a general chief who is from the Ahel Hacheur fraction and each of the fractions has its own chief. The current chief of the Chorfa, Melanine, has a real influence over the other inhabitants of the region (Peulh and Maure), because he is not only a major land owner but also an intellectual and a politician who plays a very important role in the public life of the region. The power of the Chorfa is at base a spiritual one but also an economic one; given that they own many river valleys (oued) and in particular control the areas where water is most abundant. Today the control of water and thus of land has slipped from their control due to the dam and SONADER, nevertheless their influence remains great first because of the spiritual basis of their power and secondly because they still have the possibility of establishing their right as owners to a great part of what is now the Gorgol Noir project.

2) The Tajakanet: - Among the Tajekanet the greatest power in the region belongs to the Rmadhines, who are not, however, large land owners in the zone, but their chief, Aminon, is himself a large land owner. He is in fact the owner of the whole Bouthiab river valley (oued) which he inherited from his grandfather El Abghary, the first to develop this river valley. The power of this tribe is based not only on the ownership of some fields in the region, but also to the fact that they are the tribe of religious learning in the region to which 90-95% of the oulemas and qadis of the region belong. The chief of the Rmadhine, Aminon, and the members of his tribe are land owners in other river valleys outside the Gorgol and outside the prefecture of Barkeol, in areas which are not politically in the electora

circumscription of MBout. Aminon was a deputy in the national assembly under the civilian government and continues to play a major political role in the public life of the region and in particular by means of intermediaries.

3) The Chratit: - These are the warriors of the region, and the greatest part of their lands are not in the zone of the project. Their power is based not only on land ownership but also on the size of their population and their solidarity. Their chief, Ousmane, is a politician of the first order in the region.

Conclusion

It must be said that traditional power has been shaken by the establishment of the project which took away the greater part of its economic control; particularly its control over land. But it must also be noted that the chiefs of the three most important tribes always have some say in so far as they are designated officials in SONADER (chargés de mission à la SONADER) to whom they represent the populations of the region. In 1985, when we were in Foum, the influence of the traditional families was further strengthened in the elections of representatives to the different cells of the "structure d'education de masse" when Ousmane, chief of the Chratit, and Melanine, chief of the Chorfa were elected respectively as vice-president and president of the Council of the Department of MBout. It is important to note that the traditional figures had lost the last two elections preceding the election of 1985. By way of emphasizing the influence of the traditional authority structures it may also be worth recalling that there is not a single case of a litigation for damage and interest as the result of the ending of a tenure contract even though according to our interviews certain tenure conflicts have caused serious damage to peasants.

2. Impact of Land Tenure Patterns on Local Income Generation in Rural Mauritania

by Glenn Rogers

A distinguishing feature of land as an economic input in the rural economy is its lack of mobility. One implication of this mobility is that economic growth based on land resources must be geographically targeted if it is to benefit poor immobile population groups and improve inter-regional income distribution. Poverty reduction among low-income households often requires that regional, in contrast to purely national, opportunities for productive employment in agriculture, manufacturing, and service activities increase faster than the labor force. Efforts to increase location specific employment and income generation have led to an increased focus on regional economic development and research. This current research on local regional economies within the rural areas of Mauritania is a reflection of this increased focus.

The focus on household consumption patterns in this research, in contrast to purely a farm income focus, is motivated by the empirical fact that new agricultural projects in Mauritania generate between 40 and 95 UM (Mauritanian Ouguiya) of secondary local income for every UM of farm income generated (Rogers, 1986). In Mauritania, as in the Philippines (Gibb, 1974) and Malaysia (Bell, Hazell, and Slade, 1982), the major portion of this secondary income is generated through household consumption linkages rather than farm input provision or output processing businesses. This means that empirically Mauritania farm household personal expenditures are a more important generator of local income than expenditures for purchased farm inputs.

For the rural population of Mauritania in 1980, agriculture accounted for only 22% of total household cash income[1] while local non-farm sources generated 44% of total household cash income.[2] Mauritania's rural economy is highly monetized, with less than 3% of total household consumption being accounted for in non-monetary transactions.[3] In the most farm dependent counties of the United States of America only 28% of total personal income is earned from farm sources.[4] In Botswana only 55% of rural income is from crops and animal husbandry.[5] Many of the poorer farm households in rural Mauritania, as in other countries, obtain the major share of their household income from non-farm sources. Moreover, farm households in Mauritania prefer to obtain a significant share of their household income from non-farm sources as a strategy to cope with wide fluctuations in agricultural income. For these reasons, this study focuses on the role of land tenure patterns in relation to household consumption patterns and rural non-farm income

generation.

"USAID supports policies and programs which lead to a general, country-wide reliance on market forces in the valuation and distribution of land ownership and land use rights...both functioning land markets and provision of more secure and stable land tenure must join to stimulate agricultural production that extends equal opportunity to own or use land to the majority of the rural population in LDCs". Mauritania is a land surplus country in the sense that there is a surplus of potentially arable land with high quality soils. The limiting resource is water not land. In Mauritania, land tenure practices and policy cannot be separated from the allocation of water tenure rights.

In the case of Mauritania, it is not clear that allowing land use to be controlled by those individuals that have the most market power, the wealthier groups, would increase production. In the absence of a "functioning land market", labor markets can be used to adjust the labor/land ratios between farms. Depending on the point in the life cycle of individual farmers, farms may be in labor short or labor surplus conditions. The availability of cash income earning opportunities in the local non-farm sector may be a more important determinant of local farm production than a functioning land market. Farm households may need seasonal non-farm income to allow them to hire labor if they are short and to augment household income if they are in a labor surplus situation. Lack of management flexibility due to cash constraints may limit input use and timeliness of operations. Individual household labor situations are expected to vary over the life cycle of the family, depending on the ages of the parents and children, as well as over the seasons within a single year.

Rather than focusing on the use of land for credit security or the need for a functioning land market, this paper emphasizes the ability of the local private sector to provide inputs, services, and income earning opportunities for farmers. Farmers produce higher yields not only in response to higher cash rewards for their surplus production, but also in response to the opportunities to diversity their household consumption. If the local consumer sector is poorly developed then these opportunities to diversify consumption are limited. Farmer response to opportunities for an increased marketable surplus will also be limited. In this perspective, a healthy local non-farm sector allows some farmers to continue farming by augmenting their household income from non-farm sources and also provides the motivation for higher production driven by the desire for a more varied consumption pattern.

With this background, the view of land tenure issues focused on in this paper fall into two categories: spatial distribution of population and importance of size of production unit. Land tenure is seen as an important determinant of both population distribution and farm structure. In turn, both population distribution and farm structure are important determinants of local income generation in rural areas of Mauritania. Through

these linkages, land tenure policy plays a key role in determining rural income levels. These two influences of land tenure on regional development are the central focus of this paper and will be discussed below.

Data Sources for Empirical Estimation of Income/Price Effects

There are three sources of data used for the following empirical estimation of land tenure impacts on local income generation. The first is 1977 Mauritanian Census data, the second is SONADER irrigation production data, and the third is a primary survey of 70 households and 15 rural businesses conducted in 1985.

The objective of the primary data collection was to estimate consumer expenditure preferences and the resulting expenditure-induced income generation as a function of household and regional characteristics. Household and regional characteristics are the linkage between land tenure arrangements and local income generation.

As the location specific policy research is focused on secondary effects of new irrigation schemes and land tenure change, the two survey locations chosen both represent regions with new irrigation projects. The irrigation projects in rural Mauritania chosen, are the Boghé Grand Perimeter, in the Department of Boghé (1977 population of 29,962) in the Brakna Region and the Foum Gleita Dam Project in the Department of Mbout (1977 population 48,460) in the Gorgol Region.[6] Each Department has roughly 600 nomads included in the total population. Villages in the Boghé Department are slightly larger on average (352 versus 209 residents) compared to the Mbout Department. For the Department of Boghé, 1977 non-agricultural sedentary employment accounted for 27% of total employment while fro the Department of Mbout this figure was only 14%.

Within each of the two departments three general types of survey sites were selected based on community population and distance form the major irrigation project. The first type of "survey site" included major retail trade centers, which are defined as a population center with at least 14 merchants. This included the towns of Mbout and Foum Gleita in the Department of Mbout and the towns of Sarandougou and Boghé in the Department of Boghé. The second type of "survey site" consisted of smaller villages within possible commuting range, roughly 7 kilometers, of one of the major retail trade centers. The third type of "survey site" included small villages "isolated" from the major retail trade centers. These sites were 20-25 kilometers from a major center and had at most three resident merchants. Within these three types of sites, villages of different ethnic background were selected.

The household sampling objective was to efficiently capture variation across the range of locations and welfare levels. A

two stage stratified sampling process was selected. At the first stage, locations/ethnic groups were selected. This was done by listing all villages that were recipients of newly irrigated land for each project. In addition, several distant villages were chosen based on their distance form the major market centers. At the second stage, households within villages were randomly selected within relative welfare groups (poor versus rich). These households were selected with the knowledge of local leaders and lists of farmers involved in the projects. For example, in the village of Touldé near Boghé there are six "quartiers" or administrative units of 100 households each. Each quartier head was asked for the name of two of the richest and two of the poorest families in their quartier. These twenty-four households were then listed with the six largest landowners in the village and a sample of nine was selected from this list.

The Bidan and Haratine are the two subgroups within the Maure group while the peulh and Toucouleur are the two subgroups within the Pulaar group. As the Haratine and Toucouleur are the cultivating subgroups within the larger ethnic groups, they were sampled at a higher rate than the Bidane and peulh who are traditionally pastoralists. The sample was also weighted towards richer households who are presumed to have a greater variation in consumption than poorer households.

In summary, the sample is a random sample of poorer households in certain types of locations. Likewise, the sample is a random sample of richer households in the same types of locations. However, the sample is not a random sample of households in Mauritania or even within the survey sites.

Income Multiplier Model Used for Empirical Estimation

Until recently, most regional economic development analyses have focused on the magnitude of the initial investments and the inter-industrial linkages leading to secondary effects. Little attention has been paid to the differences in households or the regional characteristics which influence the magnitude of local consumption linkages. If creation of regional secondary income is an important development objective, the variation of household and regional characteristics should be taken into account when planning investments. The model developed below is a framework for evaluating policy to change the magnitude of secondary effects, given a fixed incremental change in a region's tradable or exportable income.

Secondary economic effects of a project are generally defined in three categories:

1) backward industrial linkages (new economic activity due to increased demand for inputs),
2) forward linkages (new processing activity or additional increments of value added to the product before it is sold outside the region or for final consumption, and
3) induced effects arising from increased household

consumption expenditure derived from increased household income.

Although researchers generally agree that consumption effects may be important quantitatively, the general view is that consumption effects are the same for any given initial income stream, regardless of the regional economy's specific characteristics of of which households receive the initial benefits.

This research presents a regional model which can be used to measure the impact of variation in specific household and regional characteristics on the magnitude of local secondary income. The "output-income multiplier" defined in this paper incorporates non-linear household expenditure patterns and regional characteristics as determining factors. This multiplier measures the ratio between change in output value (such as from agricultural crops) and total (primary plus secondary) new local income generation.[7] This framework can be used to estimate the secondary regional employment or income generated by increasing a specific output.

Variation of regional household consumption multipliers depends on two types of parameters: the characteristics of the households receiving the initial income (such as consumption propensities and multiplicity of income sources); and the spatial, technological, and market characteristics of the regional economy (such as size of urban center, labor mobility, and what goods are produced locally).

Modeling Assumptions

A model regional economy can be defined which produces only two types of products. tradables and nontradables.[8] Tradables are products, such as cereal grains or manufactured goods, which are consumed locally but may be produced locally or non-locally. Prices of all tradables produced locally are determined by markets outside the region. Locally produced tradable products are used in local household consumption, in local production of nontradables, or exported out of the region. Nontradables, such as household services, transportation, and services such as retailing or repair work,[9] are consumed locally only if they are produced locally and production is only for the local market. Prices and quantities of nontradables are determined in the local market.

The classification of sectors based on the degree of product mobility is the distinguishing feature of the tradable / nontradable dichotomy, in contrast to the exported / nonexported dichotomy of export based models. Tradables can be traded across regional boundaries, while non-tradables can be consumed only in the region in which they are produced. When output of tradables expands (as in an exporting industry or in import reduction), this may make demands on the local output of other tradable and nontradable sectors through economic linkages. While demand for tradables can be met through imports, the increased demand for non-tradables must be met through increased regional production.

Income that is not spent on nontradables is equivalent to a leakage out of the local economy for two reasons. If income is spent on imports, the income flows directly out of the region. However, if the income is spent on locally produced tradables it can also be considered equivalent to a leakage out of the region. If it is assumed that the production level and price of tradables is determined outside the region, an increase in local demand for tradables will not lead to an increase in local output for tradables. Based on this assumption, if local consumption of tradables increases, this increase will come at the expense of net exports. This loss of export income to the region causes a loss of regional income, just as if the increased consumption had come from increased imports.

Three assumptions underlie the model developed at length in my thesis:

1) local tradable output production is not determined by local markets,
2) local nontradable output is determined in local markets, and
3) household income earned in the production of tradables is spent in the same manner as income earned from other sources.

Local Labor Market Conditions, Price Effects, and Induced Migration

Price of nontradables, migration, and changes in income levels in the local economy are closely linked. The model used is flexible enough to allow any of these three variables to adjust in response to changes in regional income derived from production of tradables. The assumptions needed to allow each of these variables to adjust independently are explained below.

Initial labor market conditions and types of adjustment will partially determine the value of the output-income multiplier. There are three possible labor market conditions for a local economy. Any of the three following specifications could be used to estimate the multiplier in regions with different local labor market characteristics or in one region over a period of time. As a region develops, the multiplier will change as conditions in the local economy change. The following empirical examples represent multiplier values for a local region with a population of 2000 that is being developed by creation over a period of time of numerous medium size irrigated perimeters. The tradable output that is increased is foodgrains with average annual yields assumed.

Stage One

Local unemployment allows output to expand without leading to price increases or rising marginal cost of labor. Prices of

nontradables are constant and no return migration is induced. The expected output-income multiplier is between 1.0 and 1.3 depending most importantly on the initial per capita consumption level which ranges between 1500 and 3000 UM/Month/Adult. Policy focus should be on allocating income and jobs to local residents rather than to returning migrants.

Stage Two

Local unemployment has been sufficiently reduced so that return migration is induced due to a rising expected local wage. The expected wage is the actual wage times the probability of being employed. The actual wage stays constant so prices of nontradables are constant but the probability of being employed has risen due to falling unemployment levels. The result is that the expected wage has risen enough to induce return migration. During this stage because the per capita income level is not rising the multiplier is between 0.7 and 1.0. Policy focus should be on equitably reincorporating the return migrants into the farm and nonfarm sectors. If remittances per capita are influenced by return migration then this will change total income generation. The values estimated here assume return migration does not change the total level of remittances.

Stage Three

At this stage all the potential return migrants who will return have returned. The regional population stops growing in the short run due to migration and per capita local incomes start to rise. Due to rising income levels and a relatively low unemployment rate the cost of labor (and subsequently the prices of nontradables) starts to rise. The multiplier at this stage increases to between 1.2 and 1.8 depending on regional and household characteristics. The policy issues at this stage are to influence the price rises so that the poor groups are not disadvantaged in real terms. The influence of price rises on transfers of real income between consumers/producers and income groups should be evaluated. The appropriate policy response is to take measures to ensure input availability to the nontradable sectors and encourage local reinvestment in the local nonfarm sector with labor saving technologies: transportation, water lifting, grain grinding, etc.

Land tenure, population distribution, and local income generation

The water resources of Mauritania are distributed along the southern border of the country, the Senegal River. Within this natural distribution of resources which leads to population concentration in the south, the government has choices that influence settlement patterns. If large irrigation projects are

chosen, such as the Boghé Scheme or the Foum Gleita Dam Project, this encourages the growth of relatively large population centers. If only small village based irrigation schemes are developed, the growth of large population centers would not be encouraged to the same degree.

For example, the Foum Gleita Project in the Gorgol Region currently supports a local population of between 7,500 and 10,000. Eventually this could be larger. A town of this size in Mauritania supports about 58 retail stores and about 30 to 40 other local businesses. In the Gorgol Region, towns with a population between 500 and 1000 have on average 5 merchants. For towns with a population between 1,000 and 2,000 the number of merchants rises to 14.[10] What is important about the number of merchants in the market center of a local rural region (7 to 10 km radius) is that as the number of merchants increases the price of retail services falls dramatically. In the rural regions with only one or two merchants it is not unusual for retail prices to be 20-30% higher than in the large retail centers. Higher costs for imported retail goods means that the rural households in these markets spend more of their budget on imported goods and less on other local goods and services. Partly as a result, real incomes are lower and these local economies do not provide sufficient demand for a broader variety of locally produced consumer goods and services. Many of these goods and services are "nontradable": that is if they are to be consumed locally they must be produced locally. As a consequence the local economy does not provide the desired variety of consumption choices or a variety of demand driven income earning activities for local agricultural households.

If land development and tenure patterns are such that a population of over 2,000 lives within a 7 km radius, the number of merchants in this local market is likely to be at least 14. Real incomes would increase through a decline in retail prices of roughly 10-15%. With over 14 merchants, retail prices are low enough that households allocate roughly 10% more of their budgets to imported tradable goods[11] than if there were only one or two merchants.

Prices would continue to fall as additional merchants establish themselves in the local market. However, the budget share for imported goods rises much more slowly for additional merchants after the initial 14 merchants are established. This reflects the fact that the prices fall quickly when a retail center increases from 1 to 14 merchants, but much more slowly thereafter. In addition, towns with 14 retail establishments are roughly at the threshold of an aggregate consumer demand level for other services to be established. Tailoring, milling, clothing shops, butchering, and other services begin to have a sufficient local demand to be established. This threshold population depends of course on local per capita income levels as well. Consumption of locally produced nonfarm goods and services would not increase when the number of merchants increases because increased consumption of imported goods is stimulated by lower

prices. However, demand for nonfarm products is very income elastic once a minimum household demand for food has been met.

The implications of this pattern of retail prices for land tenure is that agricultural projects should be established and land distributed in such a manner that total regional population approaches at least 2,000 within a 7 km radius. Larger concentrations of population in a particular region will not lead to major consumption benefits.[12] If the policy objective is to stimulate diversified consumption and off-farm income earning opportunities, priority for additional agricultural projects should be in other rural regions that have not yet reached this size.

Land tenure, farm structure, and local income generation

Land and water distribution are a major determinant of farm household income and consumption levels. If consumption patterns or crop yields differ by farm size or household per capita income level, then these variations could influence regional economic activity. This section first discusses the consumption linkages and then production linkages.

Land tenure patterns do directly determine household structure and income levels. How a society defines its units for production is an important determinant of how it defines itself for consumption activities. If land within projects is distributed to a nuclear family (such as with individualization of land ownership) then this encourages the consumption unit to be defined around the same nuclear family. If land is controlled by an extended family, as was traditionally the case in some areas, then this encourages a larger consumption unit. Traditionally, the compound (galle) was composed of several nuclear families. Several of these nuclear families formed a consumption/production unit. Now that production is being individualized, these nuclear families are becoming independent consumption units. Based on empirical results from Mauritania, it is known that as household size decreases (holding per capita income constant) a larger share of the household budget is spent on items which generate less local income.[13] If land tenure patterns lead to larger household consumption units this will increase the consumption expenditure share for items such as household services, vegetables, products made by local artisans and craftsmen. If size of the household consumption unit decreases by the equivalent of one adult consumer, the share of the household budget spent on these locally produced labor intensive products will decrease by 0.01.

This decrease in budget share is offset by increased expenditure share for other imported items such as consumer expendables, consumer durables, cloth, and plastic shoes. Unless there are clear compensating effects, a land tenure structure that encourages a large production/consumption unit should be encouraged.

Household per capita income levels also influence

consumption behavior. With a combination of farm size and pricing policy for new irrigation projects, government can influence per capita income levels of farm households. With high support prices and/or higher land to man ratios the government can increase income levels. As per capita income levels rise budget shares for locally produced labor intensive goods and services increases. As a household consumption budget rises from subsistence level, budget shares for locally produced goods and services which generate additional local income rises by 0.05 for every 1000 UM additional increment in value of total consumption.[14] At first the budget share rise for transportation, baked bread, grain milling, and wood, metal or leather artisanal goods. As incomes continue to rise the demand for vegetables, other craftsmens' services, and household services increases. Roughly 73% of this additional local expenditure is earned as local income. The other 27% is spent on imported material used in the production of the goods and services. What this means is that as a household's per capita income rises it generates more and more local off-farm income per ouguiya of consumption expenditure. At the margin, richer households are generating more off-farm income with their consumption expenditures than poor households. For households with a monthly adult consumption budget of 3000UM, 34% is spent on goods and services that generate local income. Due to the fact that 73% of this expenditure becomes local income, for every 1000UM of expenditure this type of household will generate 260UM of off-farm local income. In contrast, a household with a monthly budget per adult of 1000UM will generate only 180UM of off-farm income for every 1000UM of expenditure.

The implications of the income elastic demand for local nonfarm goods and services is that if every household in a local market is below the 1500UM /adult consumption level, there is unlikely to be sufficient demand for a range of locally produced consumer goods and services. If there is to be a nonfarm sector and a diversified local economy there must be at least some portion of the population that is well enough off to provide a base level demand for the nonfarm sector. Farm size per household should be large enough to provide an income level that will generate demand for nonfarm goods and services.

In terms of farm size it has already been summarized that farms should be as large as possible even if the labor/land ratio is the same. If larger farms are allocated to larger household units the labor/land ratio could be the same as with small farms allocated to small households. Given the general desirability for larger consumption units, there remains the desire in general for higher labor input per unit of land in a country with high underemployment. This means that if there is a relationship between yields per unit of irrigated land and labor-input / land ratios, then farm size should be adjusted to increase this ratio.

The basic determinant of the labor-input to land ratio is the ratio of (value added per unit of labor input) to (opportunity cost of labor time) for the individual production

unit. The higher this ratio is the more labor intensive will be the farming enterprise. Opportunity cost of time and value added are measured in terms of real consumption. If prices for consumer goods declines (relative to the agricultural output and holding the opportunity cost of labor constant) then the labor intensity of farming should increase. However, as real incomes rise the leisure preference rises which also raises the opportunity cost of time. This ratio can be higher for rich farmers if their labor input is sufficiently more productive than for poorer farmers. Rich landowners may have higher returns to their farm management and this would result in higher labor / land ratios than for poor households with a low opportunity cost of time. Herders may have such poor agricultural management skills that the value of extra labor or management input to their cropping enterprise is small even relative to their low opportunity cost of time. Labor intensity can be higher for poor farmers if their opportunity cost of labor is sufficiently low. Increasing the demand for labor intensive off-farm employment is expected to decrease the labor intensity of farm production.

For the hivernage rice campaign in Mauritania in 1980 there is data available for 29 small perimeters. These perimeters had a median 60 coopérateurs, 0.20 Ha/coopérateur, and median paddy yields of 3 tons/Ha. A linear regression analysis (see Table One) indicates that yield per hectare decreases as the number of coopérateurs per perimeter increases. This implies that a fully cultivated perimeter[15] with 10 coopérateurs each farming 0.2 hectares would produce a paddy yield of 6 tons/hectare. On a perimeter with 120 coopérateurs each with the same size parcel, the expected yield would be only 2.5 tons/hectare. This statistically significant difference may be attributable to diseconomies in management. A possibility is that with only a few coopérateurs it is easier to make management decisions for running the perimeter. When the number of coopérateurs that must be involved in the decisions increases to 120, the time required to reach a consensus is longer, perhaps critically so in some cases of broken irrigation equipment. Rice yields are very sensitive to timeliness of operations such as transplanting, irrigation, fertilization, etc. If the timing of these operations is delayed due to management indecision, it is expected that yields would decline.

The regression results on the impact of parcel size are not statistically significant. However, it is expected that on a perimeter with 60 coopérateurs, if each is farming 0.20 Ha yields would be 4.4 tons/Ha. If these same 60 were farming 0.50 Ha each, yields would decline to 3.4 tons/Ha. these results should be viewed as tentative, however there is a possibility that smaller surface area per farmer leads to more intensive management and higher labor input per unit area.

In terms of local income generation, higher yields lead to higher farm incomes and subsequently to higher nonfarm income as the farm income is spent locally. Using a multiplier model for the local economy (Rogers, 1986: 133) it is estimated that on the

perimeter described above with 10 coopérateurs, total local income generated per UM of crop value would be 1.27 UM. On the perimeter with 120 coopérateurs only 0.72 UM would be generated in local income per unit of crop value. On a per hectare basis, the difference in local income generation would be even more dramatic due to the fact that total value of crop output with the large group is less than half that of the small group with high yields.

Conclusions

In summary, this research has emphasized the importance of the nonfarm sector to rural agricultural growth and welfare. Land tenure has been considered an important determinant of rural income generation through its impact on spatial distribution of population, consumption patterns, and production impacts. This paper draws on field experience in Mauritania. The empirical and policy considerations relate to the Senegal River Valley, though the local economic and cultural diversity within the Valley means that the policies considered need to be evaluated for particular circumstances.

With regard to policy for rural development and structure of land use there are six conclusions that have been reached.

1) Small village perimeters have higher income multipliers per unit of output value than large perimeters.
2) Small perimeters should be distributed along the Senegal River Valley in a manner that encourages population concentrations of at least 2000 people within a 10 KM radius of the local retail trade center.
3) Land control and production organization should be structured to encourage maintenance of the extended family as a production / consumption unit.
4) Within each local 10 KM radius retail market, a sufficient number of farmers should be raised above the 1500UM / month / capita subsistence level to allow the creation of a rudimentary non-farm sector. Where there are government employees or pensioners this required number of farmers will be lower. Elements of a rudimentary non-farm sector which have demand thresholds at these income levels are: a mechanical grain mill, taxi service, meat butchering, marketed vegetables, and a broader variety and competition in retail goods. If these services exist in the local market, poorer citizens will have access to them even though these citizens would not intensively use such services.
5) New irrigated lands should initially be allocated to citizens with a high ratio of labor productivity / opportunity cost of time. Women from ethnic groups with agricultural backgrounds could be a target.
6) Small perimeters should be designed to minimize the

number of coopérateurs/project. Based on recent experience in Mauritania, it appears that larger perimeters have lower yields because they have more coopérateurs that must work together and larger plots per coopérateur which may lower the labor intensity per hectare. Within each perimeter the surface area / coopérateur probably does not need expansion as a first priority. Priority should be given to multiple cropping of the parcel. Labor input needs and seasonal availability of labor for perimeter work needs additional research.

NOTES

1.Agriculture includes animal husbandry, farming, and fishing.
2.RAMS, Rural Income in Mauritania, 1980. Unless otherwise noted, the RAMS data referred to is based on 29 budgetary units located in the Gorgol Province. This subset of the RAMS data geographically approximates the data collected in 1985 by Rogers.
3.RAMS, Rural Sector Consumption Patterns in Mauritania. 1980
4.Pulver, Glen and Glenn Rogers. Changes in Income Sources in Rural America, forthcoming in the Journal of American Agricultural Economics.
5.Chernichovsky, Dov, Robert Lucas and Eva Mueller, The Household Economy of Rural Botswana: An African Case. World Bank Staff Working Papers #715, Washington: The World Bank.Table 1.1,p.8.
6.Unless otherwise stated, all population and aggregate employment figures reported are from the 1977 Census. In 1985 the Governor of the Department of Mbout claimed that the Department had a 1984 population of 69,000.
7.It is important to note that the output-income multiplier developed in this research is related to, but not equivalent to, the Type II income multiplier of the input-output literature. The Type II income multiplier is equal to the output-income multiplier divided by the direct income effect. Since the direct income share of output is less than one, the Type II income multiplier would be larger than its output-income equivalent.
8.The model developed here draws on SIOM (semi-input-output method) concepts and intial ideas of Hazel (1984) and concepts from Bell, et.al. (1982). Growing out of Isaard's work in the 1950's, the SIOM was initially developed by Tinbergen (1966) and formalized by Kuyvenhoven (1978). An example of the use of the SIOM for estimation of indirect effects is given by Karunaratne (1976) for Papua New Guinea.
9.In some markets demad for nontradables is partly determined by nonlocal residents, such as tourists.
10.Recensement Général de la Population 1977: Répertoire des Villages. Direction de la statistique, Ministère de l'Economie et des Finances, Nouakchott, Mauritania.
11.Imported tradable goods include items such as sugar, tea, milk powder, fish, meat, consumer expendables, cloth, shoes, appliances, and plastic mats.

12. If a much larger population is concentrated, such as 30,000 to 50,000 in Kaédi, then new opportunities arise. However, the population in rural Mauritania is too sparse to create numerous centers of this size.
13. The consumer goods category that declines with household size, includes food grains, sugar, tea, protein foods, consumer expendables (batteries, kerosene, butane gas, and soap), appliances (flashlights, radio-cassette players, and lamps), cloth and plastic shoes.
14. This increment is measured per an adult equivalent consumer unit per month.
15. Fully cultivated is in contrast to perimeters for which the area developed is not fully cultivated as is the case with new perimeters or special problem cases.

3. Mauritania and irrigated development projects: the case of the Gorgol Pilot Perimeter

Mamadou Baro

Introduction

Irrigated agriculture seems to be the means of choice selected by the Mauritanian State to achieve self-sufficiency in food production for the country. The strategy adopted is to create and develop irrigated projects all along the Senegal River valley. The intended goal is to make the peasants more self-sufficient so they can make their own economic decisions (s'auto-gérer) based on security of revenues and a marketable surplus which will guarantee the socio-economic viability of their holdings and be in conformity with a harmonious and integrated development plan.

Yet, in reality, the majority of the projects developed with this goal in mind paradoxically have many problems, in particular if one considers their results at the social level. The study which follows is a contribution to the evaluation of projects from this latter perspective.

I will not present an exhaustive description of the record of all the irrigated development projects in Mauritania because I lack the time and means to do so. Still, the experiment which I take as a model - the case of the Gorgol Pilot Perimeter - is without doubt one of the best examples in Mauritania due to its age compared to other projects and above all due to the richness of the data available on it. In the first part of the study I will begin with an evaluation of the record, an analysis of the implications of that record and the perspectives this provides. In the second part, I will try to determine the basic characteristics of the sometimes different rationalities which motivate the peasants and the State.

I. Evaluation of the record of the Gorgol Pilot Perimeter

The Gorgol Pilot perimeter had as its main goal the intensification of agricultural production in the region in order to guarantee the financial and economic profitability of the project, to assure its long term viability and to improve the living conditions of the peasants. Thus the participants in the Project, namely the State and the financial partners, foresaw:

- an augmentation of production and productivity.
- an augmentation of employment possibilities.

In this chapter I will examine the different levels of the project. This will allow me to evaluate the results obtained and the problems and constraints encountered. I will try to see if

the means and practices set in motion contributed effectively to the attainment of the expected goals. This analysis will center on the identification of the actors affected by the project and the social and economic situations which determine their specific status within the project. In addition I will assume that the Gorgol project is not a neutral and autonomous structure with respect to its multidimensional environment. I will therefore try to identify and analyze the interactions between this environment and the project.

Initially, I will examine the historical background of the Gorgol Pilot perimeter. This will allow us to better understand the evolution of the problems which have appeared. Next I will consider the land tenure issues bearing in mind the importance which they have for the project and the strategies which result. Finally, I will examine the socio-economic impacts of the project.

History of the Gorgol Pilot Perimeter

Studies have been devoted to the Gorgol valley for some time. Already in 1952, a french administrator, J.P.Dubois presented a thèse de troisième cycle on the possibilities of the irrigated development of the Gorgol valley.[1] He brought to the forefront the potential of the Gorgol for irrigated development and the possibilities for the construction of dams which could release this agricultural potential. The M.A.S.[2] and the M.I.S.O.E.S.[3] launched beginning in 1956 and 1958 the first hydrological and economic studies of the agricultural potential of the "White and Black Gorgol Rivers".[4] This is why after 1967, the Gorgol basin interested the World Bank which carried out in September 1968 an evaluation study which demonstrated the need for the creation of a major irrigated agricultural project which would have significant potential. Following this study the Mauritanian Government in 1968 presented a request to the U.N.D.P.[5] and to the World Bank for studies and the construction of the project. These two organizations reached an agreement: the studies would be undertaken by the U.N.D.P. and the project constructed by the World Bank.

This is why in 1970 the U.N.D.P. provided the financing for the studies of the project. In March 1972, the U.N.D.P. and the F.A.O. developed a "master plan" for the development of the Gorgol valley and a pre-project study of the viability of an intensive rice sector of 6,500 hectares in the waalo of the Gorgol between Lexeiba and Kaédi.

The master plan for the project provided for 9,500 hectares developed in three stages:

-First stage: the development of 3,500 hectares of two season rice cultivation
-Second stage: development of an additional 3,000 hectares in the waalo

-Third stage: development of 3,000 hectares of sugar cane

This master plan foresaw that after the 1980's, 9,500 hectares would be developed. It foresaw the construction of two dams on the watersheds of the two Gorgol rivers, one at Foum Gleita, and the other at El Bir. These two dams together would permit the retention of 500 million cubic meters of water. The construction of a dike to retain the flood waters of the Senegal river should allow the isolation of the flood waters from the river. The plan provided for a weir to regulate the waters. Planners thought that these 9,500 hectares would replace the total imports of rice and sugar for Mauritania. They thought as well that the populations affected would thus secure their own self-sufficiency in food and this in turn would allow them to considerably improve their living conditions.

The total project was costed at the time as coming to between two and three billion ouguiya.

At the end of its studies, the World Bank estimated that the cost of the master plan was excessively high and that rather than begin with the construction of two dams and the creation of a 6,600 hectare perimeter, one should begin with a small perimeter in the Gorgol valley. The Mauritanian Government was not in agreement. The World Bank estimated that the internal rate of return of the project was less than the real cost of the project. Finally the World Bank canceled the project and withdrew its financial support for the development of a perimeter. It was at this point that the F.E.D. intervened and proposed the development of a 200 hectare perimeter. The Mauritanian government considered the area of the perimeter proposed by the F.E.D. to be derisory, and considered turning to other sources of financing.

Finally, the F.E.D. agreed to finance the development of a 700 hectare perimeter. The U.N.D.P. agreed to extend its studies of the development of an irrigated perimeter. From 1974, the studies of the development of 700 irrigated hectares being done, the F.E.D. made available a non-repayable grant of 188 million ouguiya for the development of a 700 hectare irrigated perimeter devoted to rice production. The operations financed by the F.E.D. included:

- the construction of a protection dike,
- the construction of the hydraulic infrastructure of the perimeter,
- the development of the infrastructure and equipment needed for functioning cultivation,
- participation in the operational costs during the start up period,
- monitoring of the construction works and technical assistance.

The completion of construction took two years. In July 1977, the Gorgol Pilot Perimeter was technically usable. It is

located to the north-east of Kaédi on the right bank of the Senegal river and upstream from the confluence of the Gorgol and the Senegal Rivers. The project is linked to Kaédi by a weir constructed on the Gorgol, which permits pumping of water either from the Senegal River or from the Gorgol River. Irrigation of the perimeter uses a pumping station which includes four pumps each having a power of 90 watts. This pumping station controls the irrigation and drainage networks.

Parallel to the studies of the implementation of the 700 hectare perimeter, the U.N.D.P. completed a plan for the development of parcels within the perimeter. This plan listed the names of the traditional land owners whose lands were occupied by the project as well as the boundaries and areas of their holdings. It should however be noted that the list of holdings had significant errors which made both the list of owners and holdings unusable. In effect, the majority of names listed were in reality first names and not names which could be used to identify families. This is why certain peasants to this day dispute the legality of the holdings list on which basis the allocation of lands in the perimeter is made.

The cultivators whose lands were on the land now occupied by the dike and other infrastructure constructions were the object of an initial indemnification because the project construction was going to begin a few weeks before the waalo harvest. In reality, because the initiation of works was delayed, the millet had matured. In the end these peasants benefited both from the indemnification to the tune of 8 UM per kilo at 100 kg/ha and from reaping their own harvest. One year later a second indemnification took place. Since there was not yet any cultivation on the 700 hectares, the land owners and those who traditionally had some rights in the lands received an indemnity. These, in turn, paid a part of this indemnity to the traditional laborers who had ties with their families. This portion was the object of conflicts between land owners and agricultural laborers. A third indemnification took place in 1977 but concerned only the owners. These last indemnifications were calculated using an estimate of the waalo harvest of 400 kg of millet per hectare at a price of 8 UM per kilo.[6] Indemnifications were continued for peasants whose fields had been ceded to the project without being cultivated.

I note throughout the studies and the implementation of the project a basic flaw which it still suffers today. I mean the absence of any sociological conceived effort to educate the populations impacted and the lack of precise socio-economic data from before the start of the development. Planners also ignored some socio-economic aspects which are essential. We can mention among other examples:

- the demographic situation of the region based on a census of the communities impacted in order to provide some numerical figures on the labor force available to the future project,

- identification of the different social groups interested in the project: land owners, those with other rights, renters, and the study of the systems of relations between these groups,
- the land tenure structure existing on the lands to be developed,
- and above all the extension of the project to the different groups and the analysis of their motivations towards irrigated agriculture. In general, and this affects both the design and the implementation of the project, planners neglected the changes in social organization and the economy of the populations concerned by the project which stem from the introduction of irrigated agriculture.

These deficiencies had a negative effect on the behavior of the populations. This is why when the construction works began in 1976, the government forces encountered organized opposition from the land owners. The latter made prior satisfaction of certain demands essential for their cooperation. These demands basically concerned the maintenance of their property titles, the allocation of parcels adequate for them and their families, and the continuation of their traditional rights; that is to say "assakal" (1/10 of the harvest) paid by those with usufruct rights, and "rempetien" (1/2 of the harvest) paid by pure renters. A fight developed from this point on between the land owners and the State.

Tenure Problems in the implementation of the Gorgol Pilot Perimeter

Tenure and social problems stemming from the way the traditional society was organized were not taken into consideration when the Gorgol Pilot Perimeter was designed. These problems were considered minor matters compared to the technical problems. Planners were not initially concerned with questions about the attitude of the impacted populations toward the project, the affect of their traditional structures on the goals of the project, the degree of their participation, etc. Only technical and economic considerations were weighed in the design and implementation of the project.

Unfortunately, the social and tenure problems, instead of being considered the basic initial facts to consider only became basic data after the fact; that is to say when they appeared as obstacles which put in jeopardy the plans established at the beginning of the project.

In addition, due to the lack of personnel appropriately trained to regulate the status of the lands developed, the only method open to the Mauritanian State was to look for ways of convincing the land owners to cede their lands for the benefit of the public. The land owners viewed the State's attitude as an unavowed attempt to expropriate their lands and to impose in the

long term a model of cultivation and organization whose implications were unclear. This apprehension was reinforced by the absence of the initial consultation which they desired. The feeling of frustration and the resistance to the proposed changes was due to a lack of extension effort and the lack of any attempt to get real peasant participation. In addition Mauritania had not yet faced the social and tenure problems related to the development of the valley nor had it defined the judicial status of the lands to be developed. Thus, it would be foolish to implement development programs or develop and carefully cultivate vast areas without first defining the status of the lands developed, at the national or regional level (taking into consideration the specifics of each region). No clear tenure legislation existed before the implementation of the perimeter; giving rise to a process of trial and error by the State throughout its interminable negotiations with the Gorgol peasants.

From the beginning of the studies for the implementation of the project, the local populations demonstrated their hostility to any irrigated development because they were not familiar with irrigation and were not interested in growing rice. In addition they were afraid of the expropriation of their lands which would affect their social prestige. Here is how this was expressed to me by a group of peasant land owners:

> "One day in May 1970, we found some engineers measuring the dimensions of our fields who were planting stakes all over. We asked them what reasons they had which would justify their surveying our fields without our permission. They replied that it was the government, by the intermediary of the regional Governor, who charged them with carrying out surveys on the fields with the goal of developing an irrigated rice perimeter. We then went to the Regional Administration where the statements of the engineers were confirmed by an official of the administration who very briefly summarized for us the State Project. We were indignant because we did not understand the nature of the project which the State wanted to implement on our lands. We did no know what rice cultivation was or what irrigation was. All that we knew, is that it would ruin our lands and we could not accept that in good faith all the more so since we had not been consulted at the beginning. We were afraid that the State would expropriate our lands for we knew that at M'Pourrié (Rosso) the peasants had been expropriated by the State by force. It was for these reasons that we boycotted the studies for the establishment of the list of owners and the cadastral survey. We were ready to sacrifice our lives to preserve our lands for it is on them that all our cultural, social, and economic prestige rest."

These statements generally reflect the point of view of the majority of peasant land owners at the beginning of the

implementation of the project. They show the lack of extension effort and the lack of prior knowledge. The reveal as well that the peasants, who are however the main persons impacted, were not included in the design or the implementation of the project. When one realizes that these matters essential to the success of any project were put to the side, one understands the reasonability of the negative reactions of the peasants.

The land owners aimed to conserve their rights and traditional powers on their lands and on the tenants who traditionally cultivated them. The land owners belonged to four great main families: the Ndioufnabé, the Tianguelnabé, the M'balnabé, and the Kaédinabé. They were not always cultivators and many of them devoted themselves to extra-agricultural activities; renting out their lands. The total or partial loss of the lands would have an economic and social significance. On the economic level they would loose the tithes which they received from the rent of their lands, on the social level their prestige and the power over the traditional renting class cultivators would diminish.

Still, the combination of certain factors made the land owners more receptive to the creation of a project:

- the payment of traditional tithes had become from one year to the next more irregular, some renter-cultivators refused to pay the owners what they were due and thus jeopardized the nature of these relationships. Beyond this it was a general phenomenon that was observable throughout the rural areas of Mauritania. There had even been direct confrontations between land owners and landless peasants at El Gabra in 1982.
- the consecutive years of drought during the last few years ran the risk of preventing any possibility of traditional cultivation of the waalo of the Gorgol. The floods were becoming progressively lower, the cultivable lands were decreasing from year to year. The owners feared that in the long term they would end up with lands that had no value.
- finally, irrigated agriculture, even if it was not known, represented an alternative; given that the prospects in the other cases were rather grim.

Even if in the end the land owners agreed in principle to the implementation of the perimeter, they did not agree as such to the principle of egalitarian distribution of parcels. The owners could not accept that their ancient renter-cultivators could free themselves from dependency on them and become economically independent. Yet, it was to this that an egalitarian distribution of the area would lead.

Numerous negotiations occurred between the land owners and the State to determine the status of the developed lands. The power relationships will very often be on the side of the land owners given the absence of a clearly defined irrigated development policy. The representatives of the State did not

even take a united position vis à vis the land owners. The negotiations evolved by trial and error since no legislation was available in this matter. The colonial "loi domaniale" which was the sole legal source available at the time, required a visible sign of possession (construction, enclosure, path, etc.) in order to confirm ownership. Yet waalo lands are a case where no visible sign of possession in the sense of Roman Law exists. The application of these juridical texts would have permitted the State to contest all property rights on waalo lands, which would inevitably put it in conflict with the traditional tenure rights accepted in the waalo areas. In addition the land owners had solid support within the State apparatus. This explains in part why a careful distribution of lands between all peasants according to the principle of equality could not subsequently be implemented by the State.

At the beginning of the negotiations the land owners envisaged the rental of their lands to the state at a rate of 15,000 UM per hectare per season. The government could install whomever it wanted for the cultivation of the rented lands. The plans of the land owners did not exclude the possibility that they would also participate in the State project. Several days later the land owners withdrew this proposal. It is important to emphasize that certain of the State representatives who negotiated with the peasants were at the same time the "representatives" of local collectivities at the regional level. They had a certain political authority which allowed them to influence peasant opinions. They thus played a double, and contradictory, role: in the eyes of the peasant land owners they were the defenders of the latter's interests against the State, and in the eyes of the State where they had important positions, they appeared to be defenders of the State's interests. This situation created confusion in the determination of who should be party to negotiations: M.N., a land owner made the following statements to me on the subject of negotiations:

> "The negotiations which we made with the State have never been clear, we did not understand precisely what it wanted. Certain negotiators for the State, originally from the Region and known for their privileged position in the party, came to our homes to ask us to accept this or that point. They added that they were there to defend our interests and that we would loose nothing in accepting their proposals. Sometimes we accepted without understanding, we accepted them at their word. It happened sometimes that some among us were not in agreement but dared not express it openly due to the position of our interlocutors in the State administration and in the Region. Most often, it was after our interlocutors left, that the real positions of each of us became clear. This is why we went back on our agreements so often. In addition the procès verbaux of the negotiations were in French, and it was later that we analyzed them in general assembly."

This is how negotiations took place the 16, 17, and 18th May 1977 between the State and the "peasants". These negotiations gave rise to a procès-verbal which would be contested later. The analysis of this procès-verbal which is included as an annex to my thesis reveals a certain number of shadowy areas and sources of contradictory interpretations.

In article II of the procès-verbal, the land owners agree to cede their rights to the State but the nature of this cession is not clearly specified: one does not know precisely if the peasant land owners cede their lands or if they lend them to the state. In addition, the procès-verbal requires the registration of the ceded lands. But it does not specify in the name of who. One does not know if the registration is to be in the name of the same land owners or in the name of other peasants. In Article III, the State agrees to return the lands to the peasants in the case of a definitive interruption of the project. But there is no specification of in what condition the lands should be returned. It is from the time of this agreement that the privileged status of the land owners was conceded. This procès-verbal recommends that the owners be given priority in installation on the developed lands according to the areas ceded and the importance of the family. From this derives a type of control by the land owners over the choice of some of those non-owners who are to receive land.

During the first rice season of 1977, the allocations were made according to a commission composed of sixteen representatives of the peasants who are all land owners (as in the project only concerned this category of peasants in the Gorgol), three representatives of the Administration and one representative of SONADER. It is from this moment that the saamba remoru (landless peasants) began to be neglected by the project.

When the project was opened, the land owners exercised a great influence on the distribution of lands, going as far as demanding that they be placed in the perimeter at the exact site of their old lands with the goal of conserving the traditional property rights. The allocation commission allowed them to be installed on the same type of land that they had held before the implementation of the project. On the traditional waalo of the Gorgol, one found in practice three types of soil: hollaldé, hollaldé wodere, and fondé. From this moment the traditional tenure rights were largely reconstituted. It was the families of the traditional land owners or those who were close to them who had priority in installation. Quite often these families did not have a labor force capable of exploiting the areas allocated to them. This led inevitably to the reconstitution of the networks of traditional clientship and the traditional social structure. The majority of the land owners, incapable of cultivating all their lands, placed cultivators on their domains expecting to receive from them the traditional return for such rent of lands in the form of tithes whose nature varied according to the land

owner. This despite the agreement signed between the State and the peasants which prohibited such practices as contrary to the stated objectives of the project. This practice is above all characteristic of the toucouleur clans of Kaédi who are the majority in the project. Among the Soninké who are the second largest group, due to the traditional absence of a "land chief" (maître de terre), the land owners freely concede the use of their lands to the members of their families. They are more organized and have greater solidarity and have demonstrated more interest in irrigated agriculture from the beginning of the development.

Remember that the social objectives sought by the Mauritanian State concerning access to developed lands were to extend the benefits of this development to the totality of the cultivators of the region. In practice, this objective could not be attained because a study completed by SONADER after the first rice season showed that:

- 40% of the recipients of land had delegated use of their parcels to other persons and in return received Assakal,
- 23.5% of the recipients of lands did not even reside in the region,
- 25% of the recipients of land lived in Kaédi and exercised a primary economic activity which was not agricultural,
- 11.5% of the recipients of land were unused to agricultural work.

Thus the majority of the recipients of land had their parcels exploited by other persons. These non-cultivating recipients had placed on their parcels their clients and traditional renters and demanded from them in return the customary tithes whose nature and importance varied according to the relations which the client had with the parcel owner. A minority of the renters, basing themselves on the administrative texts, had refused to pay the tithes but found themselves expelled the following year from the parcels which they had occupied. Thus during the first season the land owners were able to reproduce in the perimeter a great part of their traditional prerogatives. This situation was reinforced by the fact that the land owners held more than half of the cultivable parcels and did not have available to them from their own families enough labor to exploit the parcels which they had been allocated. This is why 7% of them used exclusively salaried labor.

During the following agricultural season, the first allocations were annulled and other negotiations were conducted in 1978. The negotiations ended in an agreement which would be supported by another procès-verbal (see the appendix to my thesis). This procés-verbal would be disputed in 1979 by the land owners who made payment of the seasonal costs subject to the recognition of their customary rights on the lands of the perimeter. This is how the Mauritanian State, through the intermediary of its Minister of Rural Development, ended up

making a strong radio declaration calling the peasants of the Gorgol to order.[7] This declaration suggested that the State, this time, was taking a radical stance to support the general interests of the peasantry against that of the land owners. The declaration did not prevent a part of the land owners from boycotting the perimeter and in the process leaving fallow hundreds of hectares.

Thus each start of the season was the occasion for the land owners to dispute the preceding agreements. This situation severely hampered the normal progress of the agricultural seasons. This perpetual questioning of decisions has for long created within the perimeter a climate of uncertainty for some and of opportunity and gain for others.

During the 1981 agricultural season, the perimeter experienced a serious loss due to the rupture of the periphery dike, preventing cultivation of the perimeter. The years which followed were marked by a massive return of peasants to the perimeter. In July 1979, after the boycott of the development by the land owners, access to the perimeter was opened to all those who so desired. The results obtained by those who cultivated that season were satisfactory, and this motivated the land owners progressively to return to the perimeter. This return of the land owners was at the expense of the landless poor. These people who had no source of income and who were the unlucky victims of the drought, had willingly cultivated the parcels which had been allocated to them by the project administration in order not to have a perimeter without cultivators. It was due to the activism of these landless peasants and to the not inconsiderable results which they had obtained that the land owners became aware of the importance of the perimeter and increasingly returned. Yet, each time that a land owner returned, it meant there was a saamba remoru who left. Today all the land owners have returned and occupy more than half of the developed area while they represent barely 30% of the peasants who actually cultivate the perimeter. The land owners have arrived at this privileged position because of the influence which they have both in the commission entrusted with the allocation of parcels and in the organization administering the project. In addition, they reproduce to a significant extent within the perimeter the social relations of production of the traditional agriculture thus preventing the extension of the benefits of irrigated agriculture to the totality of the peasants. Here is how it was expressed to me by M.B., a peulh peasant from the Gorgol region:

> "It has now been three years since I left my natal village with my family including my wife and six of my children. I had learned before leaving that the State had created an agricultural development project in which it was establishing peasants in order to allow them to go into agriculture to assure themselves of food security. I left my village because I had no other choice since the drought

was each year becoming more severe along with all its associated troubles. On arriving in Kaédi, I presented myself as a volunteer and they gave me a parcel of 0.5 hectares that I could cultivate for my family. The cultivation of this parcel in the 1979-1980 agricultural seasons allowed us to survive. I paid regularly the project costs claimed by the administration. I obviously did not make large profits but it was better than the situation I had had in my village. Unfortunately this situation could not last because I was expelled from my parcel by a land owner who claimed that I was cultivating his land. I opposed the expulsion at first but I was finally forced to go along with it by the commission that allocates parcels. I asked then that they allocate my another parcel but they replied that unfortunately the whole project was occupied. There now is how I came to be alone with my family and without a source of income; and numerous are those "peasants without land" who suffered the same fate as I. But God is great, he will come one day to our aid."

My interviews revealed that 60% of the "landless peasants" installed on the perimeter at the beginning of the project were expelled as the land owners returned.

Of the 615 hectares cultivated in 1983, more than 400 were allocated to the land owners; in other words more than 70% of the developed lands. Sixty-five percent of these land owners do not themselves cultivate their parcels. Among them 30% exercise a non-agricultural principal activity, 25% do not reside at Kaédi or in the region, 17% use only salaried labor, and 5% have unascertainable status. Only 35% of the land owners cultivate their parcels themselves. The others appoint members of the extended family or other cultivators to work their parcels. When it is a question of someone outside the family, cultivation of the parcel requires a contract. Most often the renter must pay 4 or 5 sacs of paddy to the land owner. The payment of all costs to the administration is the responsibility of the renter. It happens as well that the land owner hires labor appropriate for the different agricultural tasks (planting, weeding, application of fertilizers, etc...). Labor is abundant and cheap.

For the rest of the areas developed, 18 hectares have been allocated to the Autonomous Military Zone of Kaédi and are cultivated by soldiers for the account of the National Army. Eleven hectares have been allocated to a merchant association called CO.MAU.DA and five hectares to the E.N.F.V.A.[8] Approximately 65 hectares have been allocated to people whose principal activity is non-agricultural (state bureaucrats, merchants, marabouts, etc.).

In the end, the <u>saamba remoru</u> (landless peasants) who are however the majority and the most needy find themselves with scarcely 115 hectares, or about a sixth of the developed area.

The support of the State for the traditional power could only lead for a transposition, under other forms, of the rules

regulating the functioning of traditional power. The tenure legacy represents at the same time economic and social values which an egalitarian distribution would threaten. The objectives of the land owners were in contradiction to those of the State which intended to "make the perimeter benefit the totality of cultivators in the region".

From the perspective of a land owner, it was out of the question that others should benefit from the lands which they had inherited from their ancestors without the land owners having any rights over the beneficiaries.

The saamba remoru for their part could not bear to have the state invest millions of ouguiya so that a single category of the population would profit. They felt this way particularly since the State had always proclaimed itself as a defender of the interests of all.

Confronted with this contradiction representing the divergent interests of two categories of peasant, the State opted in fact to preserve the interests of the first group. It could not have been otherwise if one knows that the land owners were one of the principal social supports of the State. Taking into consideration the relationships of clientship which exist between the two parties, it was not conceivable at the time that the representatives of the state would make decisions opposing the interests of the land owners even if their decisions were to the detriment of the mass of peasants.

The absence of tenure legislation before the implementation of the project and the recognition by the State of the traditional rights in the area of land tenure largely contributed to legitimize in practice the position and the powers of the great landed families. The insecurity and instability of rental contracts with land owners and the inegalitarian characteristics of the traditional tenure system are irreconcilable with development objectives for the reproduction in the Gorgol Pilot perimeter of ancient social relations of production were a serious handicap to extending the benefits of irrigated agriculture to the totality of the peasantry.

Administration and social organization of production

The first four years of the project were notable for low production and low yields per hectare. This was due mainly to the boycott of the project by the majority of the peasants and by the unfamiliarity with certain techniques necessary for rice cultivation. This situation changed qualitatively after 1982. The land owners who had boycotted the perimeter returned en masse. The first cultivators had slowly begun to acquire the agricultural techniques which allowed them to increase production. Their example combined with the continued effect of the drought on the rest of the waalo contributed to the influx of other peasants (particularly land owners) to the perimeter.

It is appropriate to point out that the Gorgol perimeter had

as its goal the intensification of agriculture which would imply a double or triple cropping per year. The reality was that intensification did not prove possible. The peasants so far have been limited to a single crop in the winter season. According to the administration of the perimeter, the absence of a double or triple crop is due essentially to technical problems. The intensification of cropping would, however, have permitted a reduction by a factor of two or three (depending on whether it was double or triple cropped) in the charges, referred to by the administration as "fixed charges", that each recipient must pay annually to the administration. The amount of these charges is 19,400 UM per hectare per year. M.D. who is a Gorgol peasant noted the following in regard to the fixed charges:

> "In the beginning we were told that there would be two or three crops per year and that the fixed charges that we pay annually would cover these two or three crops. Now since we have been in the perimeter there has only been a single crop of rice per year, the fixed charges which we pay to SONADER and which were supposed to be for two or three crops have remained the same. We had thought that these charges would be divided in two or three given that we only cultivate one crop. So far our claims have not been satisfied."

This point of view is shared by the majority of the peasants who cultivate in the perimeter. Certain peasants add that they do not know to whom this sum, which they pay each year to SONADER, goes. From the perspective of the administration these fixed charges go to the maintenance and repair of current equipment; they assure the administration and long term viability of the project. If it is not possible to diminish the fixed charges, it would be desirable from the perspective of the peasants to establish a second season of crops, which would allow the peasants to take more advantage of their export production.

Analysis of the yields of parcels

The yields obtained in the perimeter have in general been increasing over the years. This increase is the result of progressive assimilation of agricultural techniques. Seventy-five percent of the peasants whom we met in the field confirmed that they had learned the agricultural techniques of irrigation. The average yield of 7.3 tons per hectare obtained in 1983 is one of the better yields found in the entire country. The variations in yields which we noted came less from a misunderstanding of agricultural techniques than from a lack of material and human inputs among certain cultivators and from

constraints linked to the situation of their parcels (topographical configuration of the land which creates an excess or shortage of water, the non-observance of water distribution rules which favor certain cultivators to the detriment of others).

Among these 100 parcels, 2 yielded 5 tons per hectare, 2 yielded 5.5 tons per hectare, 45 had higher yields than 5.5 tons/hectare, 47 had yields above 6 tons per hectare, 3 had yields above 7 tons per hectare, and one yielded over 8 tons.

The exceptionally low yields were among the saamba remoru while the exceptionally high yields were among the Soninké where the acquisition of agricultural techniques is more advanced and where the material and human inputs are greater. Beyond the solid social organization which characterizes this ethnic group, one should also note the higher sense of collective solidarity which inspires the ethnic group. There is also a correlation between the yield of cultivated parcels and the social position of the recipients. I noted that among the saamba remoru the yields are low while among the large land owners and other recipients (merchants, bureaucrats, marabouts, etc...) the yields are often high. This disparity is basically due to this latter category of recipients having material and human means that are substantially superior (the possibility of hiring cheap labor). The saamba remoru who represent the most destitute social strata and those most dominated traditionally (Haratine, Maccubé / "captives") demonstrate however a heightened motivation which expresses itself as high yields whenever they have the chance of cultivating better parcels. They are generally used in the perimeter as an inexhaustible reservoir of labor.

Labor and the social organization of work

Remember that the Gorgol Pilot Perimeter is subdivided into parcels of 0.5 hectares grouped into sectors. Theoretically a parcel of 0.5 hectare should support the installation of a family comprising at least three laboring adults ("actifs"). Yet the actual situation is quite different: the majority of recipients do not have enough labor power to properly cultivate their parcels. One finds families with more and less parcels than they should have if one based the calculation on the criteria of 0.5 hectares per three laboring adults.

Let us listen to M.M. Ba who is a peasant speaking out about the administration:

> "I support a family of 18 made up of my two wives and fifteen children of whom eight are boys and seven girls. Two of my girls are married but are still in my care, their husbands being away on trips. Other than my wives and three of my children who are very small, all the other members of my family are capable of working in rice cultivation. Despite the numerical size of the persons in my care and the number of actifs available to me (13) I have only been able

to obtain from SONADER a single parcel of 0.5 hectares. I am barely able to make ends meet. The production that I get from my parcel is by no means enough to satisfy the needs of my family. I have on many occasions asked that I be allocated other parcels because my family and I are able to cultivate them but I have obtained nothing else. Still my neighbor who is next to me has six parcels while the family he supports is barely half as large as mine. This is why he has to hire salaried labor. I think that this is not fair but when I see some families like mine who do not even have a single parcel I console myself. If these families die of hunger, it is not because they do not want to work but because they do not have anywhere to work..."

The general rule in the administration is the individualization of parcels. The recipient should cultivate his parcel with his family. In fact the distribution of parcels is made without regard to the size of the family or the number of actifs in it. This is how parcels of equal size have been allocated to families without regard to their available labor force. This practice limits considerably the social profitability of the project.

In addition there is a great difference in the application of crop technology within the perimeter. The average inputs suggested by the perimeter administration are not always followed; either because of shortages in the inputs made available by the administration or because of constraints on the side of the recipient himself (for those who do not have enough labor available planting or weeding take longer). Respect for the ideal dates for crop operations is often a function of the availability of financing to the cultivator at the beginning of the season to hire salaried labor to replace inadequate family labor.

Social division of labor

In the Gorgol Pilot Perimeter, the men, the women and the children all participate significantly in the work. However there is a distribution of tasks between the sexes and the age classes which is less rigorous than that of traditional agriculture. For the 200 parcels which I studied, I found the following results for the distribution of tasks:

- because this labor is mechanized, leveling of fields is done 90% by men, 4% by women and 6% by children.[9]
- female participation is very important for planting,
- the maintenance of the different irrigation canals and the spreading of fertilizers is reserved almost exclusively for men,
- as for weeding, participation of men and children is much

higher than of women,
- as for reaping, men do the most followed in order of importance by children and women,
- as for threshing and winnowing, women do about the same amount of work as men; children do at most 25% of the work.

The proportion of tasks done by women increases each year. Cooperative efforts contribute part of the total work. These are particularly important for such tasks as planting and threshing. This aid is not always free. In the perimeter, salaried labor does the greatest part of the work and is used in all tasks. For planting, for example, student work groups or other organized labor groups coming from other locales provide salaried labor. Paid according to the area they plant, there is a veritable army of labor based around the perimeter. Each team is well organized: it has its rules, its chief and sometimes its own flag. These are often the youth from surrounding villages who have experienced the effects of the drought and are part of the rural exodus. One of them M.A.T. made the following statements to me:

> "I am 22 years old and I am from Awoynath,[10] I am a member of a group of 9 other youths and we are specialized in planting. We can plant an entire parcel in half of a day. The earnings which we make are certainly not high but they allows us to survive. In any case it is the only work available to us for the moment. Personally, I tighten my belt in order to save something, I do not know if I will make it but I want to go north[11] to look for a better paying job. It seems that there people are better paid. While if I continue to plant each year in the Gorgol, I do not think I can assure my future or that of my family left in the village. If at least they would give us a parcel I would stay because I do not want to go to far from my homeland and my relatives."

The situation of M.A.T. is typical for the majority of young who come to the Gorgol Perimeter during the winter season.

There are also numerous Haratine women who thresh and winnow and are paid in kind or cash. Their situation is very precarious and resembles in many respects that just described by this young agricultural worker.

One of these women, M.N.[12] related the following to me:

> "I come originally from Lexeïba[13] and I came here to look for work, any kind. I worked as a servant in a house in Kaédi for some time and received 500 UM per month. This was too little but I stayed anyway for three months. Then I left the house at the time that they were beginning to harvest and thresh rice in the Gorgol Perimeter. I got employment in this work and was paid by the task. I earned thus between 100 UM and 150 UM per day but there were days

when I could not get work because the competition is very stiff. After the harvest, I left in search of a possible job as a servant... They say we are now free but our every day social and economic situation has not changed much; I believe that it gets worse every day."

Because the majority of the traditional tenure rights are still exercised in the developed and cultivated area, the most depressed social strata of the traditional culture find themselves with roughly the same situation in this so called modern perimeter. It is these social strata, however, who provide the principal labor force. There is no adjustment between the number of parcels allocated, the significance of the need, and the available labor. The criteria for allocation of parcels does not correspond to the real labor capacities available to the recipient. This is because parcels are allocated with priority to those who owned lands before or who before had usufruct rights on the lands developed for the perimeter. Yet it often happens that these people end up with large areas for which they do not have a sufficient labor force. Thus the supposed equilibrium between labor force and area cultivated is destroyed. The distribution of recipients in the perimeter has no relation to these social criteria, such as the goal of providing for the most needy.

Before the implementation of the perimeter and within the structure of traditional cultural systems there were certain traditional forms of salaried labor such as the daol n'diobdi but these forms were limited in space and time with respect to the many traditional forms of free cooperation and aid. The beneficiaries of this aid would generally only provide a meal in repayment. Further, this meal was not even obligatory, it depended on the means available to the recipient. Among these forms of aid were doftal, daol fedde, balotiral, and daol thierno. In all of these forms of aid, work had a social function not just an economic one.

Today these forms of traditional employment tend to disappear to be replaced by salaried labor. The monetary and market relationships dominate all others. The recourse to salaried labor is almost universal and is assuming more and more organized forms. There are thus contracts between cultivators and certain organized groups of workers. Since labor is abundant, the terms of the contract favor the cultivator. The Peulh and the Haratine provide the majority of this labor force.

Financial results

On a parcel of 0.5 hectares theoretically intended for a family of at least three actifs, the total production of less than 3 tons could bring in 37,500 UM calculating 2.5 UM per kilo. If one take into account the work done directly by the peasant versus the salaried labor, the total costs would come to about 15,200 UM for a 0.5 hectare parcel. The cultivator could thus

make a profit of 22,500 UM. However, the proportion directly consumed is greater than that marketed. The perimeter would be more profitable for peasants if double cropping were practiced because the "fixed costs" that the peasants pay are annual costs. For the moment, it is the large cultivators who have many parcels who get the most benefit out of the perimeter. For the 1983-4 agricultural season, the total production of the perimeter was priced at 50 million UM.

Before the perimeter, the average yield in the Gorgol waalo had been estimated at 400 kg of sorghum per hectare worth about 8 UM per kilo at that time.[14] Thus the gross revenue per hectare had been estimated at 3,200 UM per year; not counting the cost of the factors of production.

In consequence, the new net revenue obtained by the peasants thanks to the irrigated agriculture increased more than 16 time with respect to what they earned before the perimeter. It is of course important to take into consideration inflation during this period, but this does not prevent the increases in revenue from being real. According to the peasants interviewed, who had only one parcel of 0.5 hectares, the production that they get from cultivation only covers their needs for 4 to 6 months of the year. By contrast, those who have three or more parcels cover their needs for the entire year. It has to be remembered that this category of peasant is a minority in the perimeter.

The marketing of surplus is guaranteed by another State organization: the Commissariat à la Sécurité Alimentaire (commissariat for food security) which buys rice at 2.5 UM per kilo of paddy. This paddy is processed at 3.3 UM per kilo and then resold to SOMINEX[15] at 24 UM per kilo.

The low price the peasant receives for his production causes insecurity as far as remuneration for his effort is concerned. Prices are fixed by a State organization beyond their control and prices remain at nominal levels too long without taking into account rapidly increasing costs for the factors of production. The market price worked out by the Commissariat à la Sécurité Alimentaire is based on the idea of peasants liquidating surplus for profit. Yet for the majority of peasants, marketing production represents a need for money not the desire for profit. The peasants enter into the marketing process not because they expect to make a profit but because they must at whatever cost obtain some money to pay for their numerous expenses.

In addition, the evolution of consumer prices with respect to producer prices is favorable to the marketing organization which unfortunately often reinvests significant profits outside the perimeter. This organization makes a net profit of 4.7 UM on a kg of paddy purchased from the producer.[16]

The problem of shortage of cereals is no longer significant for the Département of Kaédi because the production of the Gorgol Pilot Perimeter added to that of the rest of the waalo fills the Département's needs in cereals. This permits the country to save foreign exchange in the amount of approximately 60 million UM.

Further, the perimeter each year attracts large numbers of

people from the neighboring regions who are fleeing the effects of the drought. Among these we find primarily Peulh pastoralists and Haratine, all impoverished. At the level of mastering irrigated agriculture, the peasants of the Gorgol Pilot perimeter have served as an example for other peasants in the country.

Beside these positive factors, one should point out the existence of many deficiencies.

As a whole, the peasants are poorly organized. There is an organization for the cultivators of the perimeter called the "Comité des Exploitants" (Committee of Cultivators) which serves as intermediary between the cultivators of the perimeter as a group and the State which is represented by a parastatal: SONADER. The majority of the cultivators do not recognize this committee which counts 16 members because they feel that it was not democratically elected and rather was imposed on them. In addition, there are structures to permit the peasants to express their points of view about the administration of the perimeter. No general assemblies or reunions open to all the cultivators in the perimeter were provided for, nor were there even provisions for renewing the existing structures, such as the committee of cultivators. It should also be noted that this organization tends to substitute itself for SONADER. This gives rise to tensions and sniping which splits the cultivators over the direction of the perimeter management. Finally, the basic operational regulations are rarely changed.

To these problems of social organization, one should add technical problems linked to management: many of the irrigated sectors of the perimeter are often poorly leveled. This detracts from the results as far as the productivity of these sectors is concerned. Beyond this, the resolution of the irrigation system is very coarse which does not allow the peasant cultivators to be autonomous, which makes both the organization of work and collective inputs difficult. There is practically no work discipline.

Training is not adequately provided to the peasants who are for the majority illiterate. Planners do not take peasant knowledge adequately into consideration.

Costs of cultivation and modes of financing

It is indispensable for the Gorgol Pilot Perimeter to assure the functioning, maintenance and repair of equipment in order to guarantee to the peasants a permanent means of development. This objective implies however certain costs. Among these we may note the following:

- the charges for maintenance and repair of equipment: maintenance concerns the expenses for the maintenance of basic infrastructures for the perimeter. The repair of equipment depends on their degree of utilization and how

long they last. The costs of maintenance apply to the charges for rare rebuilding which sometimes are require in the project. These costs are extremely difficult to foresee given their accidental character. By way of example, the rebuilding of the protecting dike for the Gorgol Pilot perimeter which was damaged in 1981 cost more than 400 million UM; which is approximately equivalent to the amount initially invested for the whole development. The sums committed by the State to cover maintenance do not guarantee a minimal coverage; which justifies the recourse to exterior sources of financing.

- charges for functioning concern the costs of mechanical installations (fuel, oil, and electricity) and salaries of those personnel employed in maintenance.
- the charges for cultivation depend on the cost of the factors of production (fertilizers, seed, labor, water, etc...).

Financing for all these costs comes from the resources provided by the cultivators. Of this a part is the charge for management and the rest is the repayment of the means of production used. SONADER or the external organizations sometimes intervenes to finance certain charges.

The cultivators pay 10,400 UM per hectare as a fixed charge corresponding to the value of the management charge. Almost all the peasants of the Gorgol estimate that this charge is too high. In addition to this management charge, the cultivators reimburse for the inputs (seed, fertilizer, labor, etc...) which amounts to about 12,000 UM per agricultural season. These costs do not take into consideration the labor directly assumed by the peasants such as labor.

Implications of the experiment

We are in the process of a certain evolution of the traditional social and familial structures but the shape of this evolution is not yet clear. There are instead some evolutionary tendencies which are defining themselves within the context of a continued domination of the traditional system. The experience of irrigated development projects remains too limited in time to give rise to fully evolved forms from which one could deduce all the social and organizational implications. Nevertheless, I will try to elucidate the most notable elements of these evolving social structures.

Allocation and status of the developed parcels: towards a reinforcement of social inequalities

The acceptance, assimilation, and mastery of agriculture by the peasants involves recourse to methods devised to get around the organizational rules imposed or proposed by the administration. This is why we so often find the ancient traditional structures transposed onto the perimeter.

As we noted earlier, the allocation of parcels rarely corresponds to criteria of equity for all peasants on the perimeter. In fact, the families of the land owners are always served first and thus have the majority of the parcels even thought they are a minority of the peasants. The families of the "ayants droits" (holders of subsidiary rights) appointed by the land owners come next. The landless peasants come last. In this way the different social strata are not on the same equal footing as was supposed. The land owners still have the same tenure prerogatives on their lands and do not need to work as cultivators.

In the traditional system, land was a factor of production and a sign of economic power. The power of the family depended on the extent of the family lands. There are aristocratic families who have large estates. Due to the absence of equity in the allocation of parcels and the possibility of finding abundant labor at a cheap price, the land owners or individual recipients can benefit from the production of their lands without making any physical effort to produce. The economic and social power is not held by those who actually work on the parcels but by those who own them. As in the traditional society, the value of the individual on the economic level is defined much more by his social rank and the inherited advantages of his family than by his work. The relations of clientship or dependence as well as the social ranks determine in large measure the social relations of production.

The profitability of the project is real enough but it is the large land owners who make the profits.

The development of the participation of women in the work of irrigated agriculture tends to modify the male-female relationships. These women specialize in certain agricultural tasks (planting, threshing, and winnowing) where their level of participation sometimes surpasses that of the men. They acquire thus each year an increasing responsibility in the production process.

One may thus note another modification brought by the introduction of irrigated agriculture: this concerns the nutritional habits of the populations of the region. In effect the traditional dishes, formerly based on sorghum, millet or corn, are now made primarily of rice.

Towards the disappearance of the traditional agro-pastoral system

The development of irrigated crops also affected the traditional strategy for utilization of space based on a division of space and time. The waalo which was cultivated in the dry season supported herds and herders during the dry season while the jeeri which was cultivated during the winter supported the herds and herders during the winter when they were displaced from the waalo by the inundation. Irrigated agriculture unlike the traditional agriculture mobilizes all the land to the exclusive benefit of agriculture and the sedentary cultivator. The division of time and space which existed between agricultural activities and pastoral activities, between transhumants or nomads and sedentary cultivators, disappeared with the irrigated development projects which subtracted vast areas from the pastoral economy.

Even if Peulh herders are sometimes admitted into the irrigated perimeter, their cattle are still always excluded due to the risk that they might devastate crops or destroy small dikes. The few Peulh who are integrated into the irrigated perimeter must accept despite themselves a profound modification of their life style. In effect, the punctuality which the practice of irrigated agriculture requires contrasts with the mobility to which the Peulh are accustomed. Although inhabitants of the Gorgol waalo, they are seldom accepted as complete but different members of the local communities. Often, they are denied the right to have access to irrigated parcels. This is also why they are seldom allocated parcels.

Subsidiary activities of the Gorgol peasants

The majority of the Gorgol peasants practice enough livestock raising for it to be a significant activity even if the amount varies from peasant to peasant. Still this activity has tended to diminish due to the impact of the drought. For the peasants, livestock raising is considered as a "savings bank" and a prestige activity. If the peasant has an urgent need for money, he will sell an animal in order to obtain the necessary money. Conversely, if he has some surplus, he will invest his money in the purchase of animals in order not to spend now and so as to be able, in case of necessity, resell one day at some future profit. At some point, if the harvest provides a monetary surplus, above and beyond the immediate needs of the peasant family, the cultivator will decide to buy some animals in order to put aside his savings. In fact, given the feeble general economic level of the peasants and the numerous costs which they have, they could not keep liquid savings in their possession for long. They do not see where to invest it other than in livestock. When it is a question of selling or consume an animal, the peasants prefer to choose the males. If they do not have any, they will prefer to exchange, to the extent possible, one of the females for a male rather than to kill it.

In a general sense, the peasants make an effort to diversify their sources of revenue by practicing on the side other professions than cultivating parcels (livestock raising, artisanal activities, fishing, etc...). Fishing is a seasonal activity which is important in the Gorgol basin. But in recent years, due to the lowness of the river floods, the production of fish has fallen considerably. Fishermen consume half of the fish catch themselves and the inhabitants of Kaédi, to whom the fishermen sell their surplus, consume the other half.

Some peasants peasants practice subsidiary artisanal activities when they are not too occupied by agricultural work. Other peasants practice the professions of tailor, mason, baker, etc.

The low incomes of the peasants are also linked to the absence of possibilities for diversification. The peasants who only practice irrigated agriculture encounter more problems than their fellows who practice subsidiary activities in addition to agriculture.

Perspectives on the development of irrigated projects in Mauritania

The establishment of irrigated perimeters can be done according to different schemes which each may embody different social, economic, and political needs. There are three major possible approaches to the development of irrigated perimeters:

1. The State may develop the irrigated perimeters and set them up on an agro-industrial model with salaried labor.
2. Individual nationals or foreigners having some capital may put large areas under production using a significant amount of mechanization and salaried labor.
3. The irrigated development projects may be organized in small units in order to offer the peasants a maximal access to irrigated agriculture. Here it would be a question of developing intensive irrigated agriculture allocating developed land in proportion to the available labor power and reducing to a minimum the mechanization used.

The first approach to development was tried by the Mauritanian State at Rosso. It resulted in a State farm where the old land owners were expropriated. If the objectives of production were satisfied in the first years of the development, this approach still had its defects as far as resolving the social problems encountered; notably the absence of motivation among the peasants who felt themselves to be strangers on the fields which they cultivated. Peasants viewed the perimeter as a garden of the State. This approach was also attempted at the beginning of the Gorgol Pilot perimeter. There also it met with

failure. There is a general lack of interest in this approach by the population. In addition, the State can not support the costs of mechanization inherent in such a system. Based on highly mechanized cultivation, using few salaried workers (one worker for 9 to 11 hectares) the developments of this type increase the exodus of men towards the large towns.

The second approach to the development of irrigated perimeters which is characterized by large private exportation using the same technology as the State projects, encounters much the same sociological consequences as those arising from the establishment of a perimeter run as a State farm.

All the same, the expropriation of cultivators or even their indemnification for the benefit of individuals having significant amounts of capital would certainly give rise to much more lively reactions than expropriation to the benefit of the State. Beyond this, such systems would lead to the concentration of vast agricultural estates in the hands of a minority and would result in the direct domination of small peasants by large producers.

These two approaches to development should not be accepted if one wants to take into consideration the social dimension of development. In effect, neither of these two approaches allow for the integration of the populations into the technological progress that the irrigated developments are supposed to bring.

The third approach to development is based on semi-mechanized family level cultivation. It reduces mechanization to a minimum: other than ploughing, the majority of the other agricultural operations must be done manually or with the aid of simple easy to handle tools. This system permits significant participation of women and children in the planting, the control of water, the guarding the crop, and the harvesting. On the other hand it allows reduction of the costs of production to a minimum and in so doing diminish at the national level the imported inputs represented by investments in machines and in their maintenance. If one linked to this approach the local transformation of the product, the producers would benefit from additional revenues. Beyond this, this system should allow an irrigation network that would guarantee the producer autonomous exports with regard to irrigation, drainage, and access to cultivated lands. The producers will have to work together on the organization of labor and the administration of collective inputs. Each family will have a field of from 0.5 hectares to 1 hectare depending on the number of actifs in the family.

The distribution of developed lands should not be done for the profit of a privileged minority but for the benefit of all the people involved in or impacted by the project. One would thus favor a more egalitarian access by the peasants to the new agricultural conditions, while reducing the actual inequalities in use of land. In offering the maximum of peasants access to riskless agriculture, one would thus be responding to their concerns about prioritizing the subsistence of their families.

In addition, the alternative favors the stabilization of men and reduces the rural exodus. By participating actively in

production, the young will be less motivated to leave their homes to look for a possible job.

Further, the dependency of producers on the project administration will become less. The latter will only interfere for essential operations and over the long term will disappear for the members of all the families as well as all the working population will feel responsible for the success or failure of the project. It is only when this is so that they will take over the operation and administration of their project.

II. Peasants and the State: two different systems of rationality

A. Criticism of the methods for designing irrigation projects

The methods for designing irrigation projects which I have studied are characterized by the following elements:

- they begin with a model and express all the criteria for evaluation in monetary values.
- they analyze the initial pre-project situation only in terms of the chosen model.
- they only consider social problems which are in fact local versions of national problems.

This form of design is based on the following:

* a model for crop production
* a model for socio-economic organization
* a model for relations with the exterior
* a model for motivation

1 - A model for crop production:

What strikes one about the areas where planners put development projects is the heterogeneity expressed by the different elements of the productive system. This heterogeneity is evidenced in the great dispersal of the areas cultivated by families, in the the great differences in the cropping systems, and in the great differences in productivity and yields.

Yet most often the project administration uses a model which starts from the assumption of homogeneity, without considering heterogeneity. In addition, the model of production envisaged is always rigorously homogeneous and talks in terms of individual production units.

2 - A model for socio-economic organization:

Here it is a question of a model whose general form is the cooperative. We have seen that the socio-economic organization of the impacted populations is more characterized by complexity

and diversity. This socio-economic organization exhibits its own characteristics depending on ethnicity or ethnic group in which it occurs and on the type of agriculture practiced. Now to this diversity, the model always provides a uniform solution of the "cooperative" type. We noted for example that in the Gorgol Pilot Perimeter, the administration allocated equal sized parcels to cultivators without regard to the real availability of labor in the families concerned. Some cultivators thus ended up with more parcels than they needed and others found themselves in the reverse position.

The main reasons for this uniformity are the same as those proposed for the production model:

- in effect all the marketing operations dealing with purchases or sales are more reliable for a group than for an individual.
- rather than trying to establish a flexible structure based on the actual socio-economic organization, planners have often preferred to impose a model (the Committee of Cultivators of the Gorgol for example).

One might ask if the cooperative, as it occurs in the irrigated projects is not the most effective means of making market relationships penetrate the traditional structures and thus integrate them into the "modern sector", that is to say the capitalist sector.

3 - A model for relations with the exterior

While the proclaimed objective of irrigation projects is to turn the peasant into a modern cultivator by making him autonomous vis à vis modern agricultural constraints, it is surprising to find that all the models are ones of dependence and domination.

To be precise, the peasant has no control over the system of prices or the supply and marketing system which are organized in such a way that the peasant depends entirely, whether grouped in cooperatives or alone, on decision centers which are completely exterior to him and thus is very dependent; much more so than he was before the establishment of the perimeter.

4 - A model for motivating the peasants

"How do you motivate peasants in their own development?" is a fundamental question posed by the irrigated development projects. The answer is also unambiguous. Planners assume that the only possible motivation is the increase of peasants' monetary revenues. The objectives and constraints are expressed in terms of market value. Now, a number of the goals of peasants such as availability of time for social life, rest, the

reproduction of the society in which he lives or alternatively the contesting of the social and economic system, etc. can not be expressed in market value. In fact, the only goals considered in the design of irrigated projects are those which can be given a monetary expression. In addition, as we have seen, it is not just the need to express things in monetary terms which gives rise to this abandon of social objectives but rather something more fundamental.

The analysis of the project situation most often involves direct reference to an envisaged future model. Thus, planners concern themselves only with the four models mentioned above: the production model, the model of socio-economic organization, the model of relations with the exterior, and the model for motivating peasants. This eliminates from the outset the social reality on several levels. Planners begin on this basis to make an inventory of the information to collect. These data would be doubly misleading: on the one side because each datum would be separated from its context and on the other side because the relation of the data to other elements is not examined.

The Priority Goals of the Peasants

For the majority of peasants, the fundamental problem they confront is in the first place to assure their survival. The problem is one of their disappearance due to unfavorable circumstances (drought) and the historically known effects of social and economic domination. It is primarily on his simple labor power that the peasant expects to survive. The reproduction of his labor force, will be the real key to an evaluation of the effects of the development. We will look at this reproduction on two levels:

* the physical reproduction of the labor force
* the cultural reproduction

1 - The Physical reproduction of the labor force

At the quantitative level, the physical reproduction of the labor force means that one tries at the minimum to renew the actifs in the project accurately. This assumes certain demographic conditions: high birth rate, controlled mortality (especially infant mortality), management of outmigration. For these conditions to be fulfilled, the level of health of the population must first improve. Yet, this level of health depends more on nonmedical factors than on medical ones because the material base composed of a number of factors; each of them linked to the existing mode of production is the basic cause of the level of health.

2 - Cultural reproduction

There is a close link between the material base, or the mode of production and what are generally referred to as "cultural factors" by which I mean everything in the superstructure which has to do with ideology. Cultural reproduction in these conditions conflicts with the perpetuati . of cultural factors coming from outside the peasant milieu. This cultural reproduction is thus opposed to the social dissolution which affects the peasant system. This dissolution, in putting in jeopardy the bases for social organization at the same time destroys the means of cultural reproduction.

Once it is accepted that the perimeter will improve the production system, the choices available to the peasants are made according to three criteria:

- the security of the new system
- the new needs which the additional revenue can satisfy
- an acceptable system for the transfer of the surplus

Yet rather often, the new system does not bring any additional security because of the indebtedness it brings. For the peasants, irrigated development projects do not make sense unless they assure the conditions of their own reproduction. This means that the need to pay off the loan must in no case be allowed to eat into the subsistence needs of the peasants. This is the first condition for the social success of irrigated development projects.

The second condition for success concerns the division of the surplus produced over and above the needs of subsistence. Everything depends at this level on the development strategy envisaged by the country and the choices made with regard to dependency, the transformation of production and consumption structures, and thus on the model of society.

In fact, the adoption of such a step is justified by the place which the project occupies in the entire country's process of development: the only serious problems considered are those which interest the entire nation; this is why increased production and agricultural productivity are the major objectives. This is why planners only see the increase of production in the market sense. They see it as a way to solve a national problem; either an agricultural/food problem or a balance of trade problem. Increases in revenues themselves are seen as a means of economic integration or a way of turning an "archaic" sector into a model of modern "consumption".

The examination of the situation of irrigated projects in the region has instead illuminated some fundamental problems which, most often, are problems of food, housing, environment and social dissolution.

It is certainly normal for national development problems to

be considered but this can only be done in an effective way if the establishment of irrigated perimeters also takes into consideration elements which for the peasants are fundamental.

Conclusion

It is undeniable that the Gorgol Pilot Perimeter as well as the other irrigated perimeters in the country have brought some positive changes in the area of economic growth. This economic growth is due to an increase in agricultural production. However, the criteria of production and productivity are not sufficiently relevant to be the basis for evaluating an irrigated perimeter. In the case of the Gorgol Pilot Perimeter, this increase in production also brought some significant regressions.

This is how we find in the Gorgol perimeter peasants and individuals from the category of diverse professionals (merchants, bureaucrats, marabouts, etc...) who have enriched themselves considerably by increasing their estates, buying modern equipment, using salaried labor, and developing parallel extra-agricultural activities.

Beside this minority group, we find peasants for whom the parcel provides at best half of the subsistence needs of their families. In addition, these peasants progressively loose their parcels to the large land owners. They move bit by bit along the road to proletarianization because they then must to hire themselves out as wage labor for the large land owners. The allocation of parcels which increasingly is done to the detriment of the poor peasants has accentuated this social differentiation.

We are thus witnessing a transition toward the development of social structures characteristic of capitalist production. It could not be any other way when one considers that much more importance has been paid to the development of agricultural production than to the social conditions of the peasantry.

The difficulty the public powers have in decentralizing decisions and management in order to make the small producers effectively responsible risks in the long run to lead to the penetration of agri-business into management. Already, the possibility of the large cultivators to employ specific modern techniques is a factor which threatens to overturn social structures. This mechanization has the major disadvantage of reducing employment possibilities but the constraints of profitability and production require that the perimeter be even further mechanized. This mechanization constraint is in contradiction with the social goals of the project among which figure security of employment for the population in order to reduce rural outmigration. The Peulh and Haratine will be most affected by this proposed further mechanization given that they provide the majority of the labor force in the perimeter. This will be a severe blow to this part of the population who are already in precarious living conditions.

In addition, irrigated agriculture lends itself to market

speculation. Now this speculation is based on fully individualized structures: the monetary incomes which come from commercialization are often derived from individual fields and favor individualization of behavior. This new attitude is a new factor in a society which hitherto lived as a community.

We have seen that peasant management represents the most viable alternative for the populations impacted by irrigated perimeters but it poses a fundamental problem concerning the relationship between powers in society: among peasants, between peasants and private capital, and between peasants and the State.

In as much as there is not a new organization of power based on an equitable distribution of the national real estate, according to the needs of the populations, the social and economic evolution of projects will only work in favor of a minority. This new organization of power supposes a real political desire for change given the current nature of the organizational systems in vigor in the irrigated perimeter.

In the current state of perimeters, only those who invest or serve as intermediaries for directing such investments can properly manage perimeter financing. The peasants can not themselves guarantee the financing of the basic infrastructures of the large perimeters.

This poses a problem for the future establishment and management of large irrigation projects. Where can one find the financial resources needed for the development of irrigated agriculture for the thousands of hectares which will soon be feasible due to the large dams of the O.M.V.S.? Given the incapacity of the peasants to finance these large development projects, the possibility which looms up is that of management by large private capital.

Such an option would have grave consequences because it would lead to a crisis in rural society. It would end in the enslavement of the peasantry and a socio-cultural dissolution of peasant society making cultivators indefinitely dependent. It is not discussion of making peasants responsible which will prevent this possibility. The experience of the Gorgol Pilot Perimeter is there to prove this: despite the goal many times reaffirmed by the State "to make the peasants responsible" and "to make the perimeter benefit the entire population of the region" we have witnessed rather the reverse. The peasants who expect to get almost everything from the exterior (fertilizer, technology, etc...) become less and less responsible. They do not in reality control their own labor force. How then can they be responsible in an environment where the basic means and factors of production are out of their hands.

As for the goal of "making the perimeter benefit the entire population of the region" - particularly those who are most destitute, here again there is failure. It is rather a minority, who theoretically have the status of peasant[17] who benefit the most from the development and who make great profits to the detriment of the great mass of the the peasants for whom the perimeter was initially supposed to be prioritized.

In so far as the public powers continue to take unilateral decisions about the design and management of irrigated development projects without consulting the population first, the peasants for whom the perimeters are intended will be more slaves than beneficiaries.

NOTES

1.J.P.Dubois La basse valleé du Gorgol, étude de Géographie régionale. May 1961.
2.Mission d'Aménagement du Fleuve Sénégal.
3.Mission Socio-Economique du Sénégal.
4.Actually the Gorgol Noir and the Gorgol Blanc which drain the Gorgol river basin.
5.United Nations Program for Development.
6.The land owners as a group received 6 million UM as indemnification during the construction period.
7.The radiocast from the Minister of Rural Development during the 1978-1979 agricultural season stated that "The Government has decided to use all reasonable procedures to manage and put under cultivation the Gorgol Pilot Perimeter.
8.Ecole Nationale de Formation et de Vulgarisation Agricole.
9.The men and women working in the perimeter are between the ages of 16 and 60. Children here are defined as being under 16 years of age.
10.A village in the Kaédi region.
11.Meaning to the mining towns in the north of the country.
12.M.N. is a Haratine and formerly a slave.
13.A town not far from Kaédi.
14.According to SONADER (Essai d'approche à la solution du problème du Gorgol 1980) the price of sorghum at this time is 15 UM per kilo.
15.Société Nationale d'Importation et d'Exportation.
16.The C.S.A. buys paddy at 12.5 UM / kilo from the producer, mills it for 3.03 UM / kg and then sells it through SODIMEX to the consumer for 24 UM / kg. with 3.5 UM going to marketing. Thus the Commissariat à la Sécurité Alimentaire made a profit of 4.7 UM per kilo.
17.These are in reality, in the majority, merchants, bureaucrats, businessmen, etc.

The Sociological Consequences of Project Foum Legleita

Mohamed Lemine O. Mohamed Salem

I. Identification of the Problem

For several decades, rural Mauritanian society has been experiencing dramatic changes. A major feature of contemporary Mauritania is the decline of the rural economy. This decline has three major causes: (1) a development policy which has what many call an urban bias. The rural economy has been neglected for a long time by Mauritanian policy makers. (2) The terrible drought and its dramatic envi[illegible] effect. In fact, the traditional rural economy depe[illegible]nly on natural factors such as the amount of rainfall. (3) The difficulties the traditional method of agriculture has in surviving in a changing sociological and economic context. In fact one has to understand that the organization of traditional agriculture corresponds to a system of ownership and a system of social stratification that has been greatly affected by the changing conditions of Mauritanian society.

This dramatic situation facing the rural sector has led to the emergence of a big concern and sensibility on the part of the government to develop and modernize agriculture. In this regard the creation of Sonader, "the national agency for rural development," in 1975 was considered a major step. From this perspective, efforts were made and policy designed to promote irrigated schemes, and Sonader began the implementation of large scale irrigation projects. Foum Legleita Project, which will be described in detail in the following section, is the biggest large scale project ever implemented by Sonader. The concern of this chapter is to investigate the sociological consequences of this project on the target population. In other words, from a sociological point of view, what are the most important effects of this project?

It should be understood, however, that the project has a short history. The development work and infrastructures have been completed in only six years. Nonetheless, it is argued here that this project may be viewed as a technological, institutional and sociological innovation that has great consequences on the target population. It is a technological innovation, first, because of the introduction of modern methods of agriculture never known before to the peasants; second, it is an institutional innovation because the value of land depends not on natural factors but on irrigation techniques. Who controls water for irrigation; controls the value of land. It is also an institutional change because the conditions of access to land have been changed. It is not the chief of a "clan" or a tribe who has the power to distribute land but the representative of government, in this case Sonader, according to its own criterion. The project finally is a sociological innovation. The irrigation project is accompanied by the

creation of villages, new settlements; in short, a project of sedentarization and "fixation" of rural population. Before the project most of the population target were semi-sedentary, semi-nomadic.

I should however point out that one has to be cautious in explaining every change in the target population as "an effect of the project." That is simply not true. The rural population is a part of a larger socioeconomic milieu marked by the spread of modern values. For example, despite the rigidity of the traditional stratification system, the rural values have been weakened by the destruction of the economic basis of nomadic society, the spread of modern values, education and so on. The first hypothesis is then that although the project does not entirely account for the sociological changes, it greatly sharpened them.

To delineate the boundary between changes brought about by the project and those resulting from the general context of Mauritanian society I chose a sample composed of settled (those who have been already allocated land in the newly irrigated land and settled in the new villages) and unsettled (those who are still semi-nomadic and waiting to be settled in the irrigated schemes). The two (settled and unsettled groups) are originally from the same villages. This will be detailed in the section "sample and methods." Taken together the villages are similarly affected. In other words people are similarly disappointed with the project, no one specially benefited from it. The second hypothesis is that there are big differences between settled and unsettled. These differences are interpreted here as an effect of Foum Legleita Project.

In short, to identify and state the problematic in this chapter, I am investigating primarily the sociological consequences of the project and at the same time attempting to make an evaluation of how much the targeted population benefited from it.

The chapter contains four sections. Section I is an introduction and identification of the problematic. Section II describes in detail the Foum Legleita project. In order to make the reader familiar with the general social context, this section will begin by an overview of the general social and economic situation of the Mauritanian rural society, and how this situation led to the emergence of irrigated agricultural projects. Following this, a summary of the technical aspects, location, and organization will be given.

Section III concerns the methods of research. Here the focus is the composition of the sample, the population characteristics, questionnaires and interviews. In Section IV I analyze the outcomes and findings of the research. The most important question should be answered in this section. Do the research findings confirm the hypothesis? What is the extent or magnitude of these consequences?

Section V is the evaluation. In this section I will attempt to identify the most important problems and shortcomings of the

project. We will also try to see to which extent the target population participate in decision making, how they view the project and its administrative apparatus and what consequences this perception has on the project success or failure. Is the peasant better off after project implementation? If no, what factors account for this? What recommendations and suggestions should be made to insure the future of the project? It is in the evaluation that such questions should be answered.

II - Project Description

A) The rural sector: an overview

One of the greatest problems in today's Mauritania is the decline of the rural economy. Since independence in 1960, the agricultural area has grown little and there has been a decrease in productivity. Prior to independence, however, the agricultural sector was the main force in the economy. Between 1960 and 1977 the traditional agriculture sector's share of GDP declined from 59% to 26%. In 1982 Mauritania produced 20,000 tons of cereals, 15,000 in 1982 compared to some 255,000 tons estimated annual need. More than half of the country needs in cereals has to be brought from foreign relief. Mauritania has become extremely dependent on foreign countries in cereals necessary to its subsistence. Jague Giri reports that the country imports each year around 140,000 tons.[1] What factors then, one may wonder, have led to this dramatic situation? First up to 1973 the traditional structures of rural economy have remained practically the same. The colonial power never made an effort to modernize or change these structures and when Mauritania became independent in 1960, no initiatives were taken in this sense. Moreover the priorities of economic development shifted to industrialization and the modern sector with the creation of Firema and the exploitation of the mining sector. The discovery of iron and its exploitation marked an era in the history of Mauritania and its economic structures. In 1959 Mauritania exported mainly cattle, gum and dates. The exports of these products represented approximately 22% of the GNP. Of all Mauritanian activities, agriculture and livestock comprised approximately 84% of the GNP. The mining sector represented only 4% of the GNP.

By 1976 raw materials represented by iron ore and copper provided 90 percent of the value of exports, contrasted with only 4 percent contribution in the GNP in 1959.[2] Parallel to this economic growth in the modern sector there was a sharp decline in the rural economy. As Samir Amin wrote "Economic growth is still totally restricted to the mining sector, and its direct subsidiaries."[3] The first factor then defines a situation of marginality and neglect of the rural sector. In his analysis of the evolution of Mauritanian social formations, F. De Chassey sees the distribution of scholarship as an indicator of the neglect of the rural economy in national priorities. He notes

that in 1975 from a total of 498 students, only 5 were trained in fields related to rural development. The second factor that definitely precipitates the decline of this sector already in crisis is the sahelian drought which begun in 1968. This natural phenomenon had dramatic social and economic consequences by worsening a situation that was already critical. Agriculture in Mauritania is a traditional agriculture which depends on natural factors; i.e. the amount of rainfall in a given year. Without rainfall it is simply impossible to cultivate. The production of cereals depends on climatic conditions, amount of rainfall and its distribution. J. Derrick notes that the whole country (Mauritania) was ruined as a result of a poor rainy season in 1982,[4] and according to Greene the average rainfall is 300 mm (year), but in 1972 it was only 144 mm.[5]

Because of drought, degradation of environment and ecological deterioration have gone further in Mauritania than in other countries. The phenomenon of desertification is continuing at an extraordinarily rapid pace. Within a few years the landscape has changed. Charles Toupet in his book about Mauritanian nomads reported that in 1973 an official report estimated that about 40% of the cattle had died.[6] However, the most impressive change that took place during the drought years is the extraordinary rural exodus and immigration toward rural cities. Since 1973 Mauritania has experienced tremendous movement toward urbanization and sedentarization due to the available economic and social opportunities in big cities and the destruction of the economic base of rural economy (livestock and agriculture).

Drought may not be the only cause of this phenomenon but it incontestably gave it huge proportions precisely because it took place in a historical context where the rural Mauritanian society began to experience an economic crisis in its means of production and a sociological crisis in its social structures. In fact the rural society in Mauritania has a rigid social stratification system corresponding to peculiar methods of production and exploitation of resources. In Moorish rural society the social stratification system is schematically the following. There is at the top of social hierarchy the noble families (ruling elements) and at the base the slaves. In intermediary categories between the two strata are artisans (specialized in handicraft production) musicians, zenaga (specialized in breeding animals belonging to the nobles) and Haratine (former slaves). In the black African rural society of Mauritania the system is fairly similar to what we just described above. This society is characterized by a social stratification with three categories: freeborn (ruling families controlling villages as well as land with their political and economic status), artisans castes and slaves. This system, however, has been weakened by the changing general context of Mauritanian society and so have been the values attached to it.

There are two reasons for giving this overview of the rural sector. First, since we are dealing with the sociological

consequences of an irrigated project on a rural population I felt it necessary to describe the general context in which these populations actually evolve. Second, as I said in the introduction, we have to be careful and avoid falling into the "pitfall" of reductionism. In other words, it is tempting but erroneous to explain every change that is actually going on in the target population by or as an effect of the project.

We have to integrate the rural population into the larger social and economic context. "The assumption that rural societies are isolated often leads to incomplete and even erroneous conclusions." J. Sonders wrote "The drama of change in rural societies is now being played at a worldwide stage. Its actors are the agents of change: the political innovators, the educators who bring a different life to children, the public health nurses ..., the community development specialists who urge barefoot villagers to raise themselves by their own bootstraps. In the west, this drama unfolded a century or so ago; elsewhere its acts are today being compressed into a few decades."[7]

We have to keep in mind the concept of articulation i.e., the congruence or working together of parts of a social system. This is the process by which rural society becomes incorporated more fully into the larger society while maintaining many of its rural institutions and characteristics. It is precisely this continuing deterioration of the rural economy that led to the emergence of a new concern to develop this sector. This concern is expressed in a practical way in the implementation of small and large scale irrigation projects in the agricultural zones of Mauritania, whose objectives are: developing agriculture by the use of modern methods, technology, and peasants' participation and involvement. The Foum Legleita project, the biggest large scale project already implemented is the object of this chapter.

B) The Foum Legleita Project

Foum Legleita is a large scale agricultural project located in the Gorgol region. Traditionally this region has been the most productive region of Mauritania in agricultural terms. This region is dominated by the proximity of the Senegal River and the presence of the valleys of the black and white Gorgol. Two kinds of cultures were practiced in the Gorgol valleys: the seasonally flooded oualo lands of limited extent which are very fertile and the dieri lands, the upland flanks of the valley which suffer from an irregular rainfall. Agriculture combined with cattle raising is the main economic activity of the population. The cultivation of land and its productivity depends on the amount of rainfall in a given year.

However, because of the drought and consequently the lack of water, a device or structure to contain water from yearly rainfall has been a popular idea among Mauritanian rural planners since 1973. The idea is the construction on the Foum Legleita site of a dam to contain water flooding from the assaba and the other regions to the Gorgol. The result is actually a

big river of approximately 65 km length. The dam is located on the black Gorgol and has a total capacity of 500 million cubic meter and a capacity of irrigation of 6000 ha. However, this initial projection (irrigation of 6000 ha) had dropped by the end of the construction to 3600 ha.

The goals of the Mauritanian government are, through the project, to modernize agriculture by providing water for irrigation, mechanization of methods, the use of modern techniques (fertilizers ... etc.) and modern management methods. The national agency for rural development is in charge of the project. It is in charge of irrigated land distribution; it decides the program of cultivation for each season, provides fertilizers and working stock. In short, it is the managing agency for the project. Before Sonader undertook the project an agreement was signed by the representatives of communities owning land and the Mauritanian government. The agreement stipulates first, that land is yielded by owners to the Mauritanian government but that after all maintenance work and construction are done, owners have the priority of access to newly irrigated perimeters. Second, the government agrees to compensate and pay people the values of houses, palmeries and other goods. During the phase of construction and the immobilization of land each household would receive food supplies. Finally Sonader is supposed to help people by moving them to the new settlement, providing technical advisors for building houses and provide some materials.

The dam, water gates, canals and other technical apparatus were built in land where peasants formerly had their fields and villages. A total of approximately 25 villages with 1500 households are directly affected by the project. They lost either their land, and villages, or their land. According to Sonader classification A1 and B1 are those villages which lost their houses or huts and their land and A2 B2 those who whose fields only were flooded. In April 1980 512 ha. of 3600 ha. were distributed to 1100 households. A second phase providing 650 households with 300 ha. of irrigated land was in preparation. The amount of surface land allowed to each household depends on the number of "actifs" in that household ("actif" is defined as adult able to work. For example, a household with young children has two actifs and is allowed 0.25 ha./"actif"). Some households have more than 6 "actifs," but because the area prepared for irrigation is limited no households can have more than one hectare. Villagers that are most affected by the infrastructures of the project (construction) have priority of access to irrigated perimeters.

Sonader, however, has an ensemble of conditions to which recipients should conform: a) people who had their fields and housing flooded by the river or destroyed by the construction and building have priority of settlement, b) every individual or household head has to work personally and cultivate their plot. They cannot rent it or lend it. c) Peasants have to conform exactly to Sonader standards, planning, and cultivation

calendar. For example Sonader decides to cultivate rice and every household should do so. The agency decides what should be cultivated and when.

Sonader is in charge of large scale labor while the maintenance of the plot is the responsibility of the household. In order to initiate peasants into the new methods of agriculture Sonader has framing and training services. Theoretically 20 trained people should assist and train peasants, however, only two of the twenty people are trained in agriculture.

Before each campaign a "cahier de charge" (book of charge) is signed by Sonader and the representatives of villages. In this book Sonader sets up an account to cover the costs of the agricultural season and the upkeep of irrigation scheme. This accounting is involves what Sonader calls "redevance" (reimbursement). Redevance has fixed and variables elements. Fixed elements are calculated by Sonader and are relative to the surface cultivated by each household. Peasants should pay the costs of equipment and maintenance of the infrastructure and irrigation network. The other elements are variable since they depend on each particular household's needs in fertilizers, copper, wheelbarrows and other instruments. In short Sonader decides the choice of and allocation of the crops to be planted, the organization of seasonal programs, dam management and the infrastructure network while the maintenance and labor inside the perimeter is the responsibility of the household.

In this section I have been trying to give a descriptive overview of the situation of the agricultural sector of Mauritania and how this situation has led to the emergence of an irrigated project such as Foum Legleita and second to describe in detail the organization and working process of this project. Now that this task is done, let us turn to the next section - research method and sample.

Section III Research Method

A) Population characteristics

The target population is composed of three main categories: The Moors (Bidane), Haratine (Black Bidane and former slaves) and Peulh (negro African). Combined the two Bidane categories constitute the majority of the population. The national census estimated Bidane as 76% while Peulh constitute the remaining 24%. A survey conducted in January 1983 by the sociological service of Sonader gives the following percentages:[8]

Haratine	53%
Bidane	23%
Peulh	24%

These categories share many similarities especially islamic religion and their social stratification system. In fact in each

case the community is divided in different strata: the nobles (ruling families) and the lower category of slaves. In between the two, a third strata is composed of musicians and artisans. Political leadership and decisions are exclusively exercised by the nobles. The other strata and groups such as women have no voice. That is to say that the authority and leadership in villages are often the prerogatives of freeborn families, particularly those at the top of the system (the nobles). In this particular case (Foum Legleita) leadership has been mostly exercised by noble Bidane: They have the two necessary elements to do so: the spiritual and the economic. The "chorfa" for example are the religious leaders, who have many followers and are owners of land. Most of the land cultivated before the project was owned by Moors. Each Moor tribe has its Haratine and sometimes its Peulh who work land, put it into productivity and give Moors part of the harvest. There are, however, many Haratine communities who cultivate for their own profit their own land.

The predominant economic activity of this population is agriculture and herd raising. As practiced in this region, agriculture is traditional involving the use of archaic methods. Access to land is communal, that is each tribe or community has its land or "oued." However within a community the access is not equally distributed; some families own large holdings, others small plots. In Foum Legleita Bidane tribes are often the owners of land. They give it to their followers or Haratine to cultivate and share in the harvest. Peulh do not own land but they have been in a close relationship with Bidane for many years. They are allied to one or another Bidane group and the latter allow them to cultivate land and share its products.

Three types of habitats exist in Foum Legleita: huts; which are the typical tradicional habitat of the sedentary people, houses, and tents (used particularly by nomadic and semi-nomadic Bidane). The socio-educative structures were practically nonexistent. Before the project three (3) elementary schools and no health services existed. In the entire department of Mbout there were in 1983, 21 elementary schools and 4 dispensaries for a population of 48,400.[9]

B) The Sample

To figure out the effects of the project on the target population, a stratified random sample of 100 households was chosen among the population of four villages selected. I tried as much as possible to integrate all the characteristics and dimensions into the sample. In fact the sample took into account population composition (ethnic) gender (male and female) socio-economic status and age, within each village. The four villages from which the sample of 100 household was selected are the following:

Village Name	Ethnic Identification	Households
1) O. Bogrou	Bidane-Haratine	188
2) Ndoula	Haratine	116
3) Var Jerk	Peulh	97
4) Zreiga	Mixed	45

The total numbers of households in the four villages is 446. Village one (O. Bogrou) is a typical Bidane village with the noble families and their Haratine. Village 2 (Ndoula) is exclusively a Haratine village whose population is mainly former slaves who long ago escaped their submission to their Bidane masters. Village 3 (Var Jerk) is a Peulh village and village 4 (Zreiga) is mixed. Bidane, Haratine and Peulh cohabit together in Zreiga. Of the 446 households approximately 64% have already moved to new irrigated perimeters. They have already received land and settled in new villages created after the project's implementation. The remaining 36% were still waiting for allocation of land in new settlements. The sample is therefore composed of 64 households from the settled population and 36 households from the unsettled. The unsettled sample is originally from the same village as the settled. From each village some settled and unsettled households were randomly chosen.

This classification of the sample into settled and unsettled should be clearly understood since we will often refer to it in the section on findings and data interpretation. It is also important because it is the most advantageous way to show to what extent the sociological consequences are the direct effects of the project. If there are many differences between settled and unsettled people, then these consequences are most likely an effect of exposure to project.

Most of the statistical tests used are Chi square tests of significance. This is probably the most appropriate since we are dealing mainly with cross tables. In the computation and tabulation of surveys results, data fore each question is summarized in a table and then the chi squared tests results are given. First the answers of the entire sample are recorded and tabulated according to dependent and independent variables and second a table is constructed to see the significance of differences between settled and unsettled households.

C) The Questionnaire

Respondents in the sample were asked twenty-eight questions covering such topics such as political participation, education, health services, peasant attitudes vis a vis the project and the agency in charge of it. The questionnaire contains two parts: part one dealt with the respondent identification, his age, number of his or her children, ethnic affiliation, and part two included the questions themselves. The questionnaire was constructed after several days of contact with peasants.[10] Its administration however was the most complicated task in the

research. After the questionnaire construction, I conducted a small survey on a sample of ten households. From this small survey, I learned many things; some questions had to be changed, others had to be formulated in a more adequate way. It also clearly showed that most people will not agree to tell exactly how many cattle they own or whether or not they consider it positive to live with other ethnic groups in front of other people. Moreover when comrades or parents are present they immediately answer for the respondent and in most cases he has to conform to their answers. In conducting the survey, therefore I isolated each respondent and administered the questionnaire in a house or tent where only I and the respondent were present. The interviews were face to face and I personally conducted them.

Another major problem was to convince people, to explain to them the purpose of this research and most important to dissociate myself from Sonader, the Mauritanian government or any relief and assistance agency. This was particularly important since in these peoples minds, interviews about project consequences are associated with relief, and assistance organizations. To clarify this misunderstanding, I went to a village, contacted the leaders and asked them for a meeting with household chiefs. I then explained why I was conducting this survey, why I chose their village and asked for collaboration. I repeated the same explanation to each respondent individually and told them that he did not have to answer but his help was greatly appreciated. Although it is impossible to totally avoid such misunderstandings in such a social milieu, I tried to maximize as much as possible the chances of getting unbiased and true answers.

Section IV Findings

Foum Legleita Project represents a radical transformation in the Agrarian structure of the gorgol region. In fact by changing land productivity and methods of agriculture the government necessarily affected the land tenure system and social organization. In times marked by lack of free water and rainfall, access to irrigation conditions the productivity and consequently the value of land. The project constitutes a technological and institutional transformation. As such it has great sociological consequences. For one thing, by taking care of land distribution, irrigation schemes and human settlement in new villages a major intrusion was made in the secular patterns of social organization in the rural society. For many years tribes or big families; in short land owners have cultivated or given their land to some followers or "allies" to put it into productivity depending on natural factors and climatic conditions. Now land productivity depends on Sonader irrigation schemes, fertilizers and modern methods. It is not the tribal chief who sovereignly decides who should cultivate and what should be cultivated, but Sonader (the government agency).

An obvious consequence of this is an alteration of the traditional political system. In other words the traditional chiefs lost some of their power in favor of the governmental agency. This political alteration is an aspect of the many changing sociological conditions. Since the project implementation the town of Foum Legleita has expanded with a population of approximately 7500. This new sedentary semi-urban center set the conditions that affect values, tastes and needs of people who were formerly mostly semi-sedentary or semi-nomadic. In the last instance the project is a project of domestication of land and fixation of rural population. In general the findings show striking differences between those villages already "fixed" in the new settlements and those who are still "unsettled." Settled people are more willing to send their children to school, to seek care in the modern health center, to be more politically aware and involved in community problems than unsettled. How then are these consequences and differences empirically expressed?

- Access to school

According to our survey, school and educational structures are not yet provided for the majority of the target population either settled or unsettled. We found that 59% of the population do not send their children to school. When asked why, most people said because there is no school or there is no place in the local school. The following table records the answers to question II "Are your children in school?"

Table 1 Children in School X Village

Village	Bogrou	Zreiga	Jerk	Ndoula	Total
Yes	23	4	7	7	41
No	19	6	13	21	59
Total	42	10	20	28	

n = 100

Access to school is not, however, independent from village ethnicity. If we test this hypothesis against a null hypothesis of complete independence we would reject the null hypothesis ($X^2 = 6.84$, df=3, and $p>.10$). For example in the Bidane village (0. Bogrou). 54.76% of households have their children in school while in the Haratine village (Ndoula) only 25% and in the Peulh village (JERK) only 35% households have access to school. This may reflect the traditional political status and power of Bidane

over the two other groups, and also the fact that in the traditional society education has been the privilege and obligation of noble Bidane families.

The striking differences in children's education (modern school) are between settled and unsettled people as the table shows. The same question is tabulated but this time according to the categories settled and unsettled.

Table 2 Children in School X Settled or Unsettled

	Settled	Unsettled	Total
Yes	32	9	41
No	32	27	59
Total	64	36	

(n = 100)

Fifty percent of the settled sample have their children in school compared to only 25% of the unsettled. If we test a null hypothesis of no difference between settled and unsettled we have to reject the null hypothesis. In fact the X^2 shows a clear association between the new settlement villages and children education (school). ($X^2 = 5.95$, df = 1, and $p > .10$). This does not explain why more settled people are helped by their children. Since children in the new villages go to school, they cannot help or work with their parents while in the unsettled villages, children have much free time and can help. To question 3 (Do other members of your household (children) work with you?), 61% of the sample said yes, but the Chi square does not indicate any association between a particular village and working children although we expected a strong correlation between Haratine and Peulh villages and working children. What the chi square indicates is a relation between location (settled or unsettled) and working children. Table 3 computes the answers to question 3.

Table 3 Children Work X Settled or Unsettled

	Settled	Unsettled	Total
Yes	44	12	61
No	20	19	39
Total	64	36	

n = 100

From the table we can see that 68.75% of the settled population are helped by their children compared to only 47.5% in the unsettled villages. The computed Chi square ($X^2 = 4.45$, $df = 1$, $p > .10$) indicates that being in the new settlements affect children participation in household work. Children in the settled villages, or at least, those who go to school have less free time than those in the unsettled, but households in the irrigated perimeters have more work than unsettled households. Settled households have to cultivate their plot, to work while unsettled are still waiting to have land.

Health services: Health facilities are still poor and do not cover the population needs. There is one health center in Foum Legleita. Sixty percent of the sample said they go to the dispensary when they are sick and 40% said the never go. (Table 4).

Table 4 Willingness to go to the Dispensary

Village	Bogrou	Zreiga	Jerk	Ndoula	Total
Yes	26	9	11	14	60
No	16	1	9	14	40
	42	10	20	28	

The computed X^2 ($X^2 = 5.15$, $df=3$, $p>.10$) does not indicate a clear association between a particular village and willingness to seek care in the dispensary. However if we compute the same question according to the categories settled and unsettled, differences appear. As table 5 suggests 42 households from the 64 settled said they seek care in dispensary while only 16 from the 36 unsettled do so.

Table 5 Willingness to go to the Dispensary: Settled or Unsettled

	Settled	Unsettled	Total
Yes	42	16	58
No	22	20	42

n = 100

The computed Chi square for table 5 shows clearly a correlation between the settled villages and willingness to go to dispensary. If more people are willing to go to the dispensary, it is not only because they are aware of its

advantages, but also because one of the most obvious consequences of the project is the appearance and proliferation of diseases generated by the new environmental conditions. The creation of artificial lakes led to a major ecological change with resulting health problems and other hazards including the appearance of endemic diseases such as malaria, onchocrosis, and bilharzia. The population suffers from the water born diseases that now are spreading rapidly with the development of irrigated agriculture. (The slow moving water and water vegetation provide an ideal habitat for the snails).

A second major group of diseases from which these people suffer is the airborne diseases (tuberculosis, pneumonia, diphtheria, and meningitis) and diseases transmitted by human feces (the intestinal parasites and infectious diarrheal diseases). The health situation has not only worsened due to the environmental factors but also by sociological changes. The concentration and fixation of several communities and villages around irrigated perimeters facilitated the transmission of contagious diseases.

To question 7 (Are you more often sick after or before the project implementation?) 75% of the sample said they were more often sick after the project. (Table 6)

Table 6 Sickness Before or After the Project

Village	Bogrou	Zreiga	Jerk	Ndoula	Total
Before	12	2	5	6	25
After	30	8	15	22	75
Total	42	10	20	28	

n=100

The computed Chi square for question 7 according to the categories settled and unsettled does not show any differences between the two. In other words regardless of location people feel that diseases are more frequent after than before the project. Several factors account for this increase of diseases. First the environmental changes which generate the proliferation of germs, second the socioeconomic conditions; the drastic poverty of population, malnourishment which make people defenseless and very vulnerable to diseases, and finally the changing patterns of health practice and changing attitudes toward these practices. When more health services and more medicines are available, people tend to be more aware and concerned about their health.

Parallel to the proliferation of diseases, the population is experiencing very high infant mortality. Question 24 asked people: Have you lost a baby lately (the last two-three years)?

Thirty percent of the households said they had lost at least one baby since the project implementation. This high mortality is probably caused partly by the economic condition of the people and the stress of the transition period (project implementation). We have to keep in mind that during the phase of immobilization and dam construction most households were without any regular economic activities. They could not cultivate their land because it was flooded or because water gates, dam and other technical apparatus were built in their fields. Besides the drastic poverty of most households another factor accounts for the high infant mortality; that is the traditional methods of child birth.

Because the frequency of diseases increased and the infant mortality is high most of the population are dissatisfied with the treatment they received in the Sonader dispensary. Question 5 asked respondents if you go to the dispensary are you well treated and taken care of? To this question, 26% said yes, 51% said no and 23% not concerned.

No significant differences are shown by the Chi square for question 5 between settled and unsettled villagers. Both are similarly dissatisfied with the treatment as table 7 shows:

Table 7 Treatment in Health Center By Village

	Settled	Unsettled	Total	
Yes	15	11	26	
No	31	20	51	X^2 =2.71 df=2 p>.10
Not Applicable	18	5	23	
Total	64	36		

The Chi square for this question leads us to reject the hypothesis that settled people benefited more from the health services than unsettled people, although we expected the contrary. The reason for this general dissatisfaction is perhaps the fact that most people have to buy medicines. To question 6 "Are medicines free or do you have to buy them?" 64% of the sample said they got a prescription, 13% get medicines free and 23% are not concerned. The calculated chi squares do not indicate any differences either between the four villages, or between settled and unsettled. "Most of them, however, can not afford to buy prescriptions, for one thing; medicines are expensive and people are too poor." What question 6 reveals is that, according to their answers most people do not get any treatment.

Politically the findings show clear differences between settled and unsettled. This is not surprising since the project itself is an alteration of the traditional political leadership.

For example noble families and landowners lost some of their political power in favor of Sonader. By setting conditions of access and allocation of perimeters Sonader affected the source of political power (land ownership) and the social structure. In general we find that the ethnic affiliation, the constraints of the stratification system are still stronger in the unsettled villages.

Question 13 asked respondents on which basis they voted for their political leaders. Thirty percent said they elected their local leader because he is a parent or relative, 2% said because he is from the same tribe, 42% said because of his ability and personal qualities to serve the general interests and 26% said, the leader was imposed on them. Because the original table for question 13 contains many cells with zeros the chi square would not be appropriate, villages Zreiga and Jerk were aggregate and answers a and b (a: relative; b: he is from the same tribe) were also aggregated in the following table:

Table 8 Vote Motivation by Village

	Bogrou	Zreiga-Jerk	Ndoula	
a-b) relative or from the same community	15	5	12	32
c) his personal qualities	16	15	11	42
d) he is imposed	11	10	5	26
Total	42	30	28	

n = 100

The computed chi square (X^2 =5.41, df=4, p>.10) does not indicate any differences between villages in vote motivation although we should expect to have more people voting on the basis of parenthood in Bogron and Jerk than in Ndoula. However, question 13 tabulated according to the categories settled and unsettled shows that unsettled villagers tend mainly to vote on the basis of parenthood. If we test an alternative hypothesis of differences. in voting motivation, we would reject the null hypothesis which states no differences. The computed chi square for table 9 is X^2 =7.04, df=2, p>.10. (Table 9).

Table 9 Vote Motivation X Settled or Unsettled

	Settled	Unsettled	Total
a and b	16	16	32
c	33	5	42
d	15	11	26
	64	36	

n = 100

Location affects political attitudes, settled peopled are more likely to vote for a local leader because of his personal qualities and unsettled people are more likely to vote for him because of family ties. 44.4% of unsettled voted for their relatives, while 51.5% of the settled voted on the basis of personal qualities. There were no big differences in the percentage of both settled (23.43%) and unsettled (25%) who said the leader was imposed on them. To a complementary question (15) "Do you understand the general goals and working process of (S.E.M.) (the government political organization), 65% of the sample claimed they do. The tabulated chi square indicates that understanding S.E.M. is not independent from village affiliation ($X^2 = 6.67$, df=3, p>.10). (Table 10)

Table 10 Understanding the S.E.M.

X Village	Bogrou	Zreiga	Jerk	Ndoula	Total
Yes	31	4	10	20	65
No	11	6	10	8	35
	42	10	20	28	

n = 100

The Bidane villages (Bogrou and Ndoula) have the biggest percentage of those claiming they understand S.E.M. with respectively 74% for Dogron and 71% for Ndoula. In the Peulh village of JERK only 50% said they understand the S.E.M. This question (15) also corroborates question 13. Tabulated for settled and unsettled, question 15 shows that settled people are more politically aware or sophisticated.

Parallel to the political awareness, settled people are more likely to participate in decisions affecting the community than unsettled. This should not surprise since unsettled people are still living in their village with their tribe and are isolated

from other communities. In the unsettled villages the traditional political structures are still very strong; and few people "chiefs" decide for the rest. Question 14 asks respondents "do you feel that you participate in decisions affecting your community?" To this question 75% of the sample said yes. "Settled people are more likely to feel they are associated to the process of decision-making than unsettled. Table 11 records the responses to question 14 according to the actual location (settled or unsettled).

Table 11 Participation in Decision-making
Settled or Settled

	Settled	Unsettled	Total
Yes	54	21	75
No	10	15	25
	64	36	

The computed chi square is $X^2 = 8.33$, df=1, p>.10), and therefore the hypothesis that there is no association between location and participation is rejected. The high percentage of participation indicates a relative democratization and consequently a decline in the rigidity of the traditional social stratification system. Categories of lower status who before the project were isolated from the process of decision making and political leadership, have now more opportunities to participate and speak for themselves. The new village settlements constituted of different ethnic groups and communities represent new sociological environment radically different from the isolated community that existed before the project implementation.

To see what effect the project has on the traditional social structure respondents were asked "Do you consider it positive and desirable to cohabitate with other ethnic groups?" (question 16). To this question 72% said yes and the computed chi square indicates association between villages and desirability to live with other ethnic ethnic groups. ($X^2 = 16.71$, df = 3, p>.10). Bidane are the most conservative and reluctant to cohabitate with other ethnics while for example in the Haratine village of Ndoula 78.5% said they consider it positive to live with other ethnic groups and Peulh with 100% unanimously agree that cohabitating with other ethnic groups is positive and desirable. The willingness of Peulh to positively perceive the cohabitation with other ethnic groups denotes a historical pattern of their relationship with Bidane. When Peulh came to the region of Foum Legleita, they did not own land, and each Peulh group became the ally of a Bidane tribe in order to have access to land. Peulh were and still are a minority and perhaps the historical need of a strong ally and

protection is still working; which partly explain why they are a 100% willing to cohabitate with other ethnic groups.

What factors account for the willingness of people in the Haratine village (Ndoula) to consider positive ethnic cohabitation? To answer this question we have to turn to the origins of this village. Originally Ndoula was a gathering of Haratine and slaves who escaped their masters domination. Contrary to most villages in the region, Ndoula is not identified by a particular tribe. Several tribes are rather represented and inhabitants identify themselves as Ehl Ndoula (people of Ndoula). This diversity of origins of Ndoula people may explain why they have a positive perception of ethnic cohabitation.

Computed according to the categories settled - unsettled question 16 show striking differences. As we will see settled people with 84.37% said they consider it positive to live with other ethnic groups compared to 50% who said so in the unsettled village (table 12).

Table 12 Desirability of Ethnic Cohabitation
Settled or Unsettled

	Settled	Unsettled	Total
Yes	54	18	72
No	10	18	28
	64	36	

n = 100

If we state as the null hypothesis that location does not affect people's attitudes towards ethnic cohabitation and an alternative hypothesis that there is an effect, the chi square leads to the rejection of the null hypothesis. (X^2 =13.50, df=1, p>.10). As a result of project implementation (gathering of several communities and their fixation) people tend more and more to "accept" other communities and to positively perceive them.

Finally an important question (28) asked respondents if they give part of their harvest to their Tolba; or if their peasant give them part of their harvest. This question is important first because this relation with a Tolba is often a secondary source of income for Bidane families and second it perpetuates the social stratification system and its inequality. Overall 25% of people give their Tolba or receive from their fellows part of the harvest. The computed chi square does not show any differences between the four villages. What it does indicate is an association between the Tolba relationship and unsettled villagers (table 13).

Table 13 Relation Tolba-Peasant for Settled or Unsettled

	Settled	Unsettled	Total
Yes	5	20	25
No	59	16	75
	64	36	

n = 100

The computed chi square for table 13 ($X^2 = 28$, df=1, $p > .10$) leads to the acceptance of effect of location on the relation Tolba- peasant. 55.5% of the unsettled recognize that this relation is still working. However in the settled villages only 7.81% said they receive or give part of harvest. The conclusion that can be drawn from this data is that the traditional predominance of Bidane has been weakened as a consequence of the new institutional and sociological changes.

However, although the noble families have lost some of their political power, they still have large influence. For one thing, the traditional chiefs are the representatives of villages vis a vis Sonader. They are the intermediaries between the project management staff and the villagers. In order to gain the support of the population Sonader pays a salary to these chiefs. In many cases "chiefs" acquire their political power and influence by promising to give the landless an irrigated plot, by convincing Sonader to give more fertilizers or materials or by getting more food supplies.

It is apparent that in Foum many of these leaders have tried to circumvent the principles for plot allocation which had been fixed by the administration; so as to preserve or restore the pre-existing structures of political authority. This situation led in some cases to farming at second hand by the use of wage labor or metayers, for those to whom farming - which they did not practice themselves - is merely an extra source of revenue to help to feed their families. Nonetheless, the new access to land distribution and Sonader control over land productivity has radically affected the leadership of traditional "chiefs" and the supremacy of noble Bidane.

The sociological consequences of Foum Project are not easy to analyze and discern since the project is historically so recent, and changes are just taking place. It is obvious, however from the findings that clear differences exist between those directly exposed to this innovation (the project) and those who are still unsettled. In general we find that constraints and rigidity of the traditional stratification system and ethnic affiliation are stronger among unsettled people than among

settled. Greater participation and involvement in community affairs are found in the settled villages. Politically, democratization and political awareness are more perceptible among settled people. We also found that settled people have more access to school and public health than unsettled, and are more willing to profit from such public services than unsettled.

The remaining selected questions will be treated in Section V entitled: Evaluation.

Section V Evaluation

Because Foum Legleita project has a very short history and it is in its experimental phase it is not yet possible to assess its success or failure. What I am trying to figure out is to what extent did the target population benefit from it and what are the shortcomings and problems the project is currently facing. Effectively the project as land reform (institutional change) permits more people to gain access to land and to benefit from their own labor. Landless do not have to put land into productivity and share their harvest with some "chiefs" or tribe "leaders." It is also remarkable that by affecting the social structure and its rigid stratification, lower groups have more opportunity to participate and manage their own affairs. However, this process of democratization and participation of disadvantaged groups is still relatively new and its sustenance remains to be seen. The project likelihood of success depends on how well the groups participate and how well they are involved.

In other words the fact that the technological and institutional changes strongly affected the social stratification system and consequently the distribution of political power does not necessarily guarantee democracy and equality within the target population. It is quite possible that those changes by affecting the traditional system lead to the emergence of new differentiation not necessarily based on tribal or ethnic affiliation but on economic well being.

A conclusion reached by all is that the mere redistribution of land must be accompanied by a number of services (credit, transportation, advisory services) and social and political measures (peasants, participation, and involvement). In Foum Legleita people are in general very disappointed with the project. They said repeatedly that the project did not bring about any positive change in their life, but it worsened their situation. To question I (have you in any way benefited from the project), thirty-six percent said they have, fifty-three percent said they have not and eleven percent said they do not know. Computed according to the categories settled - unsettled question 1 shows an association between actual location and benefit from the project. Not surprisingly the settled benefited more from the project than unsettled. Forty-five percent of settled said they benefited while only 19% of unsettled said so.

If people are so unhappy with the project, it is

essentially because, as we will see later, they are not better off. Another cause of this disappointment is that Sonader before undertaking the project made so many promises in order to overcome peasants resistance. People were told they will be economically better off; that government will compensate and pay what they have lost; that assistance will be available for house construction and so on. However Sonader did not keep these promises and the first flush of enthusiasm for the government project turned to disappointment and resentment. The first major problem is, then, the loss of Sonader credibility. This is a crucial issue, since peasant involvement and confidence in the managing agency is an important requirement for project success. A primary cause of this disenchantment is government failure to adequately deal with compensation issues. Many households had their palm trees, fields and houses flooded by water. Initially these households were assured that the government will pay, but up to now no one has yet received anything. According to the Sonader census 160 houses and 842 huts were destroyed, 14 palm trees and 4500 feet of henna were flooded. Another cause of this disenchantment is that according to respondents, Sonader has never been responsive to their demands and requests.

Question 18 asks respondents if you have a problem; how responsive is Sonader to your problems? Computed according to categories settled-unsettled, question 18 shows striking differences between the two. It shows for example that settled are more involved with Sonader than unsettled, but feel that Sonader is generally unresponsive (chi square = 20.99, df = 2, p > .10).

Table 14 Sonader Responsiveness
Settled or Unsettled

	Settled	Unsettled	Total
Sometimes	9	2	11
Never	30	3	33
Not Applicable	25	31	56
	64	36	

n = 100

Parallel to this negative perception of Sonader; the majority of respondents are not yet willing to conform to Sonader standards. Moreover, the people's reluctance to conform to Sonader standards is a consequence of their negative perception of Sonader's responsiveness. To measure people's willingness to conform to Sonader agenda we asked them if you are free to cultivate what would you choose? (a) rice, b)

sorghum and millet, c) all of the above). Only 18% chose rice (Sonader agenda) while 62% choose what they traditionally cultivate (sorghum and millet). People are reluctant to cultivate rice (Sonader agenda) because to them it is an innovation that necessitates complex techniques they do not master. They prefer to cultivate what they have traditionally known; sorghum and millet. Because the initial table for this question (q. 25) contains many cells with no frequency the chi square would not be appropriate; villages Zreiga and Jerk were aggregated together in table 15.

Table 15 Choice of Crop, by Village

	Bogrou	Zreiga-Jerk	Ndoula	Total
Rice	10	2	8	20
Sorghum-millet	30	10	17	52
All of the above	2	17	3	23
	42	30	28	

n = 100

The computed chi square for table 16 ($X^2 = 32.64$, df=4, $p > .10$) shows that the choice of crops is not independent from the village. For example in Zreiga-Jerk where Peulh are predominant 56.6% of people said they would cultivate rice, sorghum and millet. In other words Peulh are more willing to accept the Sonader agenda. In the Bidane villages of Bogrou and Ndoula 71% and 60% respectively prefer to cultivate sorghum and millet. Computed according to the categories settled - unsettled question 25 shows that settled people tend slightly to conform to the Sonader program than unsettled.

A major set of problems or issues, then, is this ensemble of psychological attitudes which probably have great effects on project future. If the project has to succeed people must be motivated; they must perceive their interests and be confident in the managing agency. Unfortunately, all the questions relevant to this set of problems show that people are disappointed, not confident in Sonader and insecure about the status of the plot they are actually cultivating. When asked about the status of their plot, 49% of respondents say they do not know if the plot is heirs or if it is owned by the government, 16% said it is owned by government and 35% said they own the plot. This uncertainty concerning the status of land combined with the negative perception of Sonader may lead households to neglect plots. If people are secured about land,

if they feel the plots are theirs, they are more likely to be motivated, and to take care of land.

I have noted earlier that if people are unhappy with the project, it is because of the deterioration of their economic conditions, even though the production per ha. increased in favor of the new methods. Before the project implementation people had two main sources of income: agriculture and herd raising. Most people had, besides agriculture and herd raising, other secondary activities such as commerce, teaching, or wood cutter. However during the period of dam construction, the second most important source of income (breeding) experienced sharp decline. This decline was caused not only by drought and the ecological changes (artificial river) which according to peasants generated diseases that killed most of their herds, but also by the extreme needs of people. In fact, the only way to survive in the period of dam construction for most households was selling off month after month their herds.

Question 22 asked respondents if they own any animals. Sixty-seven percent of the sample said they own some cattle, and 33% said they do not. However, when question 22 is computed according to categories settled-unsettled it shows that the decline of breeding is particularly obvious in the settled villages (table 16).

Table 16 People Owning Herds
Settled or Unsettled

	Settled	Unsettled	Total
Yes	36	31	67
No	28	5	33
Total	64	36	

n = 100

The computed chi square for table 17 ($X^2 = 9.25$, df=1, $p > .10$) indicates that decline of herd raising is associated with settled villagers 56.2% of the settled sample own some animals compared to 86.1% of unsettled. The impressive percentage of unsettled people owning herds is one of the reasons which explain why they have not moved to irrigated perimeters. They prefer to stay in places where they can find grazing and since they still have a source of income (herds) they are not in a hurry to move to settled villages. In fact some of them told me they are waiting to see how well the experiment is working for those already settled.

The decline is not only in herd raising but also in all other secondary activities. In the identification part of the questionnaire each respondent was asked if he has any secondary activity. Thirty-two percent of respondents said they have another activity beside agriculture and 64% said they do not have any. Computed according to the categories settled and unsettled, the answers show that 15.6% of settled people have a secondary activity compared to 61% of unsettled. The reason for the decline of other sources of income is that the amount of work required for irrigated farming has eliminated secondary activities. People who spend the day taking care of irrigation schemes inside their plot do not have much free time to practice any other activity.

Contrary to what one may expect, people did not benefit from the project in terms of getting jobs. Question 20 asked respondents if they have anyone from their households who is working in the project. Only 4% of the household have someone who works in Foum project. The proportion of those working outside the project region is low probably because Sonader rules stipulate that everyone has to personally cultivate his plot. Since the conditions of access to irrigated land require the permanent presence of household chiefs, people who formerly used to seasonally work in other regions of Mauritania had to give up this activity and stay in Foum Legleita.

To question 19 "Do you have anyone in your household who is working somewhere?", 29.7% said yes and 71% said no. The computed chi square does not indicate correlation between particular village and external migration. ($X^2 = 6.59$, $df=3$, $p>.10$) There is however, an association between being unsettled villagers and working outside Foum Legleita. This is not surprising since unsettled people lacking land to cultivate must seek other sources of survival.

Table 17 Work Outside Foum
Settled or Unsettled

	Settled	Unsettled	Total
Yes	14	15	29
No	50	21	71
	64	36	

n = 100

The calculated chi square for table 10 ($X^2 = 4.38$, $df=1$, $p > .10$) leads to the rejection of the null hypothesis that people from unsettled villages are more likely to migrate than settled villages.

Some people in Sonader argue that the project could not have worsened the economic situation of the target population, since

land productivity increased. (During the campaign of 1984 the production was 4 tons/hectare). In arguing so, however they forget to take into account at least three important elements: 1) the amount of time the irrigated agriculture eliminated secondary sources of income, 2) that peasants are paying a heavy price for the productivity increase. After each harvest they have to pay dues for the scheme's maintenance, fertilizers and so on. 3) The last but not least factor for the increase of productivity is accompanied by an increase in cost of products of basic necessity. Most households when asked estimated that prices of merchandise in Foum Legleita boutiques are very expensive.

Question 27 asked respondents if you have to buy products do you pay cash or take credit until your harvest? 84% of respondents said they take credit. This is a major economic issue since goods taken by credit are usually more expensive than those paid cash and by the time peasants harvest, they already owe merchants more than half of their production. I asked administrators in Mbout and Foum Legleita what measures were taken to economically protect these people at the mercy of merchants and got no answers. It would be probably better for peasants to have a "cooperative store" in which they can afford goods at a reasonable price. The problem for most poor households is how to pay both Sonader dues and merchants credits.

Conclusion:

During the period of research in Foum Legleita what I have witnessed is in many cases drastic poverty. Most people said that the project worsened their economic situation; precisely because during the phase of preparation and construction of the project infrastructure the economic basis of rural people in question was fundamentally disturbed. Is the relative impoverishment of people a temporary tendency due to the fact that the project was in its experimental phase or a continuing trend? Of course no one can actually give an exact answer to this question, but indications point out that if the project has to succeed and to improve the situation of rural people, some measures have to be taken and issues have to be carefully addressed.

Some of the issues were just described in this section. It is necessary for example to re-establish peasant's confidence in the project and to insure their involvement and real participation. The target population must positively perceive the project and its managing agency. Agricultural improvement is a complicated human undertaking and is vitally affected by motivation, self confidence, hard work and willingness of many individuals. In its irrigated forms, agriculture is for people in Foum Legleita a relatively recent innovation not entirely understood. Further increases in food production and improvements of the economic situation of peasants have to be

achieved not only by a mere redistribution of land and availability of water but also by more complex technical, sociological, political and human problems. For example, technical problems include the failure to adequately prepare people to manage the water distribution system, soil, perimeter maintenance and production methods. Sonader training service and employees are insufficient in regard to population needs. It is critical that the socio-educative structure be improved. Although more people are now sending their children to school than before, the majority of school age children have no access to education.

More important than this is the issue of health. We have seen earlier how the creation of great artificial lake led to major ecological changes with resulting health problems including diseases such as malaria, and bilharzia. No measures have been taken in the rice schemes to protect laborers who have to spend their working day with their feet in water, nor has much been done to eradicate the disease-carrying snails. Poor health is precisely a major issue since it imposes economic costs by reducing the availability of labor and impairing the productivity of people. However, any medical strategy in Foum Legleita should focus essentially on preventive measures because of the social milieu and the very nature of diseases.

Finally there is the issue of lack of consultation and real participation of people in decisions affecting their lives and their futures. Most of the decisions concerning the program of cultivation, reimbursement and other decisions are taken by Sonader in consultation with villages representatives who are often "traditional chiefs." People must be consulted and associated in what is after all their lives.

In conclusion, the likelihood of the project's success depends on how well critical issues and problems are addressed and dealt with. Among these issues are, lack of consultation and real participation of villagers, their involvement and perceived interest in the project, inadequate preparation of participants to manage irrigation scheme, soils and work maintenance, and failure to investigate and deal with land tenure and compensation and health issue.

It must be kept in mind that any irrigated project in a rural milieu is an innovation whose rate of adoption is affected by its advantages and disadvantages relative to the existing situation, its compatibility with existing values and needs, its perceived complexity and its communicability.

NOTES

1.T. Giri le sahel demain. Editions Karthala, Paris, 1983, page 74.

2.M. Benoune. The political economy of Mauritania: imperialism and class struggle," Review of African political economy, no. 10, p. 40.

3.Samir Amin. Neo-colonialism in West Africa, New York, Monthly Review Press, 1974, p. 79.
4.J. Derrick. West Africa; Worst years of Famine, African Affairs, vol. 83, 332, July 1984, p. 283.
5.M. Greene. Impact of the sahelian drought in Mauritania: African environment, volume 2, April 1975, p. 11.
6.C. Toupet. La sédentarization des nomades en Mauritanie sahelienne. Librairie Honoré Champion, Paris, 1977, p. 342.
7.J. Sonders. Rural Society. Prentice Hall Inc., Englewood Cliffs, N. Jersey, 1977, p. 1.
8.The ethnic composition of the population of the twenty-five villages is taken from: Rapport sur le recensement pour la construction d'un fichier village. Project Gorgol Noir, Bureau Social, January 1983.
9.Source: Rapport sur le recensement pour la construction d'un fichier village. Project Gorgol Noir. Bureau Social: Foum Legleita, January 1983.
10.See Appendix II of my Masters thesis, Sociology, University of Wisconsin-Madison, 1986.

5. The Haleybé Land Tenure System

Tidiane Ngaide

The land tenure system of the Halaybé of the Boghé area is closely related to their social structure. This chapter will describe the main features of the land tenure system distinguishing primary and secondary ownership rights, and the sharecropping and other "lesser" tenure arrangements which can be established between various kinds of owners and farmers without ownership rights.

Rights in land originate from the most important social structure among the Halaybé, the leñiol (pl. leggi).[1] There are eight of these in the Boghé area. The leñiol is subdivided into families, galleeji (s. gallé), which are further subdivided into caste groups. Details on the origin and structure of these groups as well as differences between the eight leggi will be dealt with in the next chapter. This chapter will describe only those features of the social structure that are necessary for understanding the land tenure system.

1) Caste System

In general the Halaybé can be divided into three major classes: rimbé (nobles), nieñbé (dependents), and jiabé (slaves). The below table displays the different classes, the different castes within each class, and the different activities performed by these castes.

a) Rimbé/Dimo

This class, composed of three castes (toorobé, cebbé, subalbé) constitutes the nobility of the Pulaar society. However, there is differentiation within this class: the cebbé and the subalbé are nobles but are considered inferior to the toorobé. Among the Halaybé, these noble castes are the big landowners and control all the power structure of the tenure system at the expense of the other castes that are considered inferior. The rimbé, who were interviewed in 1985, affirmed that the small size of the land holdings of the other classes (nieñbé and jiabé) was due to their lack of participation when these lands were being conquered in the Mauritanian side, or acquired in the Senegalese side.

b) Nieñbé/Nieno

This class is comprised of all the artisans. These castes are composed of free men, but since they do not own land (or even

if they do, they got it as gifts), they are not really considered to be high in the society. Moreover, they depend on the rimbé

Table 5.1 Caste distribution among the Halaybe.

CLASSES	*CASTES*	*ACTIVITIES*
Rimbe/Dimo Nobles	Torobe/Torodo Cebbe/Ceddo Subalbe/Cuballo	Farmers,herders,literates Farmers and warriors Farmers and fisherman
Nienbe/Nieno Artisans	Mabube/Mabo Sakebe/Sakke Lawbe/Labbo Wailube/Bailo Awlube/Gawlo	Farmers,weavers Farmers,leatherworkers Farmers, woodworkers Farmers and smiths Farmers and griots
Jiabe/Jiado Slaves	Galunkobe/Galunke Maccube/Maccudo	Farmers,weavers, emigrants Slaves

class, who rent to the nieñbé the land they cultivate, and give them permanent gifts of land (dokal pendungal); they do not play a very important political or social role within society.

c) Jiabé/Jiado

This class of slaves is considered to be at the bottom of the Pulaar society. Traditionally they serve the masters which can be from the noble or artisan castes. These slaves, even if they buy their freedom (sotadé), cannot accede to the other classes. However, within the class, freed slaves become galunkobé (pl. of galunké), which gives them the status of free men and a certain superiority within their class. Usually, the galunké becomes a weaver but this does not permit him to become a member of the weavers caste, mabubé. This shows that it would be misleading to infer the caste or an individual based solely on his activity. The difference between the galunkobé and the Haratine (see section in Foum-Gleita) is the form of relations that they maintain with the former master. Indeed, among the Maure, the Haratine are concentrated into villages of production, adabaye, where they reside and cultivate under the protection of

their former masters, who try to maintain some form of domination; whereas, among the Pulaar, the freed slave does not live under the protection of his former master. However, if they are not involved in other activities and rely on the master to provide them land to cultivate, they are under the domination of the master. But the galunkobe once freed usually migrate, or even if they stay farmers, they do not contract with their former masters. In any case, both the galunkobe and the Haratine are discriminated against in the roles they play within the decision-making process of the society.

2) Definition of Land Ownership

The definition of land ownership among the Halaybé is very complex, with many individuals having claims to a piece of land., However, we can distinguish two types of land ownership: a) private ownership and (b) common ownership.

a) Private ownership

This type of ownership right is not the result of working the land, as in Foum-Gleita, where there is a rainfed agriculture on jeeri lands;[2] rather it follows from inheritance or division. Indeed, when a person says that this land is privately owned by him, he means that he inherited the holding from his father. However, if individual private ownership rights are very rare, the lands of each family within a leñiol are considered as privately owned by that family, gallé. This is the reason why it is very difficult for an individual to say that he holds land privately, since he controls land only as a member of a gallé whose lands are undivided. As will be seen, the land owned by the gallé can be viewed from without as privately owned, or from within the gallé as common land.

b) Common ownership (jowré)

Here there is a necessity to distinguish between the commonly owned lands of the leñiol (jowré leñiol) and the commonly owned lands by the members of a household (jowré gallé).

b.1) Jowré leñiol The jowré leñiol resulted from the original distribution of land when the leñiol acquired the lands. For example, among the Dubenabé, these holdings were divided into four fields. Three of these fields were respectively allocated to the lineages of Ali Demba Lome (ancestor of the Lolobé Hubanabé), Birané Soko (ancestor of the Sokbé lineage), and to Diagal Boyé (ancestor of the Boybé). The fourth field was the common property of these different lineages. It was that field that was rented to the contract farmers and it was also in that field that all the late settlers on the leñiol received land such as the lineages of Sall-salbé and the Bababé Gaonabé residing in

that leñiol.

b.2) Jowré gallé. These common lands belong to a gallé in which each individual household has access to these lands. In this context, only the oldest of the family has the right to contract the land. The mawdo gallé can do whatever he wants on those gallé land (this was a problem between Abdoulaye Mamadou and Baba Couro in 1942. Indeed, as Baba Couro left the field idle for four years, his brother Mamadou gave it to Haratine under the contract of rem-ita-guié (clear and cultivate) in 1938 for a period of seven years.[3] However, after this contract the field will be given back to Baba.). This supremacy of the mawdo sometimes resulted in social conflicts when the brothers do not have the same mother. As a consequence, these jowré lands can be privatized by giving to each share holder his property.

3) Land Rights among the Halaybé

In general terms six types of land rights can be distinguished: (1) primary ownership rights, (2) secondary ownership rights, (3) the rights acquired through jipundi and dokal pendugal which are intermediate between (1) and (2), (4) lesser ownership rights, (5) ownership rights of women, and (6) rights of the slaves.

a) Primary ownership rights

Primary ownership rights are only granted to noble households which are members of the leñiol that controls the land. The individuals with this primary right are considered as jom leydi, or landowners (they are considered as "someone who owns property", jom jey). These individuals received their right through their ancestors' participation in the conquest or first settlement of the land. They have access to the lands of their families. But the mechanisms that govern the allocation of land to these individual share holders depend on two factors a) if the family is jowré and b) if the family land is not jowré.

a.1) In the case where these lands are jowré lands (common lands), it is the mawdo gallé (eldest of the family, who is joom leydi (master of the land), who allocates fields from the family lands to the different households of that family. Thus, each foyré (household) receives a plot that it cultivates each year. However, in the case of low flood reducing the land available for cultivation to the gallé, the mawdo reallocates of the land so that each member can benefit. In turn, the jom gallé (head of the household) pay the assakal (one-tenth of the production to the mawdo gallé, which is stored and used to entertain visitors, for feasts for marriages, and as a reserve for distribution in time of shortfalls of the harvest. In many cases, under the form of free labor (doftal), the different heads of households help the mawdo to cultivate his field, guessa mangu (the field of

elderly), which is the biggest field in the family holding.

a.2) If the family lands are not jowré, then each household holds individual rights in the land and the role of the mawdo gallé is diminished because he is not the master of the family lands. However, he still acts as a socio-political head and the settler of disputes, but has no allocative rights over land. The foyré are independent in their rights to land, and the payment of the assakal to the mawdo gallé is not compulsory as the case where the family lands are jowré.

Whether the lands are undivided (jowré) or divided, the pooyé (pl. of foyré) that compose the family are jom leydi. They have security of tenure, their children also acquire land through the family holdings, and they can let other people use the land under sharecropping or other terms of lesser tenure rights. If the land is jowré, however, an individual household can only sharecrop its fields but cannot give lesser rights, such as the rights of the saamba remoru (see below under lesser rights), to any individual.

The jom leydi, however, if his family has little land, can have access to the leñiol jowré lands where he has a secondary right In this case, the assakal is not paid to the mawdo gallé, but to the collector of land rents within the leñiol. Moreover, if the lands he cultivates were acquired from his mother's side, and if these lands are jowré leñiol (leñiol common lands) then he pays the assakal to that leñiol, but if the lands belong to his mother's family, then the assakal is paid to his uncles.

b) Secondary ownership rights

Secondary ownership rights are granted to noble households from another leñiol. The individuals with secondary rights are the jom lewré (owners of the cleared land), jom jambéré (owners of the land that was cleared with and axe), or jom jeingol (owner of the land that was cleared by fire). Their ownership rights are tied to the payment of a tithe, assakal, to the original landowning leñiol and the land allocated to family with secondary ownership rights is always jowré, and cannot be subdivided. Since the land had already been appropriated by the first settlers (in the case of the Dubenabé by the Sokbbé, Boybbé, Lombé), any later settler has only an ownership right of clearing the lands. This being the case of one of the Bababé Cuddi (a lineage of the Bababé), the Gaonabé, who pay their assakal to the elimane of the Dubenabé, who is the manager of the leñiol jowré. It is important to note that this right is only acquired on the Leñiol lands. Nobody can have this right on the family- owned lands. This might be the reason why the Nieñbé rarely acquire this secondary land right because they deal with individual families, not with the leñiol. It is only in exceptional cases that non-nobles acquire this right. For example, the Labé (woodworker) can acquire this right, but only on the fondé lands.[4] In addition, the households that have secondary

rights to the lands they cultivate also give their assakal to their mawdo gallé, as is true in the previous case of primary right holders. The mawdo, however, do not retain the assakal, but give it to the mawdo leñiol, who is the manger of the Leñiol Land. Nevertheless, during the redistribution of the assakal, the Mawdo with secondary rights will receive from the mawdo leñiol part of the assakal because they are members of the leñiol. The payment of the assakal is not the only difference between the jom leydi and the jom lewré. Indeed, the jom lewré cannot sell or give away the land in the form of dokal pendungal (permanent gift) because he does not have primary ownership right. In the other hand, the jom leydi cannot take away the land from the jom lewré as long as he pays the assakal.

Although the households cannot be independent from their mawdo gallé because the land is always jowré, the secondary rights are securely held and each new household within the gallé has access to the family lands unless there is shortage due to too many households cultivating the land. In this case the household can borrow land from other families.

These two rights, primary and secondary, are acquired only at the leñiol level and can be inherited by every member of the families holding such rights.

c) Rights form dokal pendungal and jipundi

This third type of right is granted to noble households and non-noble households and is a cross between primary and secondary land rights. The recipients of this right do not pay assakal to the leñiol that provided them the land, as do primary land right holders, but they cannot alienate the land by selling or donating it permanently, like the secondary right holders. There are variations in the different customs that govern the relations between the donors and the recipients depending on their castes.

c.1) Among the noble households. The noble households considered as ceernabé (religious men) acquired land through jipundi, gift with a religious character. Indeed, many people from these families who were interviewed responded that they got land because they were the religious men of such and such leñiol during their wars against the Maure. As a payment, the victors gave them lands. This is the case for the Dialloubé in Boghé, the Ngaidene sudu Mody and Sudu Salif, and the Bababé Birannabé. They do not pay any land rent on their fields. It is their property and they can sharecrop and grant use rights on these lands. However, there is type of teddungal (good manners) between the prior owners and the recipients. When land rents are collected on the lands, they give a part to the leñiol in recognition of the original grant of land. Moreover, as these lands are always jowré lands, the different nuclear families give their assakal to their mawdo.

Noble families or individuals can also acquire land through dokal pendungal; but in this case they give assakal to the donor

as a recognition and as in the case of the holders of secondary rights, the recipient cannot alienate the land. The recipient of the dokal pendugal acts like someone with secondary ownership rights by the payment of the assakal. However, the secondary ownership right is acquired by extended and nuclear families or individuals.

c.2) Among the non-noble households (rimaibé). Some of the non-noble households, on the other hand, received land as a gift from a noble family in the form of dokal pendungal. This was true in the case of a griot family who received land because their grandfather was killed at the place of a Toorodo, Samba Racine. Thus, as a sign of recognition Samba Racine gave to his descendants fields at Kolo, Falo Lopel, and Ñolly. In addition, there is a custom called adi (clause) between the nieñbé and the rimbé who gave them land as a permanent gift. The recipient pays the assakal and if he is from the sakkeebé (leather workers), he makes each year for that family shoes and slings. If he is a balio (smith), he repairs or makes for that family hatchets and hoes; and if his is a mabo, he weaves cotton cloth for them. In any case, depending on his activities, the recipient provides each year to his donor some of the products of his activity. In turn, the landowner gives the nieño recipient 15 to 30 kgs of sorghum as caatal (gift).

d) Lesser ownership rights

Lesser ownership rights include a variety of tenure arrangements such as sharecropping and other forms of rent and contract. These rights are granted to artisan families and to members of the slave caste, but they may also include land-short noble families from another leñiol and non-Halaybé outsiders. Among the holders of these rights, it is important to distinguish two categories of holders: (a) the saamba remoru and (b) the jom jalo.

d.1) Saamba remoru. The saamba remoru or contract farmer. The saamba remoru is someone who does not have either primary ownership or secondary ownership rights. These people are usually from the class of the nieñbé (artisans). They do not own land and are the ones that are really considered among the Halaybé as people who have a use right because the owner of the land cannot terminate the contract of the saamba remoru unless he doe not pay the land rents. Moreover, they are considered by Halaybé as people with whom they share the gun and the tithe, mudo e fetel, meaning that they fight together in the case of war and that they benefit form the redistribution of the assakal. However, they are subject to the payment of different land rents such as cootigou (repurchase of land when the father of the new farmer dies), ndioldo (fee of access the field) and assakal. These farmers can also be from the rimbé class when they are not from the Halaybé, or if from the Halaybé, as land-short rimbé

they contract land. In any case, these farmers can contract leñiol jowré, family jowré, or privately owned lands in the case where the family lands are divided.

d.2) Jom jalo or sharecropper. The jom jalo, meaning the owner of the hoe, is an individual who does not own land and has only his labor, and thereby, has access to land under a sharecropping contract. He does not pay cootigu or ndioldi as in the case of the saamba remoru, because the land owner can terminate the contract whenever he needs his land back, or he determines that production of his field was low due to the sharecropper. Moreover, depending on the clauses of the contract between the landlord and the jom jalo, the latter might not pay the assakal and sometimes do doftal (free labor to the land owner). These sharecroppers are usually Haratine or maccubé.

Both the above lesser rights granted to the jom jalo and saamba remoru are granted by authorities of the leñiol, the mawdo gallé, and individuals. However, it is only the jom jalo who rents and sharecrops. It is important to note that even a landowner can be a jom jalo in other lands if his fields are not flooded or are not sufficient to support his family - this being the last resort.

e) Women and ownership rights

Customarily, women among the Halaybé are not entitled to land ownership rights. The logic behind this is that women are not really part of the family because once married they leave their father's family. Moreover, some of the people that were interviewed argued that if a woman were to be given a title of ownership, there would be a lot of land fragmentation because her sons would claim the share of their mother. This is also the reason why the majority of women are married within their own family, and thereby, the welfare of the children is preserved within the family lands. Traditionally, however, women can have access to land as caatal which is a type of reward given to a woman by her brothers as a sign of satisfaction when a woman, during the waalo season, provides free labor (doftal) to her brothers. The cataal be either a piece of land (cifol), or part of the brothers production (30 to 80 kgs of sorghum). The piece of land allocated to a woman can be important, such as the fields of Thide Maissa[5] (cultivated by Haratine) given to Thilel Sileyé by her brother Farba Gelajo of Walaldé.

It is important to note that women have ownership right on their family holdings only if their families have primary ownership rights. But, they do not receive a share of land in the case of inheritance because a) as a woman can be married outside her family and her leñiol, the husband can inherit part of her wealth according to the Muslim Law, and her family does not want strangers to have ownership rights on their lands; b) when a woman is divorced or her husband dies, her brothers who support her and her children; and c) the family is afraid of land

fragmentation due to the claims of her children. Nevertheless, she and her children can always have access to her family's holdings if needed.

Since the colonial period, however, women have started to inherit land on their father's holdings.[6] They even inherited the holdings of their fathers, which used to be taken by the brother of the dead father in cases where there was no son. In 1942 there was a case between Raki Demba (heir) and Harouna Assané (uncle).[7] This case was very interesting, because the field in question was under the hands of Raki's husband, but after her father died her uncles took the field. Raki went to court and the problem was settled by giving her the ownership of the field.

f) Slaves and ownership rights

Slaves can have ownership rights if they participated in the clearing of their masters' lands or received the land from the masters as dokal pendungal. These rights are granted to a slave only if the master has individual and primary ownership rights. If these lands are the jowré of the family, these rights can be granted to a slave only if he is a family slave; individually owned slaves cannot be granted those rights. In contrast to the Halaybé, the abid, among the Maure, cannot have ownership rights to land even if they helped clear that land.[8] However, the ownership right over the field that the slave receives from his master for helping him clear the land gessa laré (field of a friend), are limited as he himself was owned and he is entitled to this land only if he stays in the family. If he tries to gain his freedom, he loses the ownership of this field, unless it is the master who liberates him. For this field, usually small, he pays assakal and cannot sharecrop or lease out the land; however, the field can be inherited by his children. This is sometimes very constraining for the Maccudo because it helps to reinforce the authority of the master. The majority of these slaves are landless and constitute the jom jale (pl. of jom jalo).

4) Types of Contracts

There is a complex system of contracts created but he Halaybé, and Pulaar society as a whole, to control access to land only to the jom jalo, whether he is a landless artisan or slave, or the land short Rimbé households. These contracts are not determined merely by the productivity or value of the land, but also by the social relations between the renter and the owner of the field, labor availability, and the level of the flood. The contracts, in this case, are forms of control of both land and labor and reinforce the different social relations between members within a caste and between members across castes.

a) Rem-petien or sharecropping

This is a contract that is widely used between the landowners and the Maccubé or the Haratine. This contract of rem-petien, which means "cultivate and share", can be made in different forms depending on the relations between landowner and contractor.

a.1) Didabal or half. Under this contract, the sharecropper (jom jalo) provides his labor and will usually give the landlord the assakal and half of the production. However, the landlord will delimit a portion of the field for the botari (food of the sharecropper), provide inputs in some cases, and depending on the clauses of the contract, will request a day or two of doftal from the contractor.

a.2) Tatabal or one third. Under the tatabal, the contract will give to the landowner the assakal and a third of the production. However, the landlord does not provide food nor inputs, but the contractor has to help the landlord cultivate for one or two days, depending on the contract.

a.3) Nayabal or one-fourth. This like the previous contract but the sharecropper pays one fourth of the harvest and the assakal.

a.4) Joyabal or one-fifth. Here the contractor will give the landlord one-fifth of the production plus assakal; and as under the tatabal and the nayabal, the contractor has to help the landlord on his field.

b) Loubal or loan

Here, the landowner loans his field to someone to cultivate for a definite period, which can be from a year to five years. After five years, the loubal has to be renewed by the recipient. During the term of the loan, each year the recipient gives assakal to the landowner. The contract is usually made between families or individuals of the same caste.

c) Dokal or gift

Here the landowner gives his field to someone for a limited time, depending on their relations. This is just a temporary gift, and the landlord does not usually demand assakal and the field can be taken from the recipient at any moment. However, in many cases when a field is donated to one member of the Nieñbé class, that field cannot be taken again; it is a pendungal (permanent gift).

d) Rema nawa or "cultivate and take"

This is a lesser form of dokal because this type of arrangement occurs only on the waalo lands when the owner does not find anyone to lease his field and he is not able to cultivate it. In this case the owner gives the land to someone to cultivate for that year. The recipient pays only the assakal to the landowner. This was very important for the landowner when he does not find someone to contract the land which if left fallow, will revert to bush. If it happens that the land is left fallow, the farmer then is obliged to clear the field again or lease it under the contract of rem-ita-gié, which is discussed later on. It is important, however, to emphasize that this contract is only for one flood recessional cropping year.

e) Cioggu or rent

In this contract the landlord evaluates the productivity of the field according to how many mounds (3 to 4 kgs) of seed can be sowed in it. He fixes a price and the renter has to pay cash before cultivating. In this case also the assakal depends on the clauses of the contract and the status of the owner. Indeed, when the owner of the field has secondary ownership rights, he will ask for assakal for the mawdo of that leñiol who gave him the right. This contract can be for up to 12 years. Indeed, in 1942 Ahmadou Tamar contracted his field for 300 francs (CFA) for a period of 12 years.[9] Because of the length of time, this contract is usually made with witnesses who may later be needed to testify that the land was contracted should the owner die before the end of the term.

f) Rem-ita-gié or "cultivate and take out the thorns"

This type of contract is made when a waalo field is left idle for some years and because with the humidity has become overgrown with weeds. So to prevent another person's clearing the land and claiming ownership rights over the field, the landowner leases the land out. The contractor clears the bushes and cultivates the field for a fixed time. He does not pay assakal to the landowner and does not provide doftal (This type of contract was done by Abdoulaye Mamadou with Haratine in 1938 for a period of seven years.).[10]

These different types of contract permit the owner to secure land and to manage land in flood-recessional agriculture because the field is valuable only if it is cultivated each year. Otherwise, the field becomes overgrown and its value decreases. They also permitted landowners to secure rights if they were carrying out other activities. In any case the contract is not meant among the Halaybé to make a profit but rather to secure rights over land and to maintain the caste structure in which the noble castes dominate. In general, the different types of land ownership rights and the types of contracts determine the different land rents that are paid by and individual for the land

he cultivates.

5) Land Rents

a) Assakal or one-tenth. The assakal is a type of land rent that is paid by almost all the members of the society, indeed, the jom gallé (heads of nuclear families) pay the assakal to the mawdo gallé (eldest person in the family) if the land is a common property; the jom lewré pays it to the manager of the leñiol holdings, the saamba remoru and the jom jalo to the owners of the land. In contrast to the Maure, where the assakal or achour constitutes a form of tenancy, among the Halaybé it seems to be a tithe paid by anyone who does not have private ownership rights or is not one of the decision-makers of the society.

b) Ndioldi or access fee. The ndioldi is fee paid by only the saamba remoru before the cropping season. This fee is not fixed and usually depends on the relationship between the contract farmer and the landlord. It is a form of ownership reaffirmation because as the contract farmer does not own or did not clear the land, he has to pay this fee before even beginning cultivation. It is a sort of access fee to the waalo lands.A saamba remoru who fails to pay it can lose his use right.

c) Ciottigu or repurchase. This is a type of license to cultivate paid only by the saamba remoru. Indeed, when a saamba remoru dies, his heirs cannot cultivate his fields unless they buy back their father's use rights. This is not done annually as with other rents but it is a way for the landowner to reaffirm his ownership right and to tell to the heirs that "this is ny land" should the heirs not know that the land did not belong to their father.[11] Usually this fee is a piece of cloth, a sheep, or a goat. This fee depends on the size of the field and the wealth of the saamba remoru. The amount to be paid is not fixed like the assakal.

d) Ndoodi. This is also a type of fee paid only by the saamba remoru when new managers of the leñiol lands are being selected. For example, they may bring animals and sorghum to help the new manager. It is a way to stay on good terms with the new manager.

6) Types of Land

The dominant agricultural land use is recessional flood agriculture on lands subject to natural flooding (waalo). Other land uses include river banks (palé), which can be irrigated from stream flow for most of the year. Less important are the margins of the waalo, which are rarely flooded (fondé), and jeeri, where agriculture depends on rainfall.

a) Jeeri lands

It is on these lands that rainfed agriculture is practiced. These lands are plentiful, and there is no defined ownership rights associated with them. Any person can have a jeeri field without any restraint; the only limitation is how much a person can weed. These lands have always been considered marginal because there are ferruginous deposits which make the land less fertile. However, with population growth these lands have started to be valuable assets for the landless and the people who have lesser holdings. This is seen by the new interest in lands located just at the margins of the jeeri, jejugol (zone of transition between the jeeri and the waalo).

b) Waalo lands

It is on these lands that the farmers perform recessional agriculture. These lands are divided into small flood plains, colladé (s. collengal), which are inundated each year by small watersheds which deposit silt. It is on these very fertile lands that the tenure system is strong and where all the different tenure conflicts emerge.

c) Fondé lands

Fondé means forest in Pulaar. These lands are located in the highlands of the waalo. Usually they are forested, and these soils have been enriched by leaf deposits. However, as they are inundated rarely the soils are very fragile, their productivity decreases after three years of cultivation. The tenure system is not very strong on these lands because they are valuable only during times of high inundation when the waalo lands have too much humidity and cultivation of sorghum is not profitable.

d) Palé lands

These lands are located on the river banks. They provide the gardens where vegetables and maize are cultivated. The soils are very rich and even with a low flood level, these lands are cultivable. Because of the security that they provide and the fertility of their soils, the fields are very small, not more than 24 meters wide. In certain leñiol these lands are the property of the subalbé castes (Mamadou Kane argued that this might be due to their original occupancy of the Senegal River basin.[12] However, among the Halabaye, the appropriation of these soils by the subalbé is the result of their participation in the conquest of these lands. Moreover, in certain leñiol, such as the Lambé, the subalbé do not own the palé, but they collect land rents for the jaladé on those lands. They exercise ownership rights only on the landing sites of Boghé, Bakao, Sinthiou, and

Lopel.

7) Land Management Authorities

Authorities at the leñiol level are involved in management of land rights primarily when dealing with the leñiol common lands (jowré leñiol), because it is for these lands that they collect land payments from secondary landowners and holders of lesser tenure rights. There is a complex authority structure and a variety of titles are used for the authorities. Specific details are described in the chapter on the social structure.

The leñiol authorities in the past had made the original distribution of leñiol land to the primary and secondary owners. But after those original allocations were made, land rights rested in the hands of the gallé or individual households as described in this chapter. leñiol authorities may get involved in settlement of disputes over land rights when such disputes cannot be settled at a lower level,

The land tenure system among the Halaybé is a complex management system which does not just apply to land, but also to the social structure. It helps a) to control land and to secure the rights of the landowners, and b) to control the different forms of relations between members of different castes. In order to really understand the tenure system there is a need to understand the social structure of the Halaybé and the different roles played by the authorities.

6. Social Structure of the Halaybé

Tidiane Ngaide

The previous chapter described the variety of tenure rights and their relation to the social structure. The different rights aver lands were also discussed in relation to an individual status or caste within the leñiol:

- Primary ownership rights are held by the rimbé castes of the leñiol;

- Secondary ownership rights are granted by the leñiol holding primary rights to groups from other leñiol;

- Lesser rights of various kind are usually given to lower castes nieñbé and jiabé. The grantors of these rights can be leñiol authorities, gallé authorities, or individual families holding primary or secondary ownership rights.

This chapter is concerned with social structure; it describes the historic origin of the leñiol which explains their caste composition; differences between the eight leggi in the Boghé area; the grants of secondary rights between leggi; and the roles with respect to land tenure that are retained by the leñiol.

1) Caste system

The Halaybé, like all Pulaar societies, have a caste system as discussed in the previous chapter. This stratification into castes results in inegalitarian access to the means of production (mainly land), and narrow control of the decision- making process for the nieñbé (artisans) and the jiabé (slaves) castes. (These features within society are deepened by the subjective character of the caste definition.)

The status of an individual depends upon a) the activity that he performs and b) his origins at birth. These determine the relationships between the individual and his caste mates on the one hand, and between the individual and the members of other castes on the other. For example, no matter how educated or wealthy a bailo (smith) is, he will always remain for the rimbé (noble Pulaar) a man of a lower class with no real social power. There is no social mobility between castes. The caste system is rigid and, each individual stays in his caste of birth. This system has survived because of the social customs which forbid marriages between individual of different castes.

In general, if stratification into castes is the main feature of pulaar societies, among the Halaybé, the individual man distinguishes himself not primarily by his caste, but his leñiol (lineage or group) and their land holdings, since this

expresses the role he plays within the Halaybé.

2) Leggi/Leñiol

The term leñiol is often unclear because of its multiple usages.[13] Among the Halaybé, the term leñiol has two meanings: (1) an autonomous fraction of the Halaybé, in which caste composition is a result of an historical process, and (2) a group composed of people who claim descent from the same ancestor; in this case leñiol means lineage.

a) Leñiol as an autonomous fraction of the Halaybé

In the modern Pulaar language, this type of leñiol can be defined as lenandu, or fraction. This structure is the combination of different lineages, different castes, and different groups and is the result of a long historical process. Therefore, this use of leñiol does not refer to lineage and is not a patronym, but rather refers to the historical settlement of that fraction of the Halaybé. For example, among the Dubenabé, we find these variations:

- lineages: Soko, Lo, Ba, etc...

- castes: Toorobé, Cebbé, Subalbé.

- historical process: Gaonabé are composed of Bababé who migrated in this region and integrated the Dubenabé, who gave them land to cultivate.

b) Leñiol as lineage

In this case, the leñiol takes the patronym of a lineage for identification: e.g., Ngaidenbé, Diadiabé, Bababé. Here, the leñiol is composed of the different subgroups of the lineage with people with the same ancestor; cuddi (s. sudu) are further differentiated into gorol (subgroups of the lineage from the male descent) and dewol (subgroup of the lineage from the female descent. For example, among the Ngaidenbé, we find four cuddi: sudu Selbu, sudu Yero, sudu Mody, and sudu Salif. The first two are considered gorol while the two are dewol. This distinction is very important because it shows the role and power that each sudu holds within the lineage. Indeed, the cuddi considered as gorol control the land holdings of the lineage and include the people that can be elected for any land title.

The distinction between these two types of leñiol is very important because it permits one to understand the different relations between castes and members within castes with regard to access to land and ownership rights.

Table 1 and 2 display the different leggi that we find among the Halaybé, their caste composition, their power structure, and their major holdings.

Table 6.1: Distribution of leggi as autonomous fractions

LENIOL	CASTES	TITLES	MAIN HOLDINGS
Bonenabe	Torobe Cabbe Subalbe	Elimane Jagaraf Jaltabe	Bari-mbodew,Sae Thicam,Sourboti, Woutouwaye,Dogoll
Dubanabe	Torobe Cabbe Subalbe	Elimane Jagaraf Jaltabe	Sae,Thiacatone Woutouwaye
Hartallanabe	Cabbe Subalbe Sakebe Haratines	Mawdo,Kamalinkou,Jagaraf Jaltabe Jom guemgal	Pongel code,Ano Ballorga,Jalcoje
Lambe	Torobe Subalbe Sakebe	Mawdo,Jalade Teine	Niolil,Gueyman Sae,Goudiowoula Collo,Ndoua Kedde
Pourinabe	Torobe Subalbe	Elimane Jaltabe	Bari,Fethi,Lal, Mouthi,Counga

Table 6.2: Distribution of the leggi as lineages

LENIOL	SUDU	CASTES	TITLES	MAIN HOLDINGS
Bonenabe	Birannabe Gaonabe Silmannabe	Torobe	Joom Bandle	Ballorga Bandle
Diadiabe	Dernba Oldou Soyrou	Torobe Torobe Torobe & Cabbe	Mawdo & Lamdo Jagaraf	Ndoua Ida
Ngaidenbe	Mody Saliff Selbou Yero	Torobe	Jagorga	Jalcoje & Thila Lal,Winde,Bandle

What is important to bear in mind when studying the Halaybé is that the socio-political and economic system revolves around land. We cannot differentiate these three aspects because they determine the different sets of relationships that exist between castes, between members within castes, and between leggi. The Halaybé are composed of eight leggi which can be divided into two major categories:

2.1) Leñiol as Autonomous Fraction

Five of these leggi: Bonnabé, Dubenabé, Hartallanabé, Lambé, and Purinabé are autonomous fraction formed as alliances of Rimbé castes in times of wars of conquest against the Maure; at these times, these fractions came to occupy the northern bank of the Senegal river. It is these conquests that obtained ownership rights for the members of these leggi. Four of the these leggi are dominated by the cebbé and which contain no toorobé. All five of these leggi include the caste of subalbé (farmers and fisherman), who as people of the river were important in assisting the other castes in crossing the Senegal River from the Senegalese to the Mauritanian side.

After the conquest of the lands, each caste including the subalbé received a share of the conquered lands, hindé.[14] However, the subalbé so not own land on the flood plain (waalo), but rather on the river banks (palé) and control the different landing sites (toufdé).

The Dubenabé granted land to the sudu Gaonabé of the Bababé leñiol in secondary ownership. This latter cleared the land and are thus considered as jom jeingol; they pay assakal to the primary owner, the Dubenabé. This is an example of the way in which secondary ownership rights are established. The Bababé is a leñiol of the lineage type and is described later on.

These five Leggi differ in caste composition as described below:

2.1.1) Bonnabé and Dubenabé. Among these leggi, the caste is the principal criteria for differentiation the various power structures for control and management of the leñiol holdings, one's relation to these lands. and the role played by each individual in the land tenure system.

These leggi are made up of all three of the rimbé castes: toorobé, subalbé, and cebbé. The toorobé and the cebbé were the main groups fighting against the Maure and as indicated above were assisted by the subalbé in crossing the river. This entitled the subalbé to the title of jaltabé (collector of land rents on the palé). The important feature of these two groups is the existence of an elimane who is the socio-political, economic, and spiritual chief. He is the pre-eminent figure who unites all these functions within the leñiol.

2.1.2) Hartallanabé. This is a unique group within the Halaybé. It is the only one in which there is no toorobé

domination. The cebbé control all the land holdings of the leñiol and dominate the other castes in the leñiol: Haratine, sakabé, and subalbé.

The presence of the Haratine of Bassine (who are considered Halaybé) among the Hartallanabé is very characteristic. According to the oral tradition of this leñiol the ancestor of these Haratine came to seek refuge and because of his knowledge of both the Maure and Pulaar languages, the mawdo (dean) of the Hartallanabé hired him to be a spy. The mawdo gave him a field, a house lot in the village of Ceenel, and the right to gather all the grain that remained on the gerngal (place on the fields where the production were piled).

The presence of the sakebé (caste of the leather workers) in this leñiol is also unique. Indeed, when Samba Harnass, the ancestor of the cebbé Hartallanabé, came from Jolloff (in Senegal), he was with 100 sakebé, 50 awlubé (griots), and 50 jawanbé (warriors). After a number of battles against the Maure, all the awlabe, all the jawanbé and 99 sakebé were killed. Thus Samba Harnass gave the only sakké remaining a large field in the collengal of Ano.

The absence of toorobé in the social organization of the Hartanallabe is due to their absence during the conquest of the leñiol's lands. However, some toorobé who were their marabouts (Islamic religious men) had been given land in the form of jipundi in exchange for prayers. These are the Ngaidenbé sudu and sudu Mody, who received Jalcoje and Thila; and the Bababé Biranabé who received the eastern part of the collengal Ballorga. These grants of jipundi are another illustration of the origin of rights by grants from one leñiol to another; in this particular case they are intermediate between primary and secondary rights. The two leggi receiving the rights, the Ngaidenbé and the Bababé (another sudu of the Bababé mentioned above, the sudu Gaonabé, received secondary ownership rights from the Dubenabé), are leggi of the lineage type and are described below.

2.1.3) Pourinabé and Lambé. These last two autonomous fraction, leggi do not include the cebbé caste. These are the Pourinabé, which include only the toorobé and the Lambé, which in addition to these two castes also include the sakkébe. The subalbé, as in the case of all the leggi that have their holdings in the Mauritanian side, helped the toorobé to cross the river by transporting them by boat.

Among the Lambé, the subalbé are the lineage of the Ndiaybé who received the title of teine (collector of land rents on the palé). However, in this leñiol, the subalbé do not own the palé but only the landing sites of Boghé, Lopel, Bakhao, and Sinthiou. In these landing sites, the subalbé perceive a fee from each person who wants to cross the river.

The presence of the sakkebé is different than among the Hartallanabé. There were four brothers: Ali Malloum, Samba Malloum, Demba Malloum, and Pathe Malloum. The last one became a bambado, a troubadour, and married a sakké woman; as a result,

all his descendants became sakké. This phenomenon raises an important issue in a patriarchal society. Even though they own land, these sakkebé do not have any power in the leñiol. Why is it that marriage to a sakké produces sakké children? Does this mean that it is the mother's status that is given to her son (or daughter)? Or does it just it just mean that in general, marriage between a toorodo and a person from another caste leads to the loss of toorodo status? Whatever the reason, this is an effective way of making marriages between castes taboo.

2.2) Leñiol as lineage

The three leggi of lineage type are the Bababé, Diadiabé, and Ngaidenbé. Unlike the above five leggi, these three are made up of subgroups (cuddi) which claim common descent. Also unlike the above, these leggi did conquer land on the Mauritanian side and some of their subgroups obtained primary ownership rights by settling first in the area or through conquest, but other subgroups received jipundi or secondary ownership rights from leggi which are of the autonomous-fraction type.

2.2.1) Bababé and Ngaidenbé as lineage leggi are composed of cuddi. The members of each sudu are from the same ancestor. However, among the Bababé, only the Sudu Simannabé conducted a war of conquest on the Senegalese side, which obtained for it primary ownership rights. As mentioned above, their other cuddi obtained rights in other ways: the Gaonabé, secondary ownership rights from the Dubenabé to whom they pay Assakal; and the Biranabé jipundi (part of the collengal Ballorga) from the Hartallanabé. Similarly, among the Ngaidenbé, the male descent (gorol) cuddi Sebou and Yero waged wars in Senegal and thus obtained primary ownership, while the female descent (dewol) Cuddi, Mody and Salif received jipundi (Thila and Jalcoje) also from the Hartallanabé.

2.2.2) Diadiabé are little different from the two other lineage leggi. The lands of the sudu Soyrou are located in the Mauritanian side and were obtained through war of conquest from the Maure in alliance with the cebbé. In this way they resemble the alliance or fraction leñiol. However, as they do not own lands on the river banks (palé), the subalbé did not receive land and are not considered as part of the leñiol. The other cuddi received land as dokal from other leggi and thereby they do not have ownership rights like the sudu Soyrou.

This distinction between different leggi shows the disparities that exist in each of these groups. Another approach would be to analyze the relations between castes and leñiol by dividing the Halaybé into two regions:

- region 1 or worgo (South, in the Senegalese side of the river). This region includes the Ngaidenbé, sudu Selbu and sudu

Yero, the Pourinabé, and the Bababé Silmananbé who are essentially composed of toorobé and whose majority of land holdings are located in the Senegalese side.

- region 2 or rewo (North, on the Mauritanian side of the river). This region includes all the other leggi who have the majority of their holdings in Mauritania and who are composed of many castes which resulted from the acquisition of their lands. Further differentiation can be made by dividing this region into two subregions: the eastern region and the western region.

- The western region includes all the different leggi that have an elimane as the pre-eminent figure: the Dubanabé and the Bonnabé. Here the religious character of the master of the land may influence tenure system within the leñiol and the way in which the different land rents are used.

- The eastern region embraces the leggi whose system is based on the traditional land tenure system in which the masters of the lands do not have any religious function. This is the case of the Lambé, the Diadiabé Soyrou, and the Hartallanabé.

This distinction is important in explaining why there is more land fragmentation in the western part of the Boghé flood plain than in the eastern part, where jowré lands (land held as a common property by different members of a family, a caste, or a leñiol) prevail.

The other remaining castes such as the mabubé, the wailubé, the jawbé, and the awlubé of the nieñbé class consider themselves as Halaybé but do not belong to any specific leñiol. However, they can be closer to one leñiol or another depending on the types of relationships that exist. These relations can be due to the fact that one specific leñiol is providing them land that they cultivate or that there is a mutual agreement (adi), between a family from these castes and a land owning toorodo family.[15] For example, the adi between a labbo (s. of lawbé) and a land owning toorodo family stipulates that the labbo will give to that family every two years a mortar. In any case, the clauses of the adi depend on the tenant function.

In addition, the correlation between leñiol and castes to the types of lands that are held by the leñiol. If we find the caste of the subalbé within a leñiol, we can infer that this leñiol owns palé lands and that the leñiol's lands are on the Mauritanian side of the Senegal River. The other groups, whose land are in the Senegalese side, can have land in the Mauritanian side, but they do not have primary ownership rights to these lands. For example, the Silmanabé received lands in Mauritania as jipundi from the Lambé. Moreover, it is usually on an individual basis that the members of those groups (Ngaidenbé sudu Selbu and sudu Yero) received land in the Mauritanian side as dokal or from their uncles.

Even if the leñiol is very important as a socio-political

and economic unit, and if the castes display the stratification of the Pulaar society, the different households that compose a leñiol or a caste are really units of production. Moreover, it is these households that are concerned with access and ownership rights to land.

3) Galleji/Gallé

The leñiol is composed of different families which are the socio-economic structures of the leñiol because of their land holdings and the labor they provide on these lands. The gallé has different features a) the gallé can be composed of different households, pooyé (pl. of foyré); and (b) the gallé can represent a household. These characteristics of the gallé result from a) the relations between the gallé and the land that it cultivates and b) the form under which, in the case of a landowning family, these lands are held, whether the land is jowré or not. Thereby we can distinguish 1) the landowning gallé and 2) the landless gallé.

3.1) The Landowning Gallé

These families constitute the basis of the leñiol because they include all the people that have claims to the land acquired by the leñiol. Thus, they are the ones that control land and the different ways and forms of land acquisition. This power of control over land allows them also to control and define the different forms of relationship with the landless households.

The gallé is composed of many households whose autonomy depends on the way in which the gallé lands are held. There are two forms in which the gallé lands are held: (a) jowré lands, and (b) divisible lands. The jowré lands are a form of common property of the different households that constitute the gallé. Moreover, these lands are considered as habous[16] lands meaning that it is against the custom to divide those lands because their division would lead to the division of the members of the gallé. Such a situation may arise between half-brothers as in the case of jaltabé Malal and Alfa Koumba Tioumo and Moulaye Daouda concerning the division of the palé of Sara Boubou in 1942. During this judgment Alpha Koumba Thioumo said:

> We do not wish to divide [the land] for two reasons: Firstly according to the custom, a jowré being a habous foundation cannot be fragmented, and secondly, once the division had occurred, we would not be in good terms anymore. Thus I do not agree with jaltabé [to divide the land][17]

However, during the colonial period, the French divided the land when there was a conflict between parties as in the case above, where the land was divided equally between the different

parties. Once the land has been divided between different right holders, then the land is no longer jowré. However, it can become jowré if the right-holder leaves heirs who can either divide the land or hold it as common property. In any case, the holding of land under the form of jowré has three implications: (a) it guarantees the welfare of all the members of the gallé; born or unborn , (b) it reduces the incidence of land holdings that are not economically viable, and (c) it allows all the different right holders to have access to a field when all their holdings are not flooded; thus, securing their income. These forms of land holdings determine the relations between the gallé and the foyré (nuclear family).

3.1.1) Gallé with jowré lands. When the family lands are jowré they are the common property of all the individuals within the gallé, though each individual family (foyré) has its own field. In this type of gallé, the role played by the mawdo gallé, the oldest man of the household is very important, in the decision-making of the household with regard to land. The mawdo is the manager of the family holdings. He is the one who decides to whom to give, or lend, or rent land, and what the conditions are under which the land is to be contracted. He is the joom leydi (master of the land) which differs from jom leydi, which means landowner. As the oldest of the family he is the judge of all the disputes within the family. He also acts as the representative of the family at the leñiol level.

The different households of the gallé constitute the labor force of the household. After each harvest, they give assakal (one-tenth of the production) to the mawdo gallé who stores it for eventualities such as visitors, marriages, bad harvests, etc. The different contract farmers are also given to the mawdo. The role of the mawdo gallé is inherited by the second oldest man of the family even if it happens that the son of the mawdo gallé is older than the brother of the mawdo gallé.

The existence of common tenure in these households shows the cohesion among the different members of the family. We cannot say that the foyré in this case is an independent economic unit because it depends on the mawdo for the field it will cultivate after the retreat of the water. However, a household can cultivate a field for many years, but this does not grant it private ownership rights to that land. Each foyré cooks its own meals within the family compound. The concentration of the right-holders within their family compound tends to disappear because of the population growth which leads many pooyé to leave the family compound and find new housing plots at the edge of the village. But the relation that existed between the mawdo gallé and the head of a household, as long as the foyré resides in the family compound, remains. Thereby, when the lands of the gallé are jowré, the foyré is just a unit of production which provides its labor.

3.1.2) Gallé without jowré lands. In addition to common lands, we also find privatization of land be the foyré. This is often the result of a) family division or the arbitrariness of

the mawdo gallé against his own half-brothers. When a father dies leaving behind many half-brothers, who usually are competing with one another, they proceed to divide their inherited holdings. Under this tenure system, the foyré is the economic unit, and the gallé is merely a socio-political unit in which the mawdo, who is no longer joom leydi, remains an important figure. However sometimes, the mawdo does not control the different households, but exercises his authority only over his brothers (those who have the same mother and in many cases hold their shares as common property). As a result of land privatization there are (a) social divisions because many households tend to be independent and move away from the family compound; (b) the division of land may lead to the loss o power by this family, because its power was the amount of land held and the different saamba remoru (contract farmers) who pay land rents to the household.

In any case, one might argue that privatization of land is very efficient because it permits each individual household to make its own decisions. However, because the jowré holdings of family lands are not located in one place and not all the fields may be flooded each year, the different members of the gallé can be sure to have land to cultivate; whereas when land has been privatized, the individual family is obliged, when its fields are not flooded, to contract land from other households. Thus, from his status of landlord, the jom gallé becomes a contract farmer during times of low floods.

3.2) The Landless Gallé

The structure of the gallé loosens because of the lack of land, which tends to serve as an economic tie. Here, the gallé represents only a social structure in which each foyré is economically independent. The head of the foyré (jom gallé) makes his own decisions as to whom to contract from. Therefore, no assakal is given to the mawdo gallé. We generally find this type of foyré outside the family compound; they tend to be very independent even when the social ties still exist. This is the case of the nieñbé class (artisans). However, when a household of this class has secondary or dokal pendungal rights to land it cultivates, the gallé functions as the one of the landowning gallé; but here, when the mawdo gallé collect the assakal from each individual foyré, he gives it to the family that has primary ownership rights to these lands instead of keeping it for eventualities as in the case of a landowning family. It is rare to find many households of artisan class living together in a gallé because these artisans tend to be very independent and in some villages you will not find any artisan (e.g. in the village of Thide, where there is not a single individual from the nieñbé class); they tend to move to cities to carry out the activities of their castes.

4) Pellé or age classes

These pellé (sing. feddé), which group the differen- agemates into classes, play and important role in Pulaar societies. The stratification into classes by age, along with the stratification into castes, determines the relationship between the different members of a village. This hierarchization is a means of labor mobilization. Indeed, these pellé constitute the labor reserve of the village because each member of an age class can ask to he agemates for doftal (help) for a period of a day or two during the planting of the waalo (recessional agriculture) or the weeding of the jeeri (rainfed agriculture). Thus, they play an important role in the decision-making of the family. This availability of this free labor permits families to cultivate most of their lands which otherwise would be contracted or left fallow. Hence, land to rent becomes scarce for the landless. This is one of the reasons why we find fewer peopled from other areas contracting lands. This potential labor, available to any household living in a village, permits owners to rent their fields advantageously.

In addition, this hierarchization defines the different relationships between members of the same caste or a family and members of different castes. Indeed, within a caste or a family, it is the older members who make the decisions and who have access to the different power structures of the Halaybé. Moreover, it is at school that the different members of a feddé start to internalize their different relations. For example, a son of a maccudo will be treated as a maccudo by his agemates. He has to perform all the dirty jobs such as making tea for the feddé, slaughtering animals, etc.

5) Power structures among the Halaybé

The lack of a centralized power structure among the Halaybé and the differences in land acquisition has led to the creation of many small power structures. Each power structure is a complex system for the management of both land and men. One cannot easily generalize about them; however, because the criterion by which an individual is entitled to the lefol (title of authority) varies from leñiol to leñiol.

In table 6.2, we can see that only three castes have access to these titles of authority: the toorobé, cebbé, and subalbé. These three comprise the class of the rimbé. However, besides the Hartallanabé where the cebbé constitute the base of the leñiol, the toorobé dominated the other castes in making the decisions related to the leñiol. An individual has access to these titles by three criteria a) the person has to be of a caste that is entitled to a title of authority, b) he has to be the oldest of that caste with the exception of the jaladé and the kamalinkou, and c) he cannot have any mental or physical handicap.

There are two levels where one exercises the title of

authority: 1) at the leñiol level, and 2) at the household level.

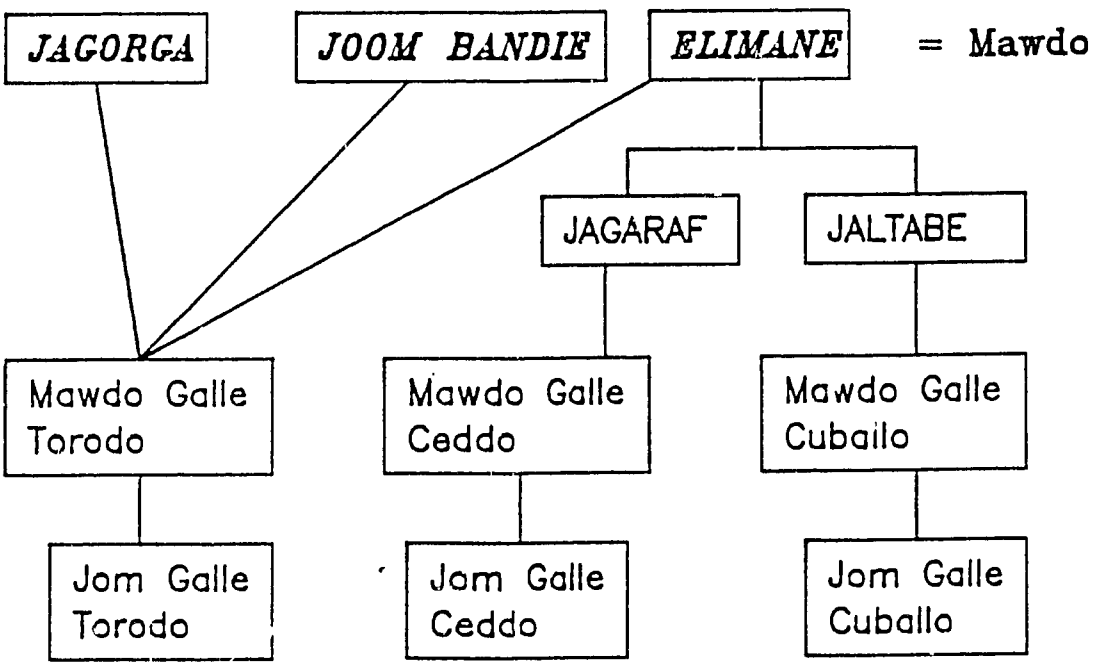
5.1) The Leñiol level

At the leñiol level, we find the mawdo leñiol who is the oldest person of the founding lineage. This title confers on him pre-eminence within the leñiol. He can exercise his power directly and indirectly.

5.1.1) Directly (Diagram 6.1)

Here the mawdo accumulates all the socio-political and economic functions. He is not just the oldest of the leñiol, he is also the mawdo collengal (flood plain). He is the one who decides who may lease the common lands of the leñiol and under what conditions.

Diagram 6.1: Mawdo Leniol exercises a direct control



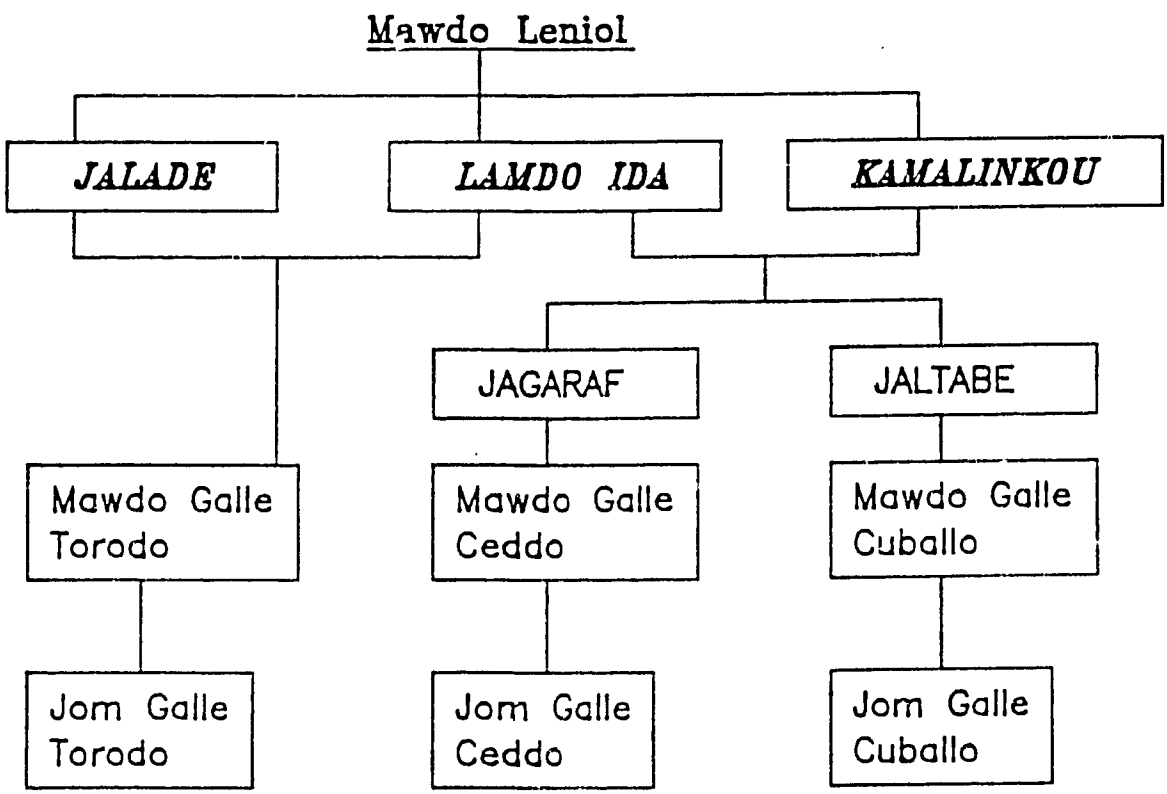
Among the Dubenabé, the Bonnabé, and the Pourinabé, the mawdo receives the title of elimane which confers on him religious authority within the leñiol. He receives all the land rents that are gathered from the leñiol jowré cultivated by the saamba remoru (contract farmers). He fixes the day when

harvesting is to be done, tiwandé.[18] But, in the fields where different groups (Lambé, Diadabé Soyrou, Bonnabé, Pourinabé) have ownership rights, such as in the collade (pl. of collengal) of Ñolly, Sae, Goudiouwoula, Dogoli, Ida, the tiwandé is set be the chiefs of these different groups. In this case, however, because of the participation of the subalbé and cebbé in the acquisition of the leñiol lands, the titles of jaltabé and jaagaraf respectively were granted to secondary ownership rights on the leñiol jowré. But he and the jaltabé also grant land rights to the saamba remoru on the lands they control. The jaagaraf exercises this right on waalo and some fondé lands, and the jaltabé on the palé and some fondé lands.

Among the Ngaidenbé and the Bababé Silmanabé, the mawdo does not have a religious function. Moreover, as there is no sulbabé or cebbé in their leggi, they do not have either a jaagaraf or a jaltabé. It is other lineages related to them such as the Ane-Anebé among the Ngaidenbé and the Sowsobé among the Bababé, who collect land rents. Among the Bababé, the mawdo is the joom bandie, the master of the flood plain Bandie. Thus, he allocates land rights to all the members of his leñiol. He receives assakal from his lineage, from the mawbe galleji with secondary ownership rights, and from the saamba remoru.

In addition, the mawdo resolves all the tenure conflicts. He knows the land rights of all the members within his leñiol.

Diagram 6.2: Mawdo Leniol exercises an indirect control



5.1.2) Indirectly (Diagram 6.2)

Here the Mawdo plays a secondary role and he delegates all his power to someone else. The person to whom that power is to be delegated among the Halaybé has to be from the dewol of the leñiol. This is to mitigate the potential conflicts that might arise between brothers and nephews with regard to land; to alleviate these conflicts, the uncles transfer their authority in the leñiol holdings to their nephews. The title that they receive varies depending on the leñiol.

Among the Lambé, the mawdo leñiol is from the lineage of the Wagnebé. He elects the jaladé (manager of the Lambé holdings) who is only from one toorodo lineage, the Lambé (considered as dewol of the Wagnebé). The choice of the jaladé is based on trust. As such, the title cannot be inherited and the jaladé can be discharged if he fails to carry out his functions. The jaladé, however, is the mawdo collengal (master of the flood plain) and judges all the tenure conflicts. He also receives all the different land rents and has a lamarba (a field given to him as a sign of authority).

Among the Hartallanabé, the mawdo leñiol elects the kamalinkou (manager of the Haratallanabé holdings) who is chosen from the two cebbé families: Diopbé and Lolobé. Here also, the kamalinkou receives land to lessen the appeal of corruption because his title is based on trust. Like the jaladé, he resolves all the tenure conflicts.

Among the Diadabé Syrou, it is the lamdo Ida (master of the flood plain Ida) who is elected by the Diadabé. He is from the toorodo lineage of the Sysibe and acts in the same roles as the jaladé and the kamalinkou.

These different officials play important roles in the tenure system because they are the managers of their leñiol holdings. However, the criterion of age which governs the choice of a mawdo leñiol, when he exercises his authority directly, is replaced by trust. Moreover, the kamalinkou, the jaladé, and the lamdo Ida can be dismissed from office whereas the mawdo leñiol cannot be because he is from the founding family of the leñiol which holds most of the leñiol lands.

In addition, the jaladé, the lamdo Ida and the kamalinkou are assisted by the jaagaraf and the jaltabé whose authority is only over their own castes and the different saamba remoru from whom they collect land rents.

a) The jaagaraf. The role of the jaagaraf is to collect the different land rents. and each is the mawdo in his castes. The title of jaagaraf belongs to only one family within the leñiol: the Niangabe among the Hartallanabé, the Bayebé among the Dubenabé, the Sysibé (toorobé) among the Lambé, the Diopbé among the Diadabé Soyrou, and the Thiambé among the Bonnabé. It is only in one leñiol that we find a jaagaraf toorodo (among the Lambé); in all the other groups, the jaagaraf is from the cebbé caste. The jaagaraf is chosen because of his age; he is the

oldest man of the family, entitled to the position. Moreover, as he holds a very lucrative position and his title can be inherited either by his brother, his cousin, or his son, the jaagaraf has little land. This system was adopted by the Halaybé to lessen the potential power of the jaagaraf. However, since the drought, the jaagaraf of the Hartallanabé has acquired more lands by developing marginal lands such as land located on jinthiou (which used to be a permanent pond located just outside of the town of Boghé).

c) The jaltabé. The jaltabé is also a collector of land rents, but only from the palé lands (lands located on the river banks). This title belongs to only one cuballo family within the Leñiol. His authority is greater than that of the jaagaraf because he is the master of the palé. He knows all the sizes of the fields in the palé, which are measured by the number of kalace (s. kalassal. which measures 3 to 4 meters). The size of a field in the palé (s. falo) cannot be greater than 6 kalace (around 18 to 24 meters wide). Thus, he resolves all the tenure conflicts on the palé and certain fondé lands, whereas on the waalo lands, it is the jaagaraf who collects land rents but does not resolve the tenure conflicts; instead the kamalinkou, or the jaladé, or the lamdo Ida resolve these conflicts.

The importance of the functions performed by the jaagaraf depends on their ownership rights within the leñiol. Indeed, when the mawdo leñiol is and elimane, these officials have an allocative role and resolve tenure disputes. In the case where the mawdo exercises indirect control, the role of the jaagaraf and the jaltabé consists only of collecting land rents (with the exception of the jaltabé of the Hartallanabé). The subalbé of this leñiol own all the palé leaning on Ceenel's side of the river and have only one field on waalo lands, the collengal of Saboualla; whereas among the Lambé, the subalbé do not own land, they own the landing sites where they receive fees from the persons crossing the river.

In addition, diagram 6.1 shows that the jaagaraf and the jaltabé do not have any authority over the toorobé households, who depend directly on jaladé and lamdo Ida. The lack of authority of kamalinkou on the toorobé households is due to the absence of that cast among the Hartallanabé.

6) Channels of Land Rents

The diversity of ways by which land is held and the different types of status of the individual on the land he cultivates determine the different channels of land rents. Two aspects are to be considered: a) the collection of the land rents, and (b) the uses of land rents.

6.1 Collection of land rents

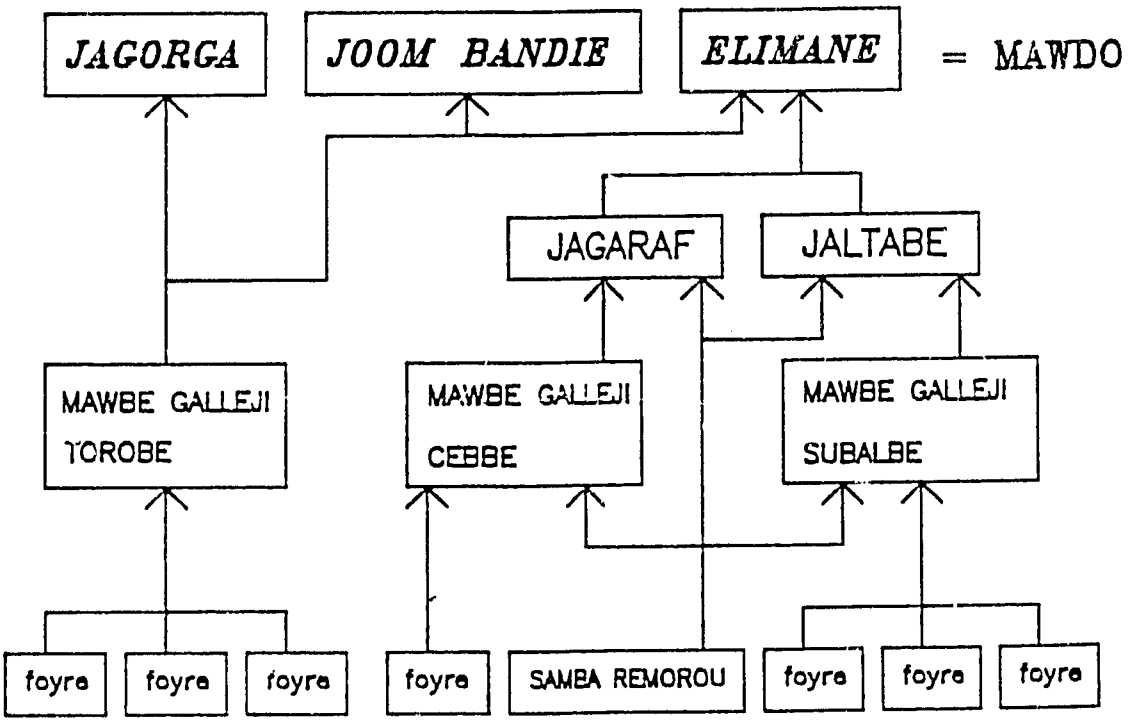
Each subgroup among the Halaybé created a complex system of land rents collection. The different types of land held by the

leñiol (waalo, fondé, and falo), the castes that have right to those lands, and the form of tenure that prevails in the gallé all determine the different channels of collection. It is important to note that land rents involve, at the Leñiol level, families with secondary ownership rights (jom lewré, jom jambéré and jom jeingol) and the contract farmers, saamba remoru. At the household level only the saamba remoru and the jom jalo are involved because nobody can have a secondary ownership on the family privately owned lands. Thus, to fully understand the system of rents collections two cases were considered (1) when the mawdo exercises direct control over leñiol lands and (2) when the mawdo delegates the control of the leñiol lands to another individual.

6.1.1) Case 1.(See Diagram 6.3) This is composed of the Ngaidenbé (jagorga), the Bababé Silmanabé (joom Bandié), the Dubenabé, the Pourinabé, and the Bonnabé (elimane).

Among the Ngaidenbé and the Bababé Silmanabé, the different households with secondary ownership rights give assakal to their mawdo, who then gives it to the jagorga or the joom Bandie. The saamba remoru gives the ndioldi, assakal and cootigu to the family from which they contracted land. However, when the saamba remoru lease leñiol lands, these rents are directly collected by the jagorga or the joom Bandie.

Diagram 6.3: Channels of land rents when mawdo leniol exercises a direct control

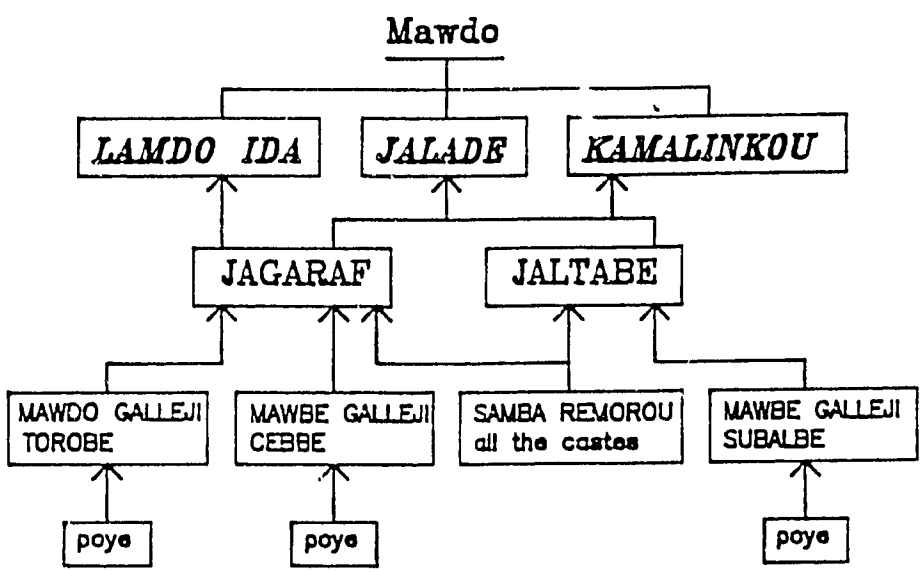


Among the Bonnabé and the Dubenabé, there are two collectors of land rents: the jaagaraf who collects rents on the waalo and on the fondé lands, and the jaltabé, who collects on the palé and some fondé lands. However, the toorobé households give their land rents, when they are not contract farmers directly to the elimane. The saamba remoru on the leñiol holdings and the different cebbé households give their rents to the jaagaraf. The saamba remoru on the palé and the subalbé households give their rents to the jaltabé. However, among the Purinabé, where there is only a jaltabé, the households with secondary ownership rights and the contract farmers pay their rents directly to the elimane, and the jaltabé collects rent from the fisherman caste and the tenants on the palé lands.

6.1.2) Case 2. (Diagram 6.4) These are composed of the subgroups where the mawdo delegates his control over the leñiol lands to another person with the title of lamdo Ida among the Diadabé Soyrou, jaladé among the Lambé, and kamalinkou among the Hartallanabé. All these different managers are assisted by a jaltabé and a jaagaraf. However, the Diadiabé Soyrou do not have a jaltabé because of their lack of palé. Moreover, the jaagaraf among the Lambé is a toorodo, whereas in all the other subgroups, this function is carried out by a ceddo (pl. cebbé).

The collection of land rents follows the same pattern as the previous case. The different households with secondary ownership rights or are saamba remoru give their land rents to their mawdo who then will give it to the jaltabé or the jaagaraf.

Diagram 6.4: Channels of land rents when mawdo leniol exercises an indirect control



These two cases show the complex channels which have resulted from the caste composition and the different types of land held by these subgroups. As shown in the different diagrams, nuclear families of the contract farmers do not have to pay the different land rents to their mawdo because the contracts are done on an individual basis. Each saamba remoru has his own field and the land rents are given directly to the mawdo of the owning family or to the collector of land rents.

At the household level, the land rents are collected by the mawdo gallé when the lands are the common property of all the members of the gallé. In the case where the land is not jowré, each owning family collects the rents from its tenants directly. The joom jalo is not considered here because a) he contracts on an individual basis and does not pay the ndioldi or the cootigu and b) he pays only to the landlord the amount of the production stipulated by the contract.

6.2) Uses of land rents

Land rents originally were stored for eventualities such as new settlers, bad harvests and etc. However, since the full occupancy of the fields by contract farmers and people with secondary ownership rights, there has been a redistribution of the different land rents between the different officials and families of the leñiol. For example, among the Lambé, these land rents collected from the toorobé are divided into four unequal shares. The biggest share is for the mawdo Wagnebé, who is the mawdo leñiol; the second share is given to the jaladé, who is the manager of the Leñiol lands; the third share to the jaagaraf; and finally the share of the jaltabé who is not toorodo and who does not own land.

Among the Dubenabé, however, the land rents collected by the elimane from the toorobé mawdo gallé and the rents gathered by the jaagaraf and the jaltabé are divided into four equal parts. These parts are allocated to the elimane, the jaagaraf, the jaltabé, and the mawdo of the Lambé family.

The structures of control and management of these small groups, leggi, which constitute the Halaybé society, are based on land rights. In this case, one cannot separate the economic aspect from the social and political aspects of the society. Thus, in order to implement a viable development project, any policy has to consider the system as the whole.

7. Land distribution in the Boghé Project

Tidiane Ngaide

1) Introduction

The Boghé project is located in the south central part of Mauritania, in the Brakna region, at approximately 16o 35' latitude North. The project is to develop 910 ha. of cultivable land which will be allocated to right-holders, those who reside in 24 villages[19] whose lands are being developed. The estimated population of the Mauritanian villages involved in the project is 15,971. The population is composed of Pulaar (98%) and Haratine (3%).[20]

For its water requirement, this project relies on pumping from the Senegal River. The 24 villages were grouped into 12 cooperatives, composed of 10 Mauritanian cooperatives (Boghé, Bakhao, Thidé, Ceenel, Touldé, Saé, Thialgou, Ngorel, Mballadji, and Sarandougou) and 2 Senegalese cooperatives (Sinthiou and Demett). Each cooperative received land in the perimeter as a function of the prior land holdings in the area developed of the different members of the cooperatives.

The aim of this project was to combine the strategy of the small village perimeters[21] with that of the big perimeters.[22] The result is a big irrigated project composed of small village cooperatives. The members of each cooperative have their lands in one area. This was done to avoid any conflict between the farmers and to facilitated management of the project.

In contrast to the Foum-Gleita, the Boghé project was implemented in an area already occupied by farmers and where the land rights were already strongly held. Thus, the problem for SONADER in this project was how to allocated these newly developed lands.

Does SONADER have to consider these cultivating the land or those who have ownership rights to these lands? The implications of each approach are fairly clear.

- If the developed lands are distributed only to the people who cultivate it, then the welfare of all the farmers involved in agriculture is taken into consideration. However, if the land owners are politically influential, such an approach can be a handicap to the project.

- If the land ownership is the criterion for land allocation, however, the welfare of the contract farmers and the sharecroppers is not taken into consideration. Furthermore, the landowners who received land are often not able to cultivate it and will try to adapt their traditional forms of contract with the landless in order to maintain their ownership rights. This will eventually result in low production and tenure conflicts.

Thus, given the two approaches described above what was the

policy adopted by SONADER for land distribution in the irrigated project of Boghé?

2) Land Distribution

The distribution of land in the Boghé project is a function of the prior holdings in the area affected by the project. Each land owner, according to the protocole d'accord (protocol of agreement) between the Mauritanian state and the farmers,[23] cedes his lands to the State for development. In turn, the project will take into consideration prior rights by allocating to each landowner a parcel in the developed lands.

2.1) Castes and Prior Land Holdings

The farmers involved in the project are Pulaar from the Halaybé. They represent 97% of the farmers. The other 3% are the Haratine form the villages of Mballadji, Boghé, and Thidé. As discussed previously, Pulaar society has a caste system and any development project which takes into consideration prior ownership rights is susceptible to maintain this form of stratification. The castes involved in the Boghé project will be discussed later, but at this point it is appropriate to show the castes of the different farmers and the lands that they ceded to the project.

The table below displays the distribution of land ceded to the project, according to castes, and the average field size. However, it is important to make clear that many of these lands are jowré lands and that only the mawdo galle, in this case, was registered. Thus, these averages are just an indication and may not reflect the average field size of a household if we consider right-holders of the different households. The jowré lands, however, can be seen among the nieñbé and jiabé castes, who received their lands as dokal pendungal which granted them ownership rights. But these lands cannot be divided between the different right-holders, and this might explain why an average field size is higher than among the toorobé, where the average field is 1.99 ha. This small field average, compared to the other castes, may be due to the fact that of these toorobé can divide land because they have primary ownership rights. Thus, it would be interesting to know the people who have jowré lands and the people who have private ownership rights.

In addition, the table 7.1 shows that the rimbé class (toorobé, subalbé, and cebbé) owned around 1412.85 ha (95%) of all the recorded lands of the Halaybé. The Haratine owned 102.81 ha, which represents 6% of the land that was ceded to SONADER.

2.2) Activity and Land Distribution

The different activities of the population involved in an irrigation project are a very good indication of the behavior of this population with regard to agricultural production and the different ways by which it adapts to the newly created

structures. As shown in table 2, there are many activities performed by the farmers who received land in the project.

Table 7.1: Castes and Prior Holdings of the Farmers in the Boghe Project

CLASSES	CASTES	Land holdings by caste/ ha	Number of owners	Average size of fields
Rimbe	Torobe	1169.81	588	1.99
	Cebbe	83.29	18	4.63
	Subalbe	159.75	63	2.54
Nienbe	Awlube	20.96	5	4.19
	Laobe	12.20	4	3.05
	Mabube	11.43	4	2.86
	Sakkebe	2.86	4	0.72
Jiabe	Maccube	31.31	15	2.09
Total		***1491.61***	***701***	
Average				***2.13***

Table 7.2: Distribution by sex and activity in the Boghe project

VILLAGES	SEX		ACTIVITY							TOTALS
	Male	Female	Farmers	Merchants	Wage Earners	Retired	Artisans	Other	Dead	
BOGHE	181	10	91	7	26	16	6	23	12	191
BAKHAO	38	1	29	0	2	0	2	1	4	39
NGOREL	23	0	15	0	5	1	0	0	2	23
SARANDOGOU	41	1	36	0	2	0	0	2	1	42
SAE	43	1	35	2	3	0	0	0	3	44
THIALGOU	80	2	33	6	20	6	1	7	7	82
MBALLADJI	19	0	10	3	1	1	0	3	1	19
TOULDE	63	4	45	3	4	2	0	0	9	67
THIDE	64	4	53	0	1	1	0	1	8	68
THIENEL	38	0	32	0	1	1	4	0	0	38
DEMETT	44	2	24	5	4	2	3	5	1	46
SINTHIOU	59	4	54	0	2	1	1	0	1	63
TOTALS	693	29	457	26	71	31	17	42	49	722

This table shows that 63% of the total population have agriculture as their primary activity and that 30% of the population engage in other activities which in many cases do not allow them to participate int he project. Even if they do participate, as wage earners (10%), they will not be able to personally cultivate the land that was allocated to them int he project. Thus, this might hinder the development of the project in two ways: a) many of these people will rent or contract their lands to landless farmers, and b) production within the project may decrease due to absenteeism. In any case, according to SONADER national policy, a person with another primary activity other than agriculture is not entitled to land in an irrigated project. However, given the type of land distribution within a project, many people with ownership rights might end up having a parcel in a project, if prior ownership was considered as the criteria of land distribution, such as in the Boghé project. The other issue raised by this characteristic of the population is the widening of the gap between the farmers and the people with other sources of revenue in one hand, and that group and the landless farmers on the other hand.

In addition, table 7.2 shows that only 4% of the total population involved in the project are women. This indicates that there was a discrimination against women in the land distribution policy, a stark contrast to the Foum-Gleita project where women constitute around 60% of the land holder in the project. The case of the women will be discussed in a later section.

2.3) Prior Ownership Rights and Land Distribution

The Boghé project in its land distribution policy considered only traditional ownership rights as a criterion for land allocation. As such, only the farmers, who held primary ownership rights, secondary ownership rights, or the rights, or the right acquired through dokal pendungal and jipundi, were entitled to land int he project. The saamba remoru Pulaar and the landless did not receive land in the project. This can be seen in table 7.3.

This table reveals that among the 83 households that were interviewed about their traditional relations they cultivated, 45.80% were jom leydi, 13.25% were jom jambéré and 12.05% had primary and secondary land rights. The households with primary and secondary ownership rights represent 71% of the 83 households interviewed in June 1985. The presence of people who have both primary and secondary ownership rights was due to a) some of the farmers have primary ownership rights int he lands located in the Mauritanian side, while also having secondary ownership rights on the Halaybé lands located in the Senegalese side, and b) others have primary ownership rights on their leñiol lands as well as secondary rights on other leñiol's lands. 20.23% of the 89 households acquired land in the project because of their traditional ownership right based on Dokal Pendungal (6.02% are

Toorobé and 7.23% are from the nieñbé class) and jipundi (8.43%). However, the jipundi concerns only the toorobé. The slaves (3.61%) received land as dokal from their participation on the clearing of their masters' lands. The case of the Haratine is very original because for the Halaybé, these people are considered as saamba remoru since the fields of Gueymane, which they used to cultivate, were part of the Lambe holdings. However, their ownership were based on their prior ownership granted to them by the Colonial rule.[24]

Table 7.3 shows also that the people who received lands as Dokal or Jipundi were entitled to ownership rights and that the donor could not take away land for any reason. Moreover, all the nieñbé that were interviewed received their lands as dokal pendungal with the exception of the sakebé among the Lambé who claim Pate Malloum as their ancestor. It can be seen that this caste had the smallest average field size (.72 ha).

Table 7.3: Distribution of ownership rights among 83 households in the Boghe project

VILLAGES	Jom Leydi	Jom Jambere	Jom Leydi& J.Jambere	Torobe		Nienbe	Jiabe	Samba
				Dokal	Jipundi	Dokal	Dokal	remorou
SAE	4	0	1	1	0	0	1	0
SARANDOGOU	3	0	0	0	0	0	0	0
NGOREL	4	2	0	0	0	0	0	0
THIDE	2	0	0	0	0	0	0	0
MBALLADJI	0	0	0	0	0	0	0	2
DEMETT	5	2	1	0	1	0	0	0
TOULDE	7	0	1	2	0	0	0	0
BAKHAO	1	0	1	1	2	0	1	0
BOGHE	9	4	3	1	2	4	1	1
THIENEL	2	1	2	0	0	2	0	0
SINTHIOU	1	2	1	0	2	0	0	0
TOTALS	38	11	10	5	7	6	3	3
Percentage	45.80	13.25	12.05	6.02	8.43	7.23	3.61	3.61

Other than in the case of these people, no saamba remoru or jom jalo were considered in the distribution of land.

2.4) Conversion Formula of Land Distribution

The farmers, who have ownership rights over the lands that are to be developed, ceded those rights to SONADER. In turn, SONADER promises to develop the lands and to give each landowning households a field of rice (0.50 ha) and a field of polyculture (0.25 ha). However, as in many cases, the person who was registered on the agency's lists was the mawdo gallé (when the family lands are jowré). SONADER set up a system of conversion can be seen in the table below.

Table 7.4: Land allocation in the Boghe project

AREA CEDED (Ha)	RICE PARCELS	POLYCULTURE PARCELS	AREA (Ha)
0.0 – 0.49	0	1	
0.5 – 1.49	1	1	0.75
1.5 – 1.99	1	2	1.00
2.0 – 2.99	2	2	1.50
3.0 – 3.49	2	3	1.75
3.5 – 4.49	3	3	2.25
4.5 – 4.99	3	4	2.50
5.0 – 5.99	4	4	3.00
6.0 – 7.99	4	5	3.25
8.0 – 10.99	5	5	3.75
11.0 – 14.99	5	6	4.00
15.0 – 19.99	6	6	4.50
20.0 – 25.99	6	7	4.75

This allocation scheme allots each person whose land is captured in the project no more than 26 hectares. It integrated all the people who previously had titles on these lands. However, as many lands were jowré, SONADER has to take into consideration the welfare of the share holders. Thus, from an individual type of land allocation, the agency considered only the person who was registered and allocated land according to the conversion formula. Such strategy raises the issue of reallocation within the family that received land. Will the mawdo gallé allocate land according to the traditional system? How will these lands be inherited in the case of the mawdo gallé death? How are women within that family to receive land? Would problems emerge in the case where the land received by that family is not enough for the different share holders? All these questions will be discussed in another chapter.

In addition, the project did not consider the leñiol as a criterion of land allocation, but shifted to villages as a criterion of land distribution. Each farmer's land was registered in his village. The strategy was to avoid the supreme authority of the mawdo leñiol and to discourage the maintenance of the traditional tenure system. According to the conversion formula, the developed land would be allocated as follows:

Table 7.5: Allocation of Land according to the Scheme

VILLAGES	Area of rice (Ha)	Area of polyculture (Ha)	Total area (Ha)
BOGHE	144.00	90.75	234.75
NGOREL	23.50	16.00	39.50
SAE	36.50	21.50	58.00
MBALLADJI	25.00	14.75	39.75
THIENEL	37.50	23.00	60.50
THIALGOU	69.00	42.00	111.00
THIDE	49.00	30.00	79.00
TOULDE	49.50	30.00	79.50
BAKHAO	27.00	17.00	44.00
SARANDOGOU	28.50	17.25	45.75
DEMETT	25.00	16.50	41.50
SINTHIOU	31.50	20.75	52.25
TOTAL	546.00	339.50	885.50

The total amount of land that would be normally allocated is 885.5 hectares, which represents 56% of the land ceded by the farmers (1594.42 hectares). Thus, the land owners will lose 44% of their previously owned lands which will be captured by the project through dikes as well as "to allocate land to the landless". This reduction of their previous holdings decreased the average size of fields from 2.21 to 1.23 hectares.

However, due to problems encountered by SONADER in involving the landowners in the project. The National Agency diverted from its land distribution scheme by allocating more lands to the villages that gave the least resistance: Mballadji and Ceenel.[25] Indeed, SONADER by allocating more lands to these villages, induced them to start cultivating the land in the project in 1983. This can be seen in the table on the effective distribution of land in the project.

Table 7.6: Effective allocation of land in the project

VILLAGES	Area of rice (Ha)	Area of polyculture (Ha)	Total area (Ha)	Differences (Ha)
BOGHE	147.00	92.50	239.50	+4.75
NGOREL	22.50	16.00	38.50	−1.00
SAE	35.50	22.50	58.00	0.00
MBALLADJI	38.00	22.50	60.50	+20.75
THIENEL	45.00	27.00	72.00	+11.50
THIALGOU	62.00	42.50	104.50	−6.50
THIDE	45.00	28.50	73.50	−5.50
TOULDE	48.00	31.00	79.00	−0.50
BAKHAO	24.00	15.00	39.00	−5.00
SARANDOGOU	26.00	16.50	42.50	−3.25
DEMETT	20.00	13.00	33.00	−8.50
SINTHIOU	32.00	20.50	52.50	+0.25
TOTAL	545.00	347.50	892.50	+7.50

Table 7.6 displays the effective allocation of land in the project and the difference between the distribution according to the conversion formula and the effective land distribution. As it can be seen, the villages of Mballadji received 20.75 Ha more of land; and Ceenel received 11.50 Ha. This can be a very important issue if the landowners know about it. Indeed, it can generate conflicts between the Haratine of Mballadji and the other villages and cripple the project. When the question was raised to the SONADER agents, the answer was that if the new lands are developed, the people from whom they took land will receive their missing land. However, it would not be very easy to develop new land since there are people who already have a claim on those lands. Moreover, if the distribution is according to prior ownership rights, then if SONADER takes away land from the right- holders in order to compensate those who lost actually, many conflicts can emerge because every farmer knows his land. In addition, if new land is developed and the person did not have prior ownership rights in it, then the new farmers can create problems to the agency.

The surplus land allocated to the villages of Mballadji and Ceenel represents the loss of 32.25 ha for 64 land owning families. The important issue here is why did not SONADER allocate land to the landless farmers under the traditional system instead of giving more land to landowners. The landless have a right on those lands as long as the project is funded by the Mauritanian Government. Do political issues lead a

Table 7.7: Distribution of farmers per village according to the number of rice fields they hold in the project

VILLAGES	0	1	2	3	4	5	6	7	8	9	TOTAL
BOGHE	19	107	35	12	11	6	0	1	0	0	191
NGOREL	0	4	16	3	0	0	0	0	0	0	23
SAE	6	22	5	7	3	0	1	0	0	0	44
MBALLADJI	0	8	2	1	1	3	0	2	0	2	19
THIENEL	0	19	8	1	6	1	1	0	1	1	38
THIALGOU	17	28	26	3	5	3	0	0	0	0	82
THIDE	13	38	4	6	4	2	0	0	0	0	67
TOULDE	9	39	8	7	5	0	0	0	0	0	68
BAKHAO	3	24	12	0	0	0	0	0	0	0	39
SARANDOGOU	0	37	2	1	2	0	0	0	0	0	42
DEMETT	15	23	7	1	0	0	0	0	0	0	46
SINTHIOU	13	36	14	0	0	0	0	0	0	0	63
TOTAL	95	385	139	42	37	15	2	3	1	3	722

government to ignore the welfare of the landless? Moreover, the lack of consideration for the welfare of the landless and the reduction of the landowners holdings, through the conversion formula, reduces the chances of the landless to receive or have access to land. Thus, what alternatives do these landless have when their means of living were based on agriculture?

In any case, SONADER allocated the fields of rice an polyculture to prior ownership right. Table 7.7 shows how rice fields were allocated between villages. It displays the distribution of farmers according to the number of rice parcels they hold int he project. This distribution further demonstrates that the scheme of land distribution was not respected because the maximum amount of rice field that a landowner was entitled to was 6 parcels or 0.50 ha of rice (3 Ha). The majority of the farmers (53%) have only one parcel (0.50 ha) in the perimeter. Only 7 households received more than 3 Ha. Furthermore, 6 of these households are form Mballadji and Ceenel. The farmers who did not receive a parcel of rice (13%) were the people whose prior holdings were below 0.50 Ha.

In addition to the distribution of land for rice cropping, the project allocated fields for polyculture, where maize and vegetables will be cultivated during the off season rice cropping. This allocation also depended on the amount of land ceded to the project.

Table 7.8: Distribution of farmers per village according to the number of polyculture fields they hold in the projects

VILLAGES	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
BOGHE	95	52	22	8	12	1	1	0	0	0	0	0	191
NGOREL	2	13	5	3	0	0	0	0	0	0	0	0	23
SAE	23	9	7	1	3	0	0	0	0	0	0	0	44
MBALLADJI	6	3	0	2	1	1	0	1	2	1	1	1	19
THIENEL	10	16	2	0	6	1	1	0	1	1	0	0	38
THIALGOU	35	26	11	2	6	2	0	0	0	0	0	0	82
THIDE	45	6	11	2	2	1	0	0	0	0	0	0	67
TOULDE	38	16	7	4	1	2	0	0	0	0	0	0	68
BAKHAO	21	14	4	0	0	0	0	0	0	0	0	0	39
SARANDOGOU	28	9	1	3	1	0	0	0	0	0	0	0	42
DEMETT	36	10	0	0	0	0	0	0	0	0	0	0	46
SINTHIOU	50	10	4	0	0	0	0	0	0	0	0	0	63
TOTAL	389	184	73	25	32	8	2	2	3	2	1	1	722

Table 7.8 displays the distribution of the number of farmers who received parcels or polyculture according to the size of land ceded to the project. Each parcel of polyculture is 0.25 ha. The majority of the farmers (54%) have 1 parcel, 0.25 ha and represent those farmers who had ceded to the project less than 1.5 ha.

The logic behind this type of land distribution was to provide to the farmer both a rice field of 0.50 Ha and a polyculture field of 0.25 Ha. Thus, each household would have at least 0.75 Ha. This is an interesting approach as long as the goals of SONADER were to improve the conditions of the farmers. However, as mentioned earlier, SONADER did not respect this scheme and allocated land not to one household, but to may households in the case where registered land was jowré land. Moreover, the allocation scheme did not allow the farmers, whose holdings were less than 0.50 ha, to receive a parcel of rice in the project.

This type of land allocation raises three issue: a) land allocation of the family, whose lands were jowré; b) the problem of the people with lesser holdings who see their holdings reduced; and c) the widening gap between the large landowners and the small landowners in the project. This affects the distribution of income among the farmers involved in the project. These issues will be discussed in following chapters.

8. Land Distribution Policy and the Traditional Tenure System

Tidiane Ngaide

The project, by considering prior land ownership as a criterion for project land ownership, maintained involuntarily the traditional tenure system. SONADER tried to mitigated the impact of the traditional tenure system on the project by writing a cahier de charges, and agreement between SONADER and the farmers, whereby, the farmers agreed not to use any of the traditional forms of tenure in the project. In exchange, SONADER would provide them land, water and inputs that should be paid by the farmers as variable and fixed costs of production.

However, the project did not consider several important issues such as (1) is the land registered privately owned land or is it jowré land, (2) what is the age structure of the landowners, and (3) do the landowners have secondary activity.

1) Jowré and Privately Held Lands in the Project

1.1) Jowré lands

The registration of the jowré lands follows the same logic as under the traditional system because it is the oldest male member of the household, the mawdo gallé, who controls these lands. So the problem in the project is how the mawdo reallocates the land received to all the other right-holders. There are several forms of adaptation.

1.1.1) Insufficient amount of land received: if a household of three pooyé receives two parcels of rice and three parcels of polyculture, the mawdo takes one parcel of rice and polyculture, with one parcel of rice and polyculture being allocated to the second brother. The third brother receives only a parcel of polyculture. This type of reallocation follows to the traditional form of allocation of share-holders in recessional agriculture. This type of allocation worked under the traditional system because the brother who did not receive enough land could always contract. In the project, however, the y64ngest br6ther has no possibility of finding land to cultivate. Thus, the welfare of the youngest of the family is not taken into consideration at this stage. Nevertheless, their welfare could be preserved if they were allowed to inherit the fields should their elders die. However, at this early stage of the project, it is difficult to foresee what type of adaptation will be made with regard to field inheritance in the case where the mawdo gallé dies. Will the fields that the mawdo used to hold be inherited by his brothers or by his sons? Whether it is the brother or the sons who inherit the fields, there will be social conflict between the uncles and nephews.

In addition, how will the mawdo preserve the welfare of the share-holders who do not actually live in the family? Will he allocate land to the share holders who want to get involved in

the project? Or will he divide the parcel into non-economic units? If these do not occur, how would he manage to deny their ownership right? In some cases, when the amount of land is small like one parcel of rice, the different members may jointly cultivate the parcel and share the production.

In any case, land held as jowré in an irrigation project, where individual ownership should be the prevailing form of tenure, constitutes a limitation to the project because a) when the fields received by a family are not equally divided, there are potential conflicts between the different right-holders, and (b) if the land is divided it can affect the productive capacity of the project by reducing the size of the fields into non-economically viable units.

1.1.2) Adequate land received. In this case, the mawdo allocates land to the different share-holders. However, the mawdo receives assakal from the other members as in the traditional system. For example, Soko Karim Samba has 3 parcels of rice as jowré. He cultivates one, and the other two are given to his nephew and sister. He receives 19 kgs form his nephew and 45 kgs from his sister.

1.1.3) Women's access to lands. Among the 9 women that were interviewed in the project, only 3 of them received land from their families. 5 of these women received land from their husbands' family because they have sons. The other woman[26] did not receive land because she did not have a son with her husband. This shows that discrimination against women still prevails in the project.

The prevailing form of relation between male right-holders and female right-holders is caatal.[27] The women, therefore do not receive a parcel if the lands are jowré. Her brothers give her caatal as in the traditional system. For example Mamadou Moustapha Dia has 2 parcels of rice and 2 parcels of polyculture that he shares with a brother and a sister. However, the sister receives only caatal. This raises the issue of access to land for her children. Will the welfare of her children be preserved as under the traditional system. Will they be able to receive land from their uncles?

Another adaptation is at the leñiol level where the fields, which were owned in common by the leñiol, were sharecropped. For example, among the Dubenabé, those fields are registered under the mawdo leñiol and the production of those fields are divided, as before, between the mawbe (pl. of mawdo) of all who have primary rights on those lands.

1.2) Registered Land was Privately Owned.

In the case where the registered land is privately owned land, there are few problems of reallocation. Some of the farmers registered their lands in the project individually. For example, a family that owns a lot of land will register each member so that they would get more land from the project. This might be one of the explanation why we find a small average of

the field among the toorobé (1.99 Ha).

In addition, these privately held lands in the project eventually become jowré lands as in the traditional system. As shown in table 7.2, there were 49 farmers (7% of the farmers in the project) who are dead, but their lands were not divided by the different heirs. The problem in this case is how will these families, in the case of the jowré registered land. proceed to reallocate the land received in the project.

In any case whether the registered land is jowré or privately owned, there is no clear indication that those lands will stay under their registered forms, since the right-holders may agree to leave the land jowré or proceed to divide the land. Both solutions might hinder the viable development of the project.

2) Age structure of the households involved

This is very important to consider when distributing land. What is the age of the population to whom land is to be allocated? Are they capable of cultivating the rice fields that require a substantial amount of physical work? If they are not capable, do they have members of their households who are able to cultivate? All these questions deal with labor availability and the quality of this labor which will affect the form of land tenure in the project. This will be discussed in subsequent chapters.

Table 8.1: Age distribution and structure of 83 households in the Boghe project

AGE	PRESENT		ABSENT				Totals
	Male	Female	Work	Study	Married	Others	
0 – 7	66	56	0	3	0	0	125
8 – 15	85	92	0	6	0	1	184
16 – 20	30	29	9	14	12	1	95
21 – 25	10	17	12	12	30	2	83
26 – 30	4	10	21	6	27	3	71
31 – 40	10	36	26	1	25	1	99
41 – 50	9	41	6	0	3	0	59
51 – 60	28	21	0	0	0	0	49
61 – 70	15	9	0	0	0	0	24
70 +	18	1	0	0	0	0	19
Totals	275	312	74	42	97	8	808

Table 8.1 displays the age distribution and the structure among 83 households. Among the 808 people in these households, 584 people (73%) are present. However, among those 584 people, 299 (51%) are under 16 years of age and 92 (16%) are over 50 years old. So the potential labor available to cultivate in these fields is 193 people (33%). This table also shows that between the ages of 16 to 50, people have a tendency to leave their villages for four reasons.

a) Work. Among the 224 people that are absent in the site during the interview in June, 1985, 74 (33%) are absent because of work, and all are males.

b) Study. Among the absents, 42 people (19%) leave their households to study. This includes both males and females.

c) Married. This category primarily concerns women. Men were not considered because only the women leave their fathers' house to join their husbands. 97 women or 43% of these 224 people are not present in these households.

d) Others. This category involves all the people that are not living in their households for various reasons.

This table also shows the behavior of the different people in these households. At the age of 16, many members of these households are not present, but between 51 and 60, there is a new increase in the present population. This shows that the security of tenure is very is very important, since many retired Pulaar come back to their villages and cultivate their family lands.

The labor availability and the quality of that labor will be one of the determining factors affecting the forms of tenure, as we will see later.

3) Existence of a secondary activity

Secondary activities also raise the issue of labor availability. Indeed, when a person has another activity, he tends to contract out his land. Among 83 households in the project, 7 farmers cultivate their fields by hiring Haratine and 5 farmers temporarily gave their fields to other relatives who did not receive land in the project.

All these factors determine the different tenure arrangements that farmers involved in the project adapt to alleviate labor shortages and to secure the fields received in the project.

4) Tenure arrangements in the Boghé project

Different tenure arrangements result from the type of constraints that confront the farmer. The various adaptations of the farmers to alleviate those constraints, under the traditional

tenure system were discussed in the land tenure chapter. Here, the purpose is to look at how land distribution based on prior ownership may maintain the traditional forms of tenancies and/or may introduce new ways to cultivate the parcels that were allocated to them. In that respect, the table below displays the different types of tenure arrangements among 83 households in the Boghé project.

Among the 83 households that were interviewed on the way they cultivate their lands, 10 did not cultivate because they did not receive a parcel of rice. Among those 10, a woman was denied access to the lands of her dead husband because she did not have a son[28] and a sakké[29] whose already cultivated field was taken away by a family claiming ownership of those lands. The eight remaining households did not cultivate because their prior holding did not allow them to receive a parcel of rice.

4.1) Dokal or gift. This tenure arrangement is practiced by 6% of the interviewed households (83). Here the land owner is not capable of cultivating his field because he is employed elsewhere.[30] Thus, he gives his field to relatives who were either brothers- in-law (2) or nephews (3). They affirm that they did not receive anything from the fields because they were not there, but once back, they took their fields. It is important to clarify that this type of arrangement, according to all the people interviewed, is now between relatives or other toorobé close to the family. The nieñbé and the jiabé who did not receive land in the project, did not benefit from this type of arrangement

Table 8.2: Tenure Arrangements

Characteristics	Households	Percentage
Dokal	5	6
Diowre	15	18
Hired Workers	7	8
Did Not Cultivate	10	12
Rempetien	15	18
Cultivated	31	38
TOTALS	83	100

4.2) Jowré lands. 15 households have jowré lands, and the types of tenure arrangements that developed from it were discussed above.

4.3) Rempetien or sharecropping: 18% of the 83 households practice sharecropping. All these farmers are more than 50 years old and do not have anyone to cultivate for them. But contrary to the traditional tenure system where there was a variation in the forms of sharecropping, the only form in the project is Didabal, or one half. Moreover, the landowner does not provide what was known as botari, the food provided to the sharecropper while he is cultivating the field. This shows that the scarcity of land encourages the landowners to contract their lands only under the form of didabal.

4.4) Hired labor. Seven households have their fields cultivated by hired labor. These workers are usually Haratine paid 100 UM/day. All 7 heads of household are working as Government agents in Boghé. Thus, as they work in Boghé, they cannot cultivate their parcels themselves, and they hire Haratine to work on their fields. This is a new form of adaptation, since under the traditional form of tenure, there was no hired labor.

4.5) Household labor. Only 31 households (38%) cultivate their fields or rely on doftal (help) to cultivate their fields. However, in the project, the farmer gives 1 moud of rice (4 kgs)/ day to each person that provided him labor. The doftal is usually done by women and boys, or by relatives of the landowner who did not receive land in the project. As many households did not receive land, doftal is becoming a source of revenue for many project landless households. Thus, as the demand for work is very high, many farmers accept doftal only from their relatives.

By considering prior ownership as a criteria for land allocation, SONADER maintained some aspects of the traditional tenure system while introducing new forms of cultivating the parcels. In the short term it would be difficult to assess the impacts of these different adaptation by the farmers on the project. However, the jowré lands and other forms of tenure will cripple the project, as most of the landowning families have their sons studying or working. So, in the long run, the project will eventually be run by people who do not have ownership rights on the fields they cultivate.

In addition, the project did change the different forms of tenure arrangements between the rimbé landowners and the nieñbé and jiabé landless. For example the adi that existed between the landowning families and the caste of artisans disappear because the project requires new tools for rice cultivation. So, the nieñbé see their agricultural role and their access to land diminished.

9. Social Implications of the Boghé Project

Tidiane Ngaide

The different forms of social relations among the pulaar resulted from the subjective definition of caste, and one's access to the means of production. This created a situation where there developed dominant groups, such as the rimbé, whose pre-eminence at not only at the social level but also at the economical and political levels was based on their control over land. Thus, when land distribution policy is based on prior ownership, there is a maintenance of the traditional power of the rimbé as a controlling class. Moreover, the control of land determines the different forms of relations between castes. This creates relations of dependency between the landless (lower castes of the Pulaar society) and the landowners (noble Pulaar castes).

Did the land distribution policy and the characteristics of the population involved help to maintain the social relation which prevailed under the traditional system, in the Boghé project?

Table 9.1: Caste distribution in the Boghe project.

VILLAGES	Torobe	Cabbe	Subalbe	Awlube	Mabube	Lawbe	Sakkebe	Maccube	Haratine	Peulhe
BOGHE	148	0	24	1	3	4	2	7	1	1
BAKHAO	28	0	6	0	0	0	0	5	0	0
NGOREL	4	6	13	0	0	0	0	0	0	0
SAE	43	0	0	0	0	0	1	1	0	0
SARANDOUGOU	35	0	7	0	0	0	1	0	0	0
THIALDOU	80	0	0	0	0	0	0	1	0	0
TOULDE	65	3	0	0	0	0	0	0	0	0
THIDE	65	1	0	0	0	0	0	0	1	0
THIENEL	20	8	5	3	0	0	1	1	0	0
MBALLADJI	0	0	0	0	0	0	0	0	19	0
DEMETT	39	0	5	1	1	0	0	0	0	0
SINTHIOU	62	0	2	0	0	0	0	0	0	0
TOTALS	589	18	62	5	4	4	4	15	21	1

1) Castes in the Project

The transfer of the newly developed land to the prior owners consisted merely of a transfer of land to the traditional landowning class, the rimbé. This resulted in the maintenance of the different forms of dependency between landowning castes and landless castes, besides the subjective definition of the individual within society.

Table 9 1 displays the caste distribution int he Boghé Project. The rimbé represent 93% of the total population involved in the project, while the nieñbé represent only 4%. Among the nieñbé involved in the project, there are no members of the wailubé (smiths) caste. The peulh in the project, is not part of the Halaybé, the land registered under his name belongs to his wife who is from the Lambé.[31]

This limited participation of the other castes, besides the toorobé (81% of the total population) in the project, shows that the stratification of society into castes among the groups (Lambé, Dubenabé, and Bonnabé) involved in the project, was maintained. This caste distribution indicates that the landless of the lower castes of the Halaybé are still dependent on the upper castes to get land. This dependency is more so when we consider that, since 1973, there have been no inundations, which the farmers relied on for agriculture. Moreover, the situation of these landless (artisans and slaves) worsened in the project because many rimbé (whose lands were not involved in the project, such as the Hartallanabé, the Ngaidenbé, Babanabé, Pourinabé), compete with them to receive a parcel from their relatives to sharecrop. Moreover, because land now is scarce, the rimbé have a priority over the other classes when the recipients of land in the project want to lease out their fields.

Also, the social relations between a noble land owning household and a non-noble landless household are maintained to a certain extent. Traditionally, there were mechanisms that governed the relations between those two types of households. These mechanisms (adi, and dokal pendungal) as discussed earlier, permitted the domination by the noble landowning household because of the reliance of the non-noble on the former household for a field to cultivate.

Since the 1973 drought, these non-noble classes are challenging the social authority of the noble classes. This challenge is due to two factors: a) the lack of land to cultivate, by both the noble and non-noble classes (water shortages lessened the nobles' authority); and (b) their involvement in education and their activities which sustained them during the drought, made them fell the subjective character of the caste system.[32] Hence, there is a sort of emancipation or those classes which felt equal to the noble class. I witnessed this situation in the village of Thialgou where I was confronted with a situation where the president of the cooperative affirmed that "there is no toorodo, cuballo, ceddo or maccudo, they are all equal". This showed how the caste system is being threatened

with disappearance. Nevertheless, if politically the noble class is being aware of that situation, still there is and will always be the subjective aspect of the caste system.

The project should have helped these landless, lower castes, to increase their independence from the noble castes. But since their welfare was not taken into consideration, these lower castes. This situation is maintained because of the security of tenure provided by SONADER to the noble castes. This security of tenure was only granted to the traditional land owning castes by the project, which allotted them land and confirmed their ownership rights.

However, if the caste distribution was maintained, the project disturbed the power structure of the different leggi that are involved in the project at three levels: leñiol level village, and gallé level.

2) Leñiol level

At this level, it is the power structure of the groups that have their lands in the project that were affected. Indeed, among the Dubanabé, the Lambé, and the Bonnabé, the elimanes and the jaladé lost their economic power because the control of land and the collection of the land rents does not exist in the project. The jaagaraf and the jaltabé of those groups saw their roles within society captured by SONADER, which provides land and collects fees from the farmers as costs of production. Thus, among these leggi, the titles of elimane, jaladé, jaagaraf, and jaltabé become only honorific titles, which show the importance of various families within the leñiol social structure and history.

In addition, the land distribution policy and the organization of the different villages involved into cooperatives, induced the election of a president of cooperative. There is a shift of power on decision-making from the mawbé leñiol to the president of cooperative, who now is the intermediary between SONADER and the landowners. This resulted in a bicephalism in the decision-makings in some villages, such as THialgou. Indeed, while the mawdo leñiol remains the prevailing figure at the leñiol level and is the biggest landowner, the president of the cooperative, who is also landowner, wants to acquire a certain power in the decision-making. This competition for power, between the mawdo leñiol and the president of cooperative, results in conflicts. The mawdo leñiol perceives himself as the only person who has the right to make decisions regarding land since he is the master of the leñiol land; while the president of cooperative feels that he should be the sole representative of the village.

However in certain villages such as Ngorel and Ceenel, the presidents of the cooperatives, who are respectively cuballo and ceddo, have a secondary role, They have to refer to their mawdo leñiol and the toorobé landowners in the project before taking any decision concerning the cooperative. Moreover, these two

cooperative presidents do not have any influence in the decision-making concerning the project as a whole.

However, since all the leggi are not involved in the project, the mawdo leñiol and the officials (kamalinkou, jaagaraf, and jaltabé) within each leñiol still retain their functions. For example, the Hartallanabé, whose lands were not affected by the project, elected their kamalinkou with regard to the behavior of these different groups in the case of good rainy season. Will the leggi whose lands were captured by the project, feel a certain loss because they can not anymore collect land rents? 3) Village level

Here, the situation is more complex because of the different power conflicts (a) between the Chief of the village and the leaders of the SEM (structures d'Education des Masses) and (b) the conflict between the cooperative president and the mawdo leñiol residing in the village. Traditionally, both the chief of the village and the mawdo leñiol played and important role: the mawdo as the master of the leñiol lands and the oldest person of the leñiol, and the chief of village as the political figure. Their roles are being captured by the leaders of the SEM in the village, who consider themselves as the only representatives of village interest and the president of cooperative as the only representative of the village landowners' interests. Thus, the similarities of interests led to the formation of an alliance between the leaders of the SEM, who distribute the food provided by the CSA (Commissariat pour la Security Alimentaire). a governmental agency; and the presidents of cooperatives, who distribute the food aid given by the project to the landowners as compensation. The goal of this alliance is to supersede the traditional powers. Moreover, this creates a number of conflicts between the different members of the village. 4) Gallé level

Here the conflicts are between members of a gallé whose lands are jowré. Indeed, many pooyé started to challenge the authority of the mawdo gallé. Each household wants to be economically independent and not depend on the mawdo allocative role. Moreover, as some farmers held land from their mothers' family, they feel that these lands should not be registered under the mawdo gallé, whose authority prevails only on the lands inherited form their father. Thus, each foyré wants to have his piece of land registered under his name. In cases where the family received only 1 parcel of rice (0.50 Ha), the plot was divided into two plots.[33] In other cases where the youngest ended up with a parcel of polyculture while the oldest of the gallé received parcels of rice, the youngest felt cheated and wanted to have their shares.

In many case, many social problems will emerge (among the gallé which lands are jowré) between competing stepbrothers. Furthermore, what will the reaction of the children of a woman, who did not receive her share on the commonly held family lands?

10. Economic Implications of the Boghé Project

Tidiane Ngaide

The creation of an irrigated project in an area which was affected by the drought is very important for the improvement of the farmers living conditions. However, as discussed in earlier chapters, the project allocated land only to the people who had primary, secondary, jipundi, and dokal pendungal rights. The welfare of the landless farmers was not taken into consideration. In addition, the project diverted from its precious policy of land allocation, which would grant only a parcel of rice (0.50 ha) and a parcel of polyculture (0.25 ha) to each household, by allocating land to only those people who were effectively registered through a system which converted one's prior land holdings.

In that respect, the project will necessarily affect the landless and the small land holders. The aim here is to look at the impact of the project on income distribution and the production of the villages involved.

1) Production in the Boghé Project

The production of the villages that was recorded by SONADER in 1983 shows that the average yield/ha in the Boghé project is 3.59 tons of rice. This yield at this early stage of the project, where the farmers are not completely adapted to rice

Table 10.1: Production and Yields in the Boghe Irrigated Project

VILLAGES	Farmers	Rice Area (Ha)	Production (Tons)	Yield/ha (Tons)	Yield/Farmer (Tons)
BOGHE	163	81.5	301.49	3.70	1.85
SARANDOGOU	53	26.5	91.60	3.46	1.75
THIENEL	40	20.0	55.40	2.77	1.39
BAKHAO	30	15.0	51.11	3.41	1.70
SAE	54	27.0	89.22	3.30	1.65
THIALGOU	77	38.5	149.98	3.90	1.95
NGOREL	37	18.5	60.51	3.27	1.64
TOULDE	45	22.5	94.59	4.20	2.10
THIDE	90	45.0	217.49	4.83	2.42
MBALLADJI	31	15.5	54.81	3.54	1.80
DEMETT	40	20.0	63.63	3.18	1.60
SINTHIOU	39	19.5	69.01	3.54	1.77
TOTALS	699	350	1298.84		
AVERAGES			108.24	3.59	1.80

cultivation, is a very good performance. However, as shown in the table below there was a variation on the yields per village.

Table 10.1 displays the different production for the village cooperatives, the number of farmers and the different yields. The project as a whole produced 1,298.84 tons of rice in 1983. The highest yield was attained by the village of Thide with a yield of 4.83 tons per ha and the lowest yield by the village of Ceenel with a yield of 2.77 tons per ha. The majority of the villages have almost the same yield. This is also reflected in the average yield per farmer, with the highest yields still at Thide. The agents of SONADER believe that the village of Thide was located on the best soils for rice cultivation.

2) Production and Labor Availability

The average age in the 83 households interviewed in the project was 62, which reflects the drawbacks of allocating land to the prior landowners who are usually older people, and the ones who control land in the Pulaar society in general. However, to circumvent the quality of labor due to the age of the population involved in the project, many farmers use different forms of adaptation: 15 farmers sharecropped, 7 farmers hired labor, and the remaining of the sample who cultivated (51 farmers) use doftal[34] to cultivate their fields. This was made possible because there are a lot landless around the project (some because their lands were not involved in the project and others because they did not own any land). All these landless seek Doftal to generate some income for the household. Thus, doftal in the project takes on another sense because the person who was accepted by a farmer for Doftal comes during both the plowing and harvesting periods. After each day of work after the harvest,t he owner of the filed gives to the person who does Doftal (generally women) 4 to 8 kgs of rice. This means that if a farmer has 10 persons ding the Doftal for 2 days, he will pay them 80 to 160 kgs of rice. Doftal, then, was very efficient in compensating labor shortages, just as it did in the traditional tenure system.

3) Income Distribution in the CPB

The income of the 83 households increased form 75,675 UM ($1100) per year to 147,604 UM ($2170) per year in the project. This might induce one to conclude that the project achieved and increase in income. However, as stated earlier, this population is not primarily composed of farmers, but rather of people engaged in secondary activities (wage earners, retired, merchants, and other activities such as sewing). Thus distinctions ought to be made between the wage earners and non-wage earners.

3.1) Income Classes among 83 Households

These households were divided into 3 classes: High income, Middle income, and Low income. This was devised to see these different classes were affected by the project. The results are shown in the table below:

Table 10.2: Distribution of Income according to Income Classes

Sources of Income	High Income		Middle Income		Low Income	
	Income 1	Income 2	Income 1	Income 2	Income 1	Income 2
Agriculture	25,885	0	24,122	0	18,914	0
Livestock	1,612	0	1,669	0	1,500	0
Fishing	9,885	0	10,300	0	0	0
Remittances	353	21,741	148	24,000	667	33,661
Migration	0	2,118	11,074	4,704	3,111	1,139
Wives	698	9,365	2,589	4,111	3,474	4,775
Wages	92,956	58,780	5,793	17,769	10,017	9,533
Pension	0	13,772	9,110	9,222	0	2,802
Other	14,588	37,835	5,524	13,350	3,150	16,586
Parcel	0	22,680	0	18,864	0	18,109
CSA	0	4,590	0	4,590	0	4,590
CPB	0	5,164	0	4,477	0	4,256
Total of Averages	156,977	176,045	77,856	101,087	31,410	95,402

Table 10.2 displays the three income classes, their sources of income before and after the project, and class average income. In general, the income of all the classes increased.

(a) High income class. The annual average income of this class increased by 12% form 156,997 UM ($2038) to 176,045 ($2589). This class is essentially composed of wage earners because the average wage income is the highest (58,780 UM) and people with other activities such as merchants.

(b) Middle income class. The average annual income of this class increased by 30% form 77,856 UM ($1145) to 101,087 UM ($1486). For this group, remittances constitutes 25% of their income and the Parcel income constitutes only 19% of their income.

(c) Low income class. The average income of his class tripled now. This is partially due to the project, because the income they derive form the project represents 23% of their income. However, the major source of income for this group is remittances (35%).

As a whole, the income of these three classes increased However, as it can be seen in the table above, each class has a major income, among the middle income people it is remittances and among the low income people it is also remittances.

The remittances constitute and adaptation to the drought. Indeed, the lack of social security in Mauritania, forces the children to take care of their parents and as usually they are low wage earners, they leave their families with their parents, and send part of their salary home each month to support both their families and their parents. For example, 5 households received around 8,000 UM each month from their sons.

3.2) Castes and Income Distribution

As discussed earlier, the Halaybé caste system and the allocation of land according to prior ownership rights affect differently the farmers who are in the project.

3.2.1) Income distribution of nobles (rimbé) versus non-noble (rimaibé)

Table 10.3 displays the annual average income among 65 noble households involved in the project. The average income of these households increased by 89%. The data shows that the income

Table 10.3: Average Annual Income among 65 Rimbe Households in CPB

Sources of Income	Income 1 (UM)	Income 2 (UM)	(Inc1−Inc2) (UM)	(Inc1−Inc2) / (Inc1)
Agriculture	24,006	0	−24,006	−1.00
Livestock	1,295	0	− 1,295	−1.00
Fishing	6,759	0	− 6,759	−1.00
Remittances	515	29,539	+29,024	+56.34
Migration	3,424	864	− 2,561	−0.75
Wives	3,038	4,133	+ 1,095	+0.36
Wages	22,795	18,964	− 3,831	−0.17
Pension	3,181	8,303	+ 5,122	+1.61
Other	6,193	20,066	+13,873	+2.24
Parcel	0	19,828	+19,828	
CSA	0	4,590	+ 4,590	
CPB	0	4,410	+ 4,410	
Total of Averages	79,176	149,999	70,823	+0.89

derived from remittances is a major source of income (20% of the average annual income in the project). Moreover, the income derived form the project (24,238 UM) for this group of farmers compensated the agricultural income.

For the non-noble households, as shown in table 10.4, income more than doubled. In contrast to the noble households, the major source of income among these 15 households is wage earning (30% of average annual income in 1985). The income also derived form the project is higher than their agricultural income prior to project. In any case this group profited more from the project.

In general, the average annual income is higher now and the average income of the no-noble more than doubled compared to the average income of the nobles which increased only by 89%. This is essentially due to their wage income (30%). Other income sources will be discussed in following section because each caste is involved in specific activities.

3.2.2) Income Distribution by caste. All the Pulaar saw an increase in income of more than 50%. The subalbé are the only one whose income increased only by 16%. The income prior to the project is shown in table 10.5 and within the project (1985) in table 10.6.

Table 10.4: Average Annual Income among 15 Non-noble Households in CPB

Sources of Income	Income 1 (UM)	Income 2 (UM)	(Inc1−Inc2) (UM)	(Inc1−Inc2) / (Inc1)
Agriculture	13,421	0	−13,421	−1.00
Livestock	2,886	0	− 2,866	−1.00
Fishing	0	0	0	
Remittances	0	19,857	+19,857	
Migration	13,214	10,500	− 2,714	−0.21
Wives	450	12,093	+11,643	+25.87
Wages	37,329	40,757	+ 3,429	+0.09
Pension	2,571	2,571	0	
Other	7,271	19,743	+12,471	+1.72
Parcel	0	17,010	+17,010	
CSA	0	4,590	+ 4,590	
CPB	0	5,060	+ 5,060	
Total of Averages	59,170	136,312	77,143	+1.30

Table 10.5: Average Anuual Income Distribution by Sources of Income and Caste Prior to Project

Sources of Income	Nienbe & Jiabe	Cebbe	Subalbe	Haratine	Torobe
Agriculture	14,568	22,477	22,336	9,217	24,611
Livestock	491	429	1,200	11,667	1,445
Fishing	0	0	40,555	0	0
Remittances	0	2,286	545	0	250
Migration	16,818	0	8,364	0	2,792
Wives	573	2,329	1,364	0	3,525
Wages	47,509	22,286	7,636	0	26,419
Pension	3,273	6,857	0	0	3,374
Other	9,255	4,171	2,568	0	7,319
Parcel	0	0	0	0	0
CSA	0	0	0	0	0
CPB	0	0	0	0	0
Total of Averages	92,486	60,834	84,459	20,883	72,221

Table 10.6: Average 1985 Income by Caste in CPB

Sources of Income	Nienbe & Jiabe	Cebbe	Subalbe	Haratine	Torobe
Agriculture	0	0	0	0	0
Livestock	0	0	0	0	0
Fishing	0	0	0	0	0
Remittances	17,091	30,000	12,327	30,000	33,417
Migration	13,364	0	0	0	1,188
Wives	12,045	4,200	8,800	12,267	3,054
Wages	51,873	6,857	25,942	0	15,630
Pension	3,273	9,714	5,455	0	8,750
Other	16,636	10,714	16,522	31,133	22,242
Parcel	20,504	23,040	19,129	4,200	19,520
CSA	4,590	4,590	4,590	4,590	4,590
CPB	4,270	6,820	5,110	7,957	3,898
Total of Averages	92,486	60,834	84,459	20,883	72,221

a) The nieñbé and jiabé (11 households) had the highest average income of 92,486 UM ($1360). This is due to two factors a) wage income and b) migration and other income. In this category, each caste has an activity which only they perform. This permitted them to have a higher than average other income (9,233 UM). The migration income of this group is mostly form the awlubé (musician and history tellers) who migrate into cities and receive a lot of money from the noble castes. In addition, the nieñbé and jiabé have the lowest average agricultural income compared to the other castes. This might be due to their small land holdings and their involvement in other activities.

Overall, they still retain the highest income. The income they derive form the project (parcel income and CPB) is higher than the income they used to derive form agriculture. In this case,they are better off than previously because they retain not only their other activities within society (leatherworkers, smiths, story-tellers, weavers, and woodworkers) but also income from the project.

b) The annual average income of the cebbé (7 households) also increased by 58%. However, their major source of income shifted form agriculture and wage income to remittances and parcel income. Moreover, they have the highest average parcel income (23,040 UM), which equals an average production of 1.646 tons of rice.[35] Traditionally, their major activity was agriculture and they did not have other secondary activities like the previous castes.

c) The average annual income of the subalbé (11 households) increased, but only be 16%. Actually they retain the highest other income. Indeed, since they had a monopoly over the fishing industry that was adversely affected by the drought which lowered water levels in the Senegal River, these Subalbé adapted by monopolizing the commerce of sea fish. They alone transport fish from the Capital, Nouakchott, and sell it in the rural markets. The subjective aspect of the caste system permitted to the subalbé to retain their traditional source on income even under different conditions.

d) The Haratine (3 households) are the group whose income really improved in the project because they were able to secure land while also deriving increased income from remittances. Their average income more that tripled as displayed in table 4. They have more sources of income than before the project, when their only sources were agriculture and livestock sales.

e) The toorobé (51 households), like the other castes, had an increase in income of 56%. The income they derived form the project was able to compensate for their lost traditional average agricultural income. The toorobé also have the highest remittance income.

This distribution of income by caste is very important because it shows the different sources of income for each caste and also counters the idea that if you are considered as low caste then you should have the lowest income. This is not the case in the Boghé area, where the lowest castes have the highest

income.

3.2.3) Income Distribution by Major Sources of Income. Here only three categories of farmers were considered: the wage earners, the farmers who receive pension, and those who do not receive any of the previous sources of income. The data was sorted by using prior income (Income 1).

Table 10.7 displays these different category of farmers in the project. The farmers in the project, who traditionally had agriculture as their major source of income increased their income by 72%. This is a substantial increase, as evidenced by the fact that their agricultural income (21,656 UM) was compensated by the income derived from the project (24,844 UM).

Table 10.8 shows that the people who before the project were retired and received pension saw and increase in income of 53%. However, for this category, the major source of income is remittances (50%). The average income realized from the project represents only 6% of their annual average income. This group also has little land as it can be seen by the small average income from CPB, which is an allocation of food aid to all the farmers as a function of their holdings.

Table 10.7: Average Annual Income Distribution among 50 Farmers

Sources of Income	Income 1 (UM)	Income 2 (UM)	(Inc1−Inc2) (UM)	(Inc1−Inc2) / (Inc1)
Agriculture	21,656	0	−21,656	
Livestock	1,755	0	− 1,755	
Fishing	7,966	0	− 7,966	
Remittances	607	28,893	+28,286	
Migration	7,339	2,411	− 4,929	
Wives	3,321	5,002	+ 1,861	
Wages	0	8,796	+ 8,796	
Pension	0	2,000	+ 2,000	
Other	6,528	21,085	+14,557	
Parcel	0	20,169	+20,169	
CSA	0	4,590	+ 4,590	
CPB	0	4,675	+ 4,675	
Total of Averages	56,635	97,916	+40,984	0.72

Table 10.8: Average annual distribution among five retired farmers in the project

Sources of Income	Income 1 (UM)	Income 2 (UM)	(Inc1−Inc2) (UM)	(Inc1−Inc2) / (Inc1)
Agriculture	24,708	0	−24,708	
Livestock	480	0	− 480	
Fishing	0	0	0	
Remittances	0	60,000	+60,000	
Migration	0	2,400	+ 2,400	
Wives	1,800	9,600	+ 7,800	
Wages	0	0	0	
Pension	49,912	37,800	−11,392	
Other	3,800	0	− 3,800	
Parcel	0	5,856	+5,856	
CSA	0	4,590	+ 4,590	
CPB	0	2,464	+ 2,464	
Total of Averages	79,980	122,710	+42,730	0.53

Table 10.9: Average Annual Income Distribution among 18 Wage–Earners in the CPB

Sources of Income	Income 1 (UM)	Income 2 (UM)	(Inc1−Inc2) (UM)	(Inc1−Inc2) / (Inc1)
Agriculture	20,964	0	−20,694	
Livestock	1,435	0	− 1,435	
Fishing	0	0	0	
Remittances	0	17,200	+17,200	
Migration	0	3,167	+ 3,167	
Wives	0	6,333	+ 6,333	
Wages	111,350	70,717	--40,633	
Pension	0	15,722	+15,722	
Other	5,333	23,333	+18,000	
Parcel	0	19,600	+19,600	
CSA	0	4,590	+ 4,590	
CPB	0	4,620	+ 4,620	
Total of Averages	123,592	165,282	+41,690	0.34

Table 10.9 shows that the wage earners retain the highest income in the project. Their annual average income increased by 34%. These are the farmers who are better off in the project because they have a plot and a government job which guaranty them a stable income source. Some of these farmers invested in the project by promoting the uses of tractors which they rent for 1000 UM per day. As it can be seen in the table 5, they have the highest other income sources.

In addition, table 10.10 displays these categories of income earners in the project. The farmers with pension and wage earners still retain the highest income. Moreover, the high average CPB income leads one to conclude that the wage earners have more land in the project. The table also demonstrates the gap between farmers and people with other stable sources of income.

Table 10.10: Average 1985 Income Distribution by Major Source of Income.

Sources of Income	Farmers (47)	Wage-earners (24)	Pension (12)
Agriculture	0	0	0
Livestock	0	0	0
Fishing	0	0	0
Remittances	26,408	25,680	38,182
Migration	3,490	0	3,000
Wives	5,418	5,700	5,691
Wages	0	82,711	0
Pension	0	0	53,090
Other	23,680	4,022	32,727
Parcel	20,379	21,238	11,225
CSA	4,590	4,590	4,590
CPB	4,447	5,313	3,430
Total of Averages	88,412	149,254	151,937

The distinction by major source of income shows the variation among the different farmers involved in the project and their different adaptations.

3.2.4) Women and Income Distribution. The women were not considered in the project in its land allocation policy. Thus the only women that received parcels were widows and those who received land from their families. The income of those women involved in the project as shown in the table below.

Table 10.11 displays the women's income prior to and during the project. In general, their income increased by 100%. However, this was not due to the project since the income derived from the project constitutes only 19% of their average income. Rather, they live on remittances form their sons and daughters (48%).

Table 10.11: Women's Income in CPB

Sources of Income	Income 1	Income 2	Inc1-Inc2
Agriculture	15,009	0	-15,009
Livestock	0	0	0
Fishing	0	0	0
Migration	0	31,500	31,500
Remittances	0	0	0
Wages	0	1,500	-6,245
Pension	7,745	15,912	5,812
Other	10,100	9,328	9,328
Parcel	0	4,590	4,590
CSA	0	3,173	3,176
CPB	0		
Total of Averages	32,854	66,006	33,152

Overall, the income of all the farmers interviewed increased. However, it would be misleading to conclude that the project was at the base of that increase because the area of Boghé was affected by the drought and the people adapted to those conditions by relying on income from other activities and on remittances. The project, however, helped to restore their previous agricultural income. In addition, each caste adapted differently to the drought. The important issue to consider is what will happen when these providers of remittances (sons and daughters) stop sending money to their parents and start taking their families with them. Will the project be able to sustain the farmers?

In any case, the allocation of land according to one's prior ownership rights maintains the inequalities in income distribution. Indeed, once the project considers prior ownership rights, it allows the wage earners with primary or secondary ownership rights to receive land in the project and not the landless and the lesser right-holders. The question then becomes: who benefits from a national project profits?

NOTES TO CHAPTERS 5 TO 10 (TIDIANE NGAIDE)

1.The leñiol is a fraction or lineage of the Halaybé.
2.See section on the types of lands.
3.Judgment no 10. Contestation de terrain entre Baba Couro et Abdoulaye Mamadou. Audience du 11 Janvier 1942.
4.See section on the types of lands.
5.Thidé Maissa is a flood plain located outside the village of Wothi whis around 25 km from Boghé. This flood plain is the property of the Farba Walaldé which is another sort of power structure among the Lao.
6.In 1956, Aissata Mamadou from the village of Touldé inherited from her father the 2/5 of her father's field located in Ganguel. Procès verbal de reconciliation no 21, Boghé le 22 décembre 1956. It was also the case of Mariata Samba who inherited one third of her father's fields in Ngoli and Ida. Jugement no 12, Boghé le 11 juin 1950.
7.Jugement no 47. Contestation de terrain, Raki Demba contre Harouna Assane, Boghe le 12 Mai 1942.
8.See section in 1986 thesis on Foum-Gleita.
9.Jugement no 15 du janvier 1942 du registre de Boghe. Saidi Ramata and Amadou Tamar. Archives de Boghé.
10.Jugement no 10. Contestation de terrain entre Baba Couro et Abdoulaye Mamadou. Tribunal de Boghé, séance du 11 janvier 1942.
11.There was a case in 1959 where a samba remorou, Alassane Oumar, claimed the ownership right of the field of Thicone cultivated by his father. After the case was taken to court, he recognized that the field was not his property and that he will pay the different land rents to the owner. Procès verbal de conciliation no 6, Boghé le 19 octobre 1959.

12.Mamadou Wane. "Reflexions sur le droit de la terre toucouleur" Bulletin de l'IFAN. T 42, sér. B, no 1, 1980, p.117.
13.Leniol was assimilated to caste, lineage, autonomous groups, Cuddi, family names etc.
14.Hinde is a share given to the castes in many occasions. It is meant to reinforce the relations between castes. For example, during the wedding of one member of the artisans castes, the toorobe will receive a share called hinde toorobe. In any case, when a caste participated in the conquest of land or any other festivity within the society, that caste is entailed to receive a share.
15.The adi is described in the land tenure chapter.
16.The jowré lands function like the Habous lands that we find in some countries such as Tunisia where "The habous system included protection of family property from the Beys who were likely to confiscate it, passage of the income to male heirs to exclude women from their legal share, avoidance of fragmentation and care for the property if mismanaged by a prodigal son" John L. Simons (1970). This tends to show that the Islamic law influenced in some respect the types of tenure among the Halaybé. The question is whether this type of tenure existed prior to the Islamization of the Halaybé or if it came during that period. In any case, the jowré lands function as the habous lands in Tunisia. The women do not receive their shares and the mawdo gallé can always take away fields from members of the galle if those lands are mismanaged such as the case of Abdoulaye Mamadou, who in 1938 gave the field of his brother to Haratine under the contract of rem-ita-gié because of the latter refusal to clear the land.
17.Jugement No 52/Contestation de Palé à Sare Boubou. Dialtabe Mala contre Alpha Koumba Tioumou et Mandiaye Daouda. Registre de Boghé, le 2 juin 1942.
18.The tiwande was a mechanism by which the mawdo leñiol controlled the production on the leñiol common holdings. Its purpose also was to mobilize labor and to control collection of assakal.
19.The villages involved in the Boghé irrigated project are as follows:

Village	Population	Village	Population
1)Boghé	7,891	13)Mbagnou Mbobji	102
2)Touldé	1,061	14)Sarandougou Djiberry	?
3)Thialgou	755	15)Sarandougou Bababé	967
4)Saé	337	16)Sarandougou Diadiabé	228
5)Thidé	834	17)Mbone Jeeri	260
6)Ceenel	838	18)Douboungué	141
7)Bakhao	674	19)Karafo	326
8)Lopel	225	20)Abaye	298
9)Ganki	257	21)Ñolly (reg. with Boghé)	
10)Arihara	282	22)Sinthiou (Senegal)	
11)Ngorel	254	23)Demett (Senegal)	
12)Gourel Boubou	241	24)Belli Thioye (Senegal)	

From the Recensement général de la Population 1977. Ministère de l'Economie et des Finances. RIM.

20.The Haratine are the former slaves of the Bidan (See 1986 thesis - section on Foum Gleita).
21.The small perimeters are village irrigated projects usually located on the fonde lands. They function as a village cooperative where each village member is entitled to land regardless of prior ownership rights. Each farmer is entitled to 0.25 ha of rice or vegetables.
22.The big perimeters, on the other hand, are large irrigated projects which involve different villages and function differently from the small perimeters, These are the Boghe, project, Foum-Gleita project, Kaédi project, and Mpourié project. Each of these different irrigated projects is different in its conception and in the way in which land was allocated.
23.The protocole d'accord is an agreement between the landowners, who cede their lands to the project, and the SONADER, which will give to each landowning household a parcel of 0.50 ha. The project agrees also to provide to the farmers all the inputs which will be paid by the farmers as costs of production.
24.The Haratine of Mballadji claimed that there was a judgment during the Colonial rule which granted them ownership rights. This is very interesting because from my perspective, the conflict of ownership between the Haratine and the Lambe might be due to their different definition of ownership right. For the Haratine, the fact of clearing the land entitles them to primary ownership rights according to the Malekite law. For the Lambe, clearing the land does not entitle primary ownership rights if the land has been already appropriated. This acquisition of primary ownership rights through land clearing (according to the Malekite Law) might be the reason why the Pulaar adopted the form of tenancy known as rem-ita-gié to alleviate the tenure conflicts. In any case, the Haratine were considered as landowners in the project and this could be a political issue because the project is a national project and has to consider the welfare of the other groups that used to cultivate the land, in this case the Haratine.
25.Ceenel is a village mostly inhabited by the cebbe Hartallanabé. It is also a village of griots. This latter characteristic make the village very important among the Halaybé.

Mballadji is a Haratine village located around 25 km from Boghe. These Haratine are not part of the Halaybe and the land they were cultivating was the property of the Lambe. It seems that as there was always a lot of water during the rainy season and a lot of trees, the Lambé never cultivated it. They, therefore, gave the land to the Haratine who cleared the land. According to the Haratine of that village that were interviewed, they did not receive the title of jom jambéré even though they cleared the land. They used to pay ndioldi each year to jalade before cultivating. However, they did not pay the assakal and the ciottigu which is paid by all the saamba remoru. This might be an exceptional contract with the Haratine because the land was marginal and they are the ones who cleared it.
26.See above.

27.See land tenure section.
28.Lam Aminata Djiby is a 70 year old woman living in the village of Toulde. When her husband died, she continued cultivating his waalo holdings. However, with the project, even though the land was already divided, the brothers of her husband denied her the use of those fields saying that she did not have a son. Thus, they gave her a little land (0.415 ha) which corresponds to 1 parcel of polyculture. But she did not cultivate it because the brothers said that she will received a parcel if new lands are developed.
29.Gako Bocar Hamady is from the leather workers caste. He is 71 years old and 0.515 ha was registered under his name on the Boghe cooperative. This allowed him to receive 1 parcel of rice and 1 parcel of polyculture. However, a Toorodo household claimed the land because according to them the Dokal of that land to Bocar Hamady was not on the form of Dokal Pendungal meaning a gift forever. So he is still registered under Boghé cooperative but he did not cultivate.
30.A farmer who was a nurse affirmed that he could not cultivate his field. Thus, he gave his field to his cousin. However, now that he is back in Boghé, he took his field back and will cultivate it himself in the next rice cropping season.
Another one who was a guard in the army cultivated his fields in rempetien for 14 years. However, in the project, he gave his field to his brother in law, who gave him 90 kgs of rice paddy in 1985 (date when he just got retired). Now that he is back, he took his field back.
31.This is very interesting because the husband is one of the qadi's secretaries, and he registered the land of his wife under his name. This may be due to the fact that he claimed the land for his wife. In any case they did not make clear to me why the parcel was registered under his name.
32.During the drought, the relations of domination on land decreased. However, the subjective aspect of defining one's caste prevailed.
33.There are two families, one Haratine and one Pulaar, who divide their parcels because they could not come to a solution on how to cultivate the parcel they received. This is done without consulting SONADER. This led to the conclusion that if the agency does not understand these practices, the project will end up with parcels that are not economically viable.
34.See Land Tenure section.
35.The price paid by SONADER to the farmers for a kg of rice paddy is 14 UM.

11. Land Tenure of the Dirol Plain

Thomas K. Park

Introduction

This chapter[1] attempts to summarize in as useful and accessible a fashion as possible data collected on land tenure in the Dirol Plain. Land tenure deals with the customs, laws, and practices governing ownership and occupation of property. Thus to properly evaluate land tenure one needs to consider socio-economic practices and beliefs. In the case of the Dirol Plain we need to consider Islamic property law, the new Mauritanian legislation on land tenure, and customary practice in the area among Halpulaar-en and Haratine.

The proposed developments for the plain envisage continuation of recession agriculture and the gradual development of small irrigated perimeters. The latter imply a transition to individualized ownership on a western model and this is not only a radical change from the traditional system but in addition would probably be disadvantageous in the recession agriculture context. We will look at these and other questions in the sections to follow.

The elementary land holding unit is the lineage grouping called a leñiol. Although our data were not fully comprehensive, the data we furnished USAID were comprehensive enough to begin more detailed planning for the development of the plain.

We begin with a number of short introductions to the Dirol area meant to facilitate understanding of our main discussions of political structure and land tenure which follow. The latter part of the report is devoted to assessing the proposed developments in the context of our findings and the new tenure legislation as well as to making our recommendations.

Geographical Background

The Dirol Plain is located about 25 km due West of Kaédi Mauritania (Latitude 16,10 North and Longitude 13,40 West) and occupies the northern bank of the Senegal River on either side of a small tributary the Dirol creek. The Dirol drains a fairly large watershed but the Plain is itself low enough that it is regularly inundated by the seasonal flood of the Senegal River which floods up the Dirol creek and from there into the various parts of the Dirol Plain attaining its maximum height in September or October of each year. Some areas of the plain are considerably lower than others and many are isolated from the Dirol creek and its adjoining low elevation lands by intervening areas of higher elevation. This situation is the key to

understanding the distribution of the annual Senegal River flood and its implications for recession agriculture in the plain. Agriculture depends on three crucial factors; the level and duration of the flood, the level of intervening lands, and the level of the land to be cultivated itself. Thus, though the Eastern half of the plain has the majority of low lying lands, in years of very low flood levels it has far less inundated land than the Western half because the flood level is not high enough to rise over most of the intervening higher areas.

Lericollais' Peuplement et cultures de saison sèche dans la vallée du Sénégal provides data on the 1970-71 agricultural season in the Dirol Plain. Lericollais divides the Dirol Plain and areas immediately around it into two halves designated on his maps as KKA (part of Kaédi Ouest) and AMC (part of Mbagne).

These areas actually contain more area than we will consider in the Dirol Plain for the purposes of our study. He estimates the population of cultivators in his two regions at 8094 (AMC) and 4373 (KKA). Of these some are clearly cultivating outside of the Dirol Plain proper. I have tried to adjust these figures by excluding the area west of Dawelel and the area east of Rindao Belimodi which are clearly outside the area concerned by the project. My adjusted estimates for cultivators during the 1970-1 season would be 6186 (AMC) and 3925 (KKA) for a total of 10,111 cultivators.

Lericollais estimates the area under cultivation at this time at 2000 ha (AMC) and 3285 ha (KKA). Adjusted for the area of the Dirol Plain proper there would be about 1530 ha (AMC) and 2950 ha (KKA). There was a major difference between the amount of land cultivated per cultivator in the two halves of the plain; 0.247 ha/cultivator in AMC and 0.75 ha/cultivator (KKA). Farmers in the eastern part of the plain cultivated three times as much land per person though 66% of the cultivators were in the western part of the plain.

The difference in density of cultivators could be due to differences of soil but the available soil maps do not suggest any simple explanation. On the difference between the two areas Lericollais writes (p.E9):

> The average elevation of the KKA, 9.4m is relatively low because of the leepness of the gorges. The recession agriculture finds favorable conditions during years of low flooding; in 1970-71 the area cultivated estimated at 3285 ha is large in relation to the number of cultivators (4373). The average of 0.75 ha per cultivator is considerable for this part of the valley. But in years of high floods in these gorges without drainage the slow retreat of the waters retards planting and favors the development of weeds. Agriculture thus displaces itself towards the higher land in the basins of the tributary (Dirol) and the fondé lands where the conditions are less optimum for agriculture.

Thus Lericollais suggests the main differences are not

intrinsic to the soil but rather derive from topography and the resulting flood patterns. One important point that it may be helpful to mention here is that we found land owning leñiols in the Dirol Plain to be in most cases also owners of land in Senegal.

This has major implications for evaluating density of cultivators per hectare because many people listed as cultivators in the core lands may only devote part of their time to these lands - being 25-75% cultivators elsewhere. Conversely, an unknown number of Senegalese may cultivate in the KKA area on a part time basis - as members of the land owning leñiols. Our survey could only take this partially into consideration.

Survey of Villages

Our preliminary study of land tenure in the Dirol Plain was based on interviews in the principal villages of the plain - from the perspective of property rights in the areas that would be affected by the proposed development. We interviewed in Feralla, Mbahe, Niabina, Hijaj, Boubou Aoudi, Bagoudine, Debaye Doubel, Fondou, Ouloum Atar, Ouloum Néré, Rindiao, Silla-Rindiao, Gongane, Sintiou Boumaka and Néré Waalo, Roufi Aoudi, and Kanyadi. In these village meetings we also interviewed delegations from Atene, Belel Gawdi, Dawelel, Lewe, and other areas. We did not, however, interview in Dawelel or Mbagne, Haimeidat or Belinabe for lack of time; all four are large towns on the periphery of the plain whose inhabitants have the majority of their land in areas that will not be directly affected by the proposed development. Inhabitants of each of these towns are likely, however, to have some land in the area of the Dirol Plain to be developed.

The population of the plain is distributed as in the table. This gives an average of 6.06 persons per household and suggests that in 1977 there were about 20,000 people resident in the plain. The 1986 figure could be larger or smaller due to outmigration or natural increase. It is highly probable that already in 1977 many people had migrated to find work elsewhere and it is a guess as to how many of these had relatives include them in the 1977 census and how many did not.

POPULATION OF THE DIROL PLAIN VILLAGES

Northern section	Households	Pop.	Cultiv.	Herders	Merchants
Atene	60	323	91	2	
Bagoudine	328	1843	248	9	32
Belel Gawdi	63	310	80	24	
Boubou Aoudi	119	699	156	14	1
Dabaye Doubel	145	877	221	6	9
Dawelel	143	764	135	1	
Feralla	167	1194	278	12	11
Fondou	242	1432	305	8	30
Haimedat	130	697	116	7	8
Hijaj	62	416	102	13	
Lewe Demba Gouro	71	456	81	21	6
Mbagne	312	2081	217	12	26
Mbahe	183	914	164	3	8
Niabina	164	1043	144	17	13
Ouloum Hatar	73	438	77	15	
Roufi Aoudi	26	146	27	2	
Tempi Daro	14	102	16	10	
subtotal	2302	13735	2458	176	144
Southern section					
Bellinabé	185	1158	211	4	11
Ndiafane-Dioke	133	826	81	8	44
Néré Waalo	102	661	61	3	11
Néréyel	56	418	90	4	24
Ouloum Néré	185	1045	213	10	8
Rindiao Belimodi	138	865	83	16	20
Silla Rindiao	117	750	101	7	9
Sintiou Boumaka	103	664	219	4	1
subtotal	1019	6387	1059	56	128
TOTAL	3321	20122	3517	232	272

2.4 PULAAR CASTES

Traditional Pulaar society is divided into castes. Today castes are clearly not as important as they used to be but it would be naive to think they have lost all relevance. In particular where land tenure is concerned there are major differences between the castes in terms of land holdings and these carry over into social and political life. In any case it is practically unheard of for a member of the non-noble classes to have significant political influence in a traditional Pulaar village. Although we do not have the sociological data to indicate the real relationship between the different castes in the Dirol Plain this relationship is undoubtedly an important one that exists as background to all political and economic decisions. The reader is referred to Chapter 5 (by Ngaide) for further discussion of the Pulaar caste system.

We really have no idea what the exact proportion is between the castes in the Dirol Plain but if it follows the rest of the valley the noble castes will probably make up at least 75% of the population and own a much higher percentage of the land.

Proposed Development

The development of the Dirol Plain proposed by USAID/RBDO consists of two basic stages. The first involves, after detailed feasibility studies, the construction of a 14.7 km dike to assist in retaining water at its highest flood level for the full period needed to inundate land adequately enough to cultivate recession crops. The dike will improve agriculture on about 6,600 ha. The second stage involves the development of small irrigated perimeters on the higher elevations in the plain to be irrigated by pumps from the waters retained in the beds of the Dirol creek or in depressions throughout the plain. During this stage the lower elevations in the plain will still be cultivated by recession agriculture. Both stages also have extension components to improve the farming systems in the plain by encouraging fertilizer use and improving basic techniques.

The RBDO proposal (LeBloas 1984) for the development of the Dirol Plain needs to be understood in the context of the proposed plans for the development of the Senegal Valley. The latter include the construction of two dams (the Diama dam at the salt/fresh frontier and the Manantali near the Mali/Mauritania border) to stabilize the level of the Senegal River. Both dams may be operational by the end of the 1980's so the development of the Dirol Plain has to consider the near term and long term implications of the overall plans for the Senegal Valley. One of the key components of the Senegal Valley plan has been the long

term transformation of the whole valley to pumped irrigation agriculture. Many studies have criticized this proposed scenario for the Senegal Valley as unrealistic and uneconomic. The fuel costs for the pumps would be a major burden for Mauritania and Senegal and the net increases in production are dubious (See WMS II). Every time the peasants have been consulted they have expressed their complete distrust and dislike for such a solution. The RBDO proposal has, in this context, the advantage that it envisages development of irrigated perimeters on higher lands while encouraging traditional recession agriculture on lower lands.

Recent Local Dikes and Dams

In 1984 and 1985 villagers from the Western part of the Dirol Plain cooperated in the construction of two temporary dams designed to retain the waters from the local watershed flowing down the Dirol to the Senegal River. These two dams were only partial successes - but they did increase the cultivable area significantly. These attempts indicate both the local desire for a water management system and the degree of cooperation that can be expected.

One dam was built on the upper Dirol (above the Plain proper) by the villagers of Belel Gawdi and Aten. The other was built lower down (in the plain proper) by villagers from Bagoudine, Ferala, and Roufi Aoudi. The villagers of Mbahe benefited considerably from this dam but did not assist in its construction and were generally disparaged as free loaders. Many landless from Roufi Aoudi contributed to the construction. Their motivation may have been twofold - without it there would be significantly less land for them to lease and being landless they may have felt it in their best interests to maintain as good relations with the land owners as possible. We also had indications that the landless felt that their contribution of labor would obligate the land owners to lease land to them.

The experience of these local efforts has convinced locals of the potential for water management and stimulated considerable local thought on just how it ought to be done. Abdullahi Alisane, a Ferala Arabic teacher, has thought a lot on this question and feels that a key to inundating the maximum amount of land with the minimum amount of water is a combination of dikes and canals; the canals would connect lower lying lands which are separated by higher intervening lands thus enabling low floods to inundate a larger area. He in fact advocates designing the dikes to make a major lake whose waters are then let out through canals to large areas of the plain and whose bed is planted when the water is let out.

It is unclear how workable such a scheme would be or how high up the Dirol such a main lake might be designed. One element that may be feasible, however, is the possibility of a

variety of small scale water management constructions complementing the main dike. As we will see in later sections, such a diversified development may help resolve some serious tenure conflicts.

Historical Summary

The present population of the valley is descended from various groups who settled in or conquered this part of the Senegal valley during the last millennium. One of the fundamental justifications for land tenure has always been historical priority. Though this does not have priority in Islamic law (as we will see in a later section) it is still a very common justification in the Dirol Plain today. In consequence the political chronology provide in the Introduction is essential for any understanding of land tenure in this part of the valley. After the conquest of the valley by Koli Tenguella around 1515, many lands were distributed in the Kaédi region. With the formation of the Almamyat in the 18th century other lands were distributed but these distributions coincided with the beginning of the razias by the Maures and the flight to the left bank by the majority of the occupants of the plain.

The exodus of people from the valley, to follow Shaykh 'Umar Taal on his holy war against the idolaters of Cayor, Kaarta and Sine Saloum around 1860, reduced the area under cultivation even on the left (southern) bank. The history of the agricultural reoccupation of the Dirol plain is, however, not clear. Many Halpulaar-en of the plain and all the Haratine say that the Halpulaar-en re-established cultivation in the plain on a regular basis only after 1900 but other Halpulaar-en have claimed that they have cultivated the plain without interruption since the 19th century. The sources are sufficiently ambiguous on this point that it is probable that at least some pulaar cultivation was maintained on the Booseya side of the plain during a significant part of the 19th century. The point is not too important since neither the shari'a nor the modern land tenure legislation base property rights on the ancientness of occupation. It is sufficient for both that there has been continuous undisputed occupation during recent years; something which is not in dispute. What makes the events of the region towards the end of the 19th century is the revolt of Ahmadou Cheikhou against the French from 1870-75 and the alliance of Abdoul Boubacar of the Booseya with the Emir of Brakna against the French between 1881 and 1891. The alliance, at a minimum, would have given Halpulaar-en on the left bank better access to lands on the right bank.

When the Halpulaar-en (Toucouleur and Peul) fled to the left bank of the Senegal river to escape the slave raids and other levies of the Emirs of Brakna and Trarza (they were for the most part on the left bank from late 18th century to late 19th or

early 20th century) they left a lot of cultivable land behind. The Bidan moors of Brakna and Trarza established their vassals the black Haratine in many of the lands vacated by the Halpulaar-en. Today there are two groups of Haratine still residing in the area who cultivated land in the Dirol Plain during the 19th century and continue to cultivate land there today. Though their historical claim to the land does not go as far back as that of the Halpulaar-en this is irrelevant as far as the legitimacy of their claim is concerned in Islamic (Maliki) law. The two Haratine groups claim that though they cultivated by permission and arrangement of the Bidan they themselves cleared the land while free men and as such established their claim to the land as its rightful owners. If true, this would indeed be a legitimate claim under Maliki law.

Most of the area in the Dirol Plain belonged at one time or another to one of three basic groups of Halpulaar-en: the Yirlaabé/Hebbiyaabé, the Nérénabé, or the Booseyabé. Each of these groups has lands today distributed in roughly north-west to south- east fashion across the plain; from Yirlaabé to Booseyabé lands. The current distribution of Halpulaar-en holdings probably owes more to the events of the 20th century than to those of the 16th or 17th centuries but it is unclear whether any attempts to continue cultivation on the right bank were maintained while the Halpulaar-en resided on the left bank. It is also unclear what correspondence there is, if any, between land holdings at the leñiol level today and those existing before the flight to the left bank.

The current Haratine lands are largely on the north and west outskirts of present day Halpulaar-en holdings and are unquestionably in part the result of Pulaar expropriations with the assistance of the French in this century. While it may be too difficult to reconstruct the exact course of even recent land settlement in the Dirol Plain it is clear a)that in most cases current land holdings (which overwhelmingly favor the Halpulaar-en) are quite legal both in modern Mauritanian law and Islamic shari'a and b)Haratine have quite legitimate historical claims both to lands they now cultivate and own and to others which they in law and fact have lost to the Halpulaar-en. The real difficulty is how to get each side to admit which lands fit into which category. This is particularly difficult since many lands in question have not been cultivated for 15 or more years.

Political Structure and political relations

There are five main political/ethnic groupings in the Dirol Plain. These are the Yirlaabé/Hebbiyaabé, Nérénabé, Booseyabé, Hijaj Haratine and Tamoudek Haratine. The first three are Halpulaar-en groups (historically mixed Peul and Toucouleur

groups). The historical sections above describe the general background for the presence of each group in the plain. Here we will look a little more closely at the current political relations between the groups.

In general we can say that there are complicated social and economic relationships between the Yirlaabé/Hebbiyaabé and the Haratine groups but much less complicated relationships between any of the other groups. When talking to the elders of the Yirlaabé/Hebbiyaabé one is given to understand that the whole plain is under the temporal and spiritual authority of the Satigui Dekle and Satigui Hebbiyaabé but when discussing with others one finds this completely denied by all members of both the Nérénabé and Booseyabé groups while the Haratine claim that while some Haratine families do pay some tithes to the Yirlaabé/Hebbiyaabé elders this is a small minority and does not concern the vast majority of Haratine lands. On this issue while there are understandable historical reasons why the Yirlaabé/Hebbiyaabé elders might make such a claim the subsequent political developments (see Vidal's report in the appendices) were such as to completely annul this wider authority. Thus one should see the authority of the Yirlaabé/Hebbiyaabé elders as principally confined to the core Yirlaabé/Hebbiyaabé lands north of Roufi Aoudi.

Vidal (1924) writes that the Nérénabé are originally an offshoot of the Hebbiyaabé. We found that almost all of the Nérénabé identified as Booseya and undoubtedly are numerically predominantly Booseya but some elders mentioned particular leñiols as having land from the Satigui so while we can not confirm Vidal's origin it may have an element of truth. We probably should refer to the Nérénabé as Booseya because today, at any rate, they seem to identify exclusively as Booseya. The Nérénabé occupy the central lands south of the Yirlaabé/Hebbiyaabé and though they once occupied the other lands south and east toward Sintiou and Belinabe they lost these to Booseyabé conquest and no longer have claims to them. The Booseyabé conquered this part of the plain at the end of the 19th century and subsequently occupied the new lands.

One encounters a fair amount of hyperbole in the Dirol Plain today about each group's seniority on the land which may be in part due to the impending development. In Rindiao Belimodi we were told that the village had been continuously inhabited for many centuries but in Silla Rindiao elders admitted to founding Silla in about 1900 and subsequently sending members of their families to found Rindiao Belimodi.

The French records seem to indicate that both towns were founded in the 20th century.[2] Yet, without accurate archaeological data it is difficult to know when sites were first inhabited by the ancestors of those now living there and the historical record even for the 19th century contains little detailed information about cultivation or habitation in this area. The record suggests the Dirol Plain was not inhabited by Pulaar speakers - other than migratory Peul - during the 19th

century but there may have been a few settlements all the same. It seems fairly certain, at any rate, that 95% of the sedentary Pulaar population now inhabiting the plain settled in the 20th century. Many of these are, however, descendants of people who inhabited the area during the 16th and 17th centuries. We can only stress that in Mauritanian and Islamic law continuous free cultivation of land for 10 years is enough to establish ownership so the exact pattern of settlement in the plain prior to 1900 has no legal implications for ownership today.

In practical terms I think it would be fair to say that events more that 10 years prior to the drought would have little legal implication for ownership today. In the decade prior to the drought matters are different because since the drought little of the land has been regularly cultivated (regular cultivation or exercise of proprietorship for 10 years being the basis of Islamic Maliki ownership - see Introduction).

The individuals in the Yirlaabé/Hebbiyaabé group have extensive ties of patronage with individual families in the two Haratine groups. These ties have been developed over time largely as a result of the variability of the seasonal floods and the location of the core Yirlaabé/Hebbiyaabé lands. The Haratine have lost a considerable amount of land to the Yirlaabé/Hebbiyaabé in this century. This has led to a general displacement of Haratine holdings toward the north and east away from the lowest and most fertile lands in the Dirol Plain. As a result, when the annual flood is low Haratine families have had to make arrangements with Yirlaabé/Hebbiyaabé families to cultivate plots of land using one of the contractual tenure arrangements described later in this report. Many of these arrangements continue over many years and so give rise to patron/client type arrangements.

The Haratine also have residual client relationships to some Bidan groups but so far in our interviews we did not meet any Bidan who came forward to claim to be owners of Haratine lands - as distinct from maintaining that the Haratine groups owe certain tithes as payment for the patron services rendered by the Bidan (protection, representation to government, and various sundry services). It is likely that nevertheless some Bidan groups might informally pressure the Haratine to make prestations on the basis that the Haratine were their former slaves and so they, the Bidan, were the real owners of the land. My impression is that such a claim would not hold up in courts for the Dirol Plain: a)because it would have been put strongly to us during our interviews if the Bidan concerned felt it would hold and b)because the Haratine themselves have cleared and cultivated the lands in the Dirol Plain since being freed. This is, however, a question that needs to be addressed in a more detailed study.

The elders of the Yirlaabé/Hebbiyaabé group maintain that they have been continuously cultivating their fields for many hundreds of years - some claim a thousand. We have seen in the historical section that the Hebbiyaabé ancestors established claims to lands in the area after time of Koli Tenguela or in

other words in the latter part of the 16th century. Though these same ancestors had ancestors of their own who had land in the valley the claims of the Hebbiyaabé, as such, date from this time and took precedence over any earlier claims by right of conquest. By the end of the 18th century the Hebbiyaabé had fled to the left bank of the Senegal. Thus these claims are somewhat exaggerated. There is a lot of evidence that the Hebbiyaabé returned to the right bank after the French conquest of the Senegal Valley was complete - in other words during the early 20th century. In the interval it is entirely possible that some families maintained some form of cultivation in some of the lands intermittently - camping near the fields to cultivate during the agricultural season or otherwise maintaining a presence on the right bank. But I have found no hard evidence for such a practice on any scale.

The claims of the Yirlaabé/Hebbiyaabé elders seem, instead, to be based on political considerations of the moment - they are aware of the increased value development could bring to their lands and want to establish as clear a right to as much land as possible. It may be that they feel without such a claim their rights to the land they presently cultivate could be disputed. No such general dispute could in point of law have any validity since they have established their claim to the lands they presently cultivate for much more than the 10 years required by Islamic shari'a. Whether they cultivated these same lands in the 19th century is irrelevant to the validity of their current claims.

Bagoudine is the residence of the Satigui Dekle and Satigui Hebbiyaabé. Foundou and Ouloum Matar are the other principle Hebbiyaabé villages. Niabina, Mbahe, and Ferala are the main Yirlaabé villages but all five of these take guidance from Bagoudine. There are as well some Hebbiyaabé fractions in Niabina, Mbahe, Roufi Aoudi, and Ferala. In dealing with the Yirlaabé/Hebbiyaabé it is advisable to start with Bagoudine but additional meetings must be held in the other principle villages as well.

The authority of the Satigui among the Hebbiyaabé is both spiritual and temporal. The Satigui Dekle traditionally delegates temporal power to the Satigui Hebbiyaabé who controls the <u>collaadé</u>. The Satiguis can be deposed if the community feels they are not fulfilling their duties properly but I know of no cases when this was done. The position of Satigui Dekle is hereditary within families but this should be understood as meaning that fairly large extended families provide the Satigui, who is chosen from among them by elders of the core families, rather than implying any sort of father-son inheritance.

On the temporal side, with which we are principally concerned, the Satigui Hebbiyaabé serves as head of an economic structure which includes appointed tax collectors (Diagaraf: these are chosen in a similar way from within another family and caste - the Thiedo/Sebbe ("warrior") caste Diengdiengbe <u>leñiol</u> who are entitled to a portion of what they collect and a complete

collection and distribution system that has an extensive welfare component despite its rigidly hierarchical structure. The Diagaraf collects assakal and ndioldi for the Satigui from Satigui lands cultivated by others.

In practice the majority of the Hebbiyaabé are land owners and pay no tithes themselves on their own land. But when they or others cultivate land not their own (which all except the wealthy may be forced to do by the variability of the seasonal flood) they pay various tithes and these are channeled through the traditional system today much as they were in the 16th or 17th century.

It is unclear from our data which colladé (or leñiol holdings) are normally cultivated by those paying tithes and which are normally cultivated by those who pay no tithes. This is due to several factors: a)we had to interview primarily at the leñiol level and this is not the ideal level to discern who pays what because some members of a leñiol may regularly cultivate lands on which they pay tithes without this appearing in our data because we were asking the head of the leñiol which lands the leñiol owned, b)the drought has kept the great majority of lands out of production for the last 15 years, and c)people are sensitive to the issue and tend to claim they do not pay tithes even when they do. The issue is an important one that merits much more thorough study than we could devote to it in our brief survey.

The list of leñiol given in our report for USAID is incomplete from a political perspective. Each of the main leñiol groupings has numerous fractions (also referred to locally as leñiol) which though acknowledged as fractions were not included here for one of two reasons; a)they do not appear to have significant lands in the Dirol Plain or b)they are really subsidiary to a leñiol of same name listed elsewhere. The dividing line between groups is somewhat fluid and small sub-leñiols are frequently amalgamated to larger groups by marriage and residence. In our interviews such groups usually were included in the parent leñiol when we interviewed it and then did not come forward again in the town in which they actually resided.

Our work in Niabina, Mbahe, and Ferala was very brief. We do not feel we have as complete data for the Diananko be of Niabina, for example, as we have for most other leñiols because those we interviewed suggested that only a few fractions of the the Diananko be have land in the Dirol. Since we were short of time we did not have the time to fully investigate all leñiols. Many leñiols went to our meetings in Bagoudine from Daouelel, Ferala, Mbahe, and Niabina but a more thorough study should be made of these leñiols before concluding that we have listed all those with land in the Dirol. We are also undoubtedly missing numerous Senegalese who have land in the Dirol but do not belong to local Mauritanian lineages.

Nérénabé Booseya

The chief of the Nérénabé Booseya is the Elimane of Ouloum Néré. The Nérénabé Booseya are divided into three core groups but include in these groupings a number of leñiols which have been assimilated to the Nérénabé at later dates. The core groups (Basbe, Hirnangue Néré, and Wantianbe) receive and divide among themselves any tithes collected from other leñiols or from other individuals who have made arrangements to cultivate Nérénabé lands. Tithes are not paid on all Nérénabé lands even by people who are not members of the core leñiols. Payment of various tithes is often interpreted in Mauritania as proof of non-ownership, which it is not necessarily, so people are often reluctant to admit they pay any tithes. In addition, in the current context of drought, many who used to pay tithes have not done so for years, if only because they have not cultivated for years, and so they can and do honestly say they do not presently pay any tithes. This means that what data we have on who pays who tithes is somewhat suspect. Yet this is an important question for at least locally it is often understood to be the key difference between real owners (jom leidi) and those with lesser rights such as various forms of usufruct. This whole question will need to be studied in more detail in a later lengthier study of land tenure. Although all the leñiols listed are in principle land holding units and also in principle assimilated as part of the Nérénabé many are patently of more recent membership and may pay tithes that others do not.

The Elimane Néré himself collects some tithes such as ndioldi (which is paid in kind) but has a Diagaraf of the Thiedo caste who collects other tithes such as assakal. The situation is in many respects similar to what occurs among the Hebbiyaabé and quite distinct from the situation among the other Booseya groups in the plain who have no comparable authority figure. The Nérénabé claim that among the Nérénabé Toorobé caste everybody has land but it is unclear whether they mean all Toorobé have rights to a share however small of some Nérénabé land holdings or that all Toorobé have sufficient land to support themselves in years of good inundation.

They admit that this is not so for other castes (which include Laobe, Mabube, and Mathioudo) and point to the Mathioudo (slave) caste as people who have no land. Even this generalization is not likely to be absolute - in fact we interviewed Mathioudo in various parts of the plain who had some land - obtained in various ways - but in general the Mathioudo do seem to be landless (they lease land from others as sharecroppers).

Hijaj Haratine

The Hijaj Haratine have an egalitarian social organization in which each nuclear family head participates in decision making at the village level in the village council. The Hijaj are divided into fractions (e.g.Hel -); to some extent land is managed at the fraction level though there are no leñiols or leñiol organization. Land is held at the fraction level but real collective authority is expressed at the village level. The fractions exercise collective control over cultivation; allocating fields each year and generally mitigating individual risk at the fraction level. Virtually all members of the community have land in some Haratine colladé but all are not represented in the remaining colladé. The Hijaj have a village chief, elected by the community, who can speak for the rest but all decisions are made by the collected elders and family heads.

During the early 20th century the Hijaj began to settle in the newly forming towns of the Dirol Plain - prior to this time they had lived in tents and cultivated in the Plain. They were among the first to settle in Mbahe and Niabina and founded Hijaj in 1902. Before the return of the Halpulaar-en all the waalo land in the Dirol Plain was under the protection of the Bidan.

Within the memory of one old Haratine in Hijaj there were only a few tents in Bagoudine. Earlier in thi century when there were large inundations the Halpulaar-en wou. come to the Haratine to contract for land. Over time the Haratine were pushed north and out of the prime lands. They recount numerous incidents of being forced off of the land.

Recently since the drought there has been so little land inundated that some Haratine families have had to go to the Halpulaar-en, who now have the lower lying lands, to contract for land to cultivate. As the Halpulaar-en became more numerous and more powerful on the right bank of the Senegal they began making demands on the Haratine - free labor (Dawanan) on Halpulaar-en fields and payments of various tithes. On occasion they would try to evict Haratine from land the Haratine were cultivating unless they paid tithes. Today the Hijaj claim they have paid tithes only on occasion and then only in years when their own lands were not inundated in order to cultivate lands now held by Halpulaar-en. They lay claim as a group to many of the prime colladé in the Dirol Plain but actually cultivate today only a few of the prime areas - most of their remaining cultivating is on the northern and western edges of the Dirol Plain.

Tamoudek Haratine

The Tamoudek Haratine came from further east in Mauritania to cultivate land in the Dirol Plain when it was under the protection of the Bidan. The arrival of the French permitted the Yirlaabé/Hebbiyaabé to come back across the Senegal river. Prior

to their return there were only Haratine and Booseyabé cultivating in the plain. Though the historical sequence is a bit difficult to document it seems to have been approximately as follows. Around 1880 the Booseyabé defeated the Nérénabé en route to their own defeat at the hands of the French. In joining forces with the Maures to fight the French they had access to the right bank and took over the traditional eastern Nérénabé lands. The Tamoudek, Hijaj, and Booseya shared the plain for a number of years before the arrival of the Yirlaabé/Hebbiyaabé (which took place in the first half of the 20th century. The village of Fondou was founded by a Haratine (Sreiba) and three Peul herders.

The Tamoudek are divided into three main communities residing in Boubou Aoudi, Ouloum Hatar (along with the Halpulaar-en majority of that village), and Debaye Doubel. They trace their ownership of land to the fact that they cleared it of brush and trees and have cultivated it since. The Tamoudek of Dabaye Doubel recount many examples of being forced off land they had cultivated for years at the point of a gun by the Halpulaar-en as recently as the 1950's and 1960's. The usual scenario recounted was that they were first asked to pay assakal and when they refused gendarmes were called. They claim that 98% of the Tamoudek families own land.

They are divided into fractions such as Hel Sidi ould Abeid and Hel Mobbe (like the Hijaj Haratine) and also have a chief who is elected by each community. Though they still consider themselves one community decisions are now all made at the village level. Fractions own and manage land as among the Hijaj Haratine. The fractions may be as fluid as leñiols among the Halpulaar-en of Ouloum Hatar and at any rate nuclear families seem relatively free to make their own economic decisions.

They have no castes or slaves - all families are of equal status. They claim to pay no tithes to Bidan and though on occasion have paid tithes to Hebbiyaabé claim no one in the community has paid any tithes to the Hebbiyaabé on any land for five years. Within the community they often practice leasing out land to each other when the inundation is such that some need more land than they have inundated and others have more than they need.

Haratine political organization

The Haratine villages are run by village councils in which all mature men have a voice. Each village is today essentially independent from the others. Each has a village chief but he has no authority to decide for the village. The only appropriate procedure is to ask the village chief to call for an assembly to discuss matters. This is technically true for the Halpulaar-en as well but Halpulaar-en is much more structured and leaders tend to have more significance than among the Haratine.

The best procedure is to consult with the village chief and

the whole village council in each village. We spent only a few days in the Haratine villages of Hijaj, Boubou Aoudi, and Debaye Doubel and did not try to break down ownership past the village level (the next relevant level down is the household and we had no time to inventory lands at the household level). Our only meetings were village level meetings plus one interview with Mona, an extraordinary Hijaj Haratine entrepreneur. There are also significant Haratine quarters in Mbagne, Mbahe, Niabina, and Ouloum Hatar with their own chiefs and village councils.

Mona built with his own savings to buy cement and build a series of wells and used them to irrigate and grow 50 palms. He did this for 7 years until the other villagers suddenly cut them down. - To allow them to grow for 10 years would have been to accept Mona's private ownership of the land in question. Mona tried to have recourse to the law but the villagers fled the Prefet and there was no one to interview. Eventually Mona simply gave up this effort, built a garden and more wells in the jeeri and last year built three small dikes across a valley in the jeeri area and caught 5' of water from the run-off and harvested a large crop of sorghum. His earthworks are impressive and his ingenuity and enterprise seem unmatched in the plain by anyone with comparable means.

Outline of tenure system

Islamic property law is fundamentally different from the legal tradition prevalent in western societies in several respects. Most generally, it places priority on the current muslim society to the disadvantage of past societies. In practice what this means is that priority of ownership does not establish legal right to property. On the contrary, oral testimony to the effect that one has exercised unhindered ownership rights for the last few years takes precedence over any prior written titles. In Maliki law, the school of Islamic law traditionally accepted in Mauritania, a period of ten years of uncontested occupation is sufficient to establish full ownership. This is based on the Shari'a concept of indirass which literally means obliteration and refers to the idea that when all traces of use disappear (are obliterated by the course of time) ownership disappears as well. Thus when the former owner, if any, does not maintain proof of ownership for ten years the use of the land by another occupant or the work of the elements obliterates his claim to ownership. Ownership can be maintained easily by requesting payment of rent in money or services each year. Ownership lapses in theory only when the former owner can not produce proof that the current occupant has paid for the right to use the land during the last ten years.

This has implications in the context of recession agriculture because <u>leñiol</u>s own land all over the plain in many different areas to minimize risk. Often they may not themselves

cultivate a particular piece of land for many years either because it is not inundated at all or because it is not inundated as well as other lands they own. They may then let someone else use the land until such time as the pattern of the flood is such that they need it for themselves. In the meantime they may or may not request payment for the use of the land depending on who (a close relative or a stranger) is using it and how marginal the land is for cultivation each year. If they receive no payment and some one else cultivates it for ten consecutive years they in theory risk loosing the land according to the principle of indirass.

This is probably the main reason the Halpulaar-en of the Senegal River valley rarely make use of Islamic qadis (judges) in resolving tenure disputes and prefer to settle by customary law (which does not accept the principle of indirass). The ecology of the region requires a more flexible interpretation of the idea of the obliteration of all trace of ownership. Matters are not helped by large immigrations and outmigrations or repeated conquests of the area. Customary law simply allows those in power to maintain their lands whether they cultivate them or require that tithes be paid or not.

Nevertheless the whole idea of gaining ownership of land by clearing it is based on the principle of indirass because the idea is that if trees and brush have grown on the land the rights of any former owners have lapsed and so whoever clears the land and cultivates it establishes their own full ownership rights. The idea of having cleared land is appealed to by both Halpulaar-en and Haratine in the area as the justification of their land claims. This use and refusal to use the principle of indirass is at the basis of most tenure disputes in the area. The new legislation, however, gives clear priority to the shari'a over customary law just as it places national priorities ahead of individual appeals to the shari'a (see the section on the new legislation and the legislation itself in the appendices).

There is great diversity of tenure in the Dirol Plain. In some areas there are strong tendencies toward individualizing tenure while in other areas collective tenure (jowré) is the only type of tenure for 95% or more of the land. The Hebbiyaabé lands are almost exclusively held as jowré while some areas of the Booseyabé lands the concept of jowré has devolved almost to the family level.

It would however be misleading to simply categorize one part of the plain as under collective tenure and another part as under individual tenure because these are only tendencies the reality is much more complicated. In Ouloum Hatar, a core Hebbiyaabé area, people admitted that land was really leñiol land held in collective tenure (jowré) but said that in practice for them the leñiol level of ownership had much less significance than it used to have and they more recently have tended to look at tenure as a family matter. They did provide us with tenure data at the leñiol level, after some debate, but it was apparent that the term "leñiol" was being used to define a somewhat lower level

kinship than in Bagoudine. Similarly in Ferala the Fokol found identification of land at the leñiol level a little problematic while the Nioukol were completely at ease with organizing land at the leñiol level.

We had begun with the idea that a leñiol was a well defined level of social organization based on historical claims to land tenure and modified only modestly by recent developments. We ended up with an understanding of the leñiol as a much more flexible concept: as a fraction of a kin group having collective rights and responsibilities at the political and economic levels which might range from embracing many (90 or more) households to including only a few (3 or 4). The basic elements of leñiol ownership (collective/jowré ownership by a nominal kin group or elementary political unit) seem to exist throughout the Dirol Plain. What is problematic for each sub-area is to identify the level of ownership at which significant collective management of land tenure occurs. We found that this varied considerably across the plain. In consequence we have listed as "leñiols" collective groupings of various sizes: on a pragmatic basis. We have used the units which seemed most appropriate by local standards in each village.

We do not have the data to explain why there is this variability but a number of possible reasons suggest themselves; In Bagoudine the Satigui Dekle and Satigui Hebbiyaabé represent a very high level of traditional authority and they have correspondingly broad authority over tenure - leñiols are large and all in some way under the authority of the Satiguis. In the Hebbiyaabé lands leñiols tend to be large and strong - with some exceptions. Ouloum Hatar the most dramatic exception has a resident Haratine minority, who practice individual family level tenure, and this may have influenced the dominant Halpulaar-en community.

In Ouloum Néré the Elimane Néré has similarly broad traditional powers and among the Nérénebe there also seem to be a fairly strong leñiol organization. Elsewhere the gradual influence of modernization, introduced principally by the individual tenure in the small irrigated perimeters (despite their nominal collective organization individuals have specific individual plots in them), has had an influence.

Nowhere did we find true individualized ownership of recession land - in the sense accepted by Islamic and western law; with full rights to sell, develop, and purchase among the Halpulaar-en. We did come across a few cases of people who had sold or purchased recession land but they were special in many ways and it was unclear whether what had been sold or purchased was usufruct rights or full property rights. We suspect the former but this is a question we can not resolve on the basis of our short survey.

One example of apparent full alienation of land by a Haratine to a Peul resulted when the Haratine cut off the Peul's ear and as a result had to pay damages amounting to a field. The Peul's family still cultivates the field in the Beuli Tioli area

today.

Although the examples we came across are not easily generalizable there appear to be occasions when the collectivities accept alienation of land but most of these are probably cases, as in the one just cited, where the cession of the land was forced upon the community. Other cases may be internal to a leñiol or community. The Satigui, for example, had the theoretical right to give lands and to take them back if the owner transgressed the limits of acceptable behavior. We have been told that he still has this authority today.

Traditional Halpulaar-en society includes a variety of forms of ownership and various types of leasehold or rental arrangements. These have an economic value in that they make the exploitation of land more flexible while maintaining a hierarchical inflexible ownership structure. By inflexible I mean chiefly that there are no significant provisions for buying or selling land and hence no land market to speak of in the traditional system. This means that the various forms of lease, rent, and usufruct serve many of the same functions that a land market would in the western system. This flexibility is even more critical than in most areas of the world because recession agriculture depends on the variable yearly flood. Each year the potential land suitable for agriculture changes dramatically.

The consequences of this yearly variability are discussed further below. Here we can only say that it is difficult to overestimate the importance of the variety of tenure arrangements possible in the traditional Halpulaar-en recession system. In this section we present a list of the main terms in use and their meaning. Our data for the Dirol Plain suggests that all the terms presented are still much in use and represent actual practice except for the constraints of the drought - which has minimized the land available for cultivation and largely restricted cultivation in recent years to land owners.

The elders of the leñiol decide how to cultivate the leñiol lands each year. Ideally they send some one impartial out to survey the leñiol land in each collengal (some one who has no land of their own in that collengal) to see how much of their land is adequately inundated. Then the adequately inundated land is divided into fields with priority in size and quality going to the eldest among the group having rights in each particular collengal. They arrange that however much is inundated everyone with rights gets a field - however small it might be. This might seem a little unfair but since lineage headship is not inherited - it is the eldest surviving member in good mental health - the advantage accruing to a family in one decade will be balanced by disadvantages in other decades. The key point to remember is that in the jowré or leñiol- owned system of tenure individual fields are not the same each year though the boundaries of leñiol property are fixed.

New legislation dealing with land tenure was decreed in Mauritania in 1983 and 1984. Ordinance 1983.127 of June 5 1983 and Decree 1984.009 are included in the appendices to this

report. These two pieces of legislation abolish the legal priority of traditional tenure. Article 3 of the Ordinance declares that traditional tenure is abolished but the remainder of the Ordinance and much of the Decree are devoted to showing in which contexts traditional tenure is invalid and in which contexts it maintains some of its former validity.

Basically, the legislation gives priority to development efforts and to registered land. It sets up procedures whereby land can be developed and then registered legally and encourages individualization of ownership and registration of land. Traditional tenure is left a role in areas where development efforts are non-existent but this is seen as an interim role ideally superseded over the long term by individualized registered tenure. There is a specific structure set up by this legislation for modernizing land tenure in the context of a development project.

The basic procedure is to submit the necessary materials to request the declaration of particular land as Domain land. When all the materials are received the Prefet will post and broadcast a notice that the land in question is to be declared Domain land. Then any who object are allowed one month to lodge a complaint and two months to produce proofs of ownership. Should proof of ownership be produced the land may still be declared Domain land if the state feels this is in the national interest but it must first be evaluated and the owner must be fully compensated at the land's value. If there are no objections or proof is not produced the land will be declared Domain land and then given to the developer as a provisional concession. The latter can be turned into a definitive concession when one fifth of the agreed upon investments have been made.

One of the special provisions (Article 73 of the Decree) may affect the timing of this procedure. It provides that the decree integrating land presumed vacant into the Domain land will only take place 6 months after the legal proceedings which conclude that it may be declared Domain land take place. This means a minimum delay of eight months from the date of submission of all the relevant documentation before the land in question can actually be Domain land - and hence before it can officially become a provisional concession. The same Article also provides that land can not be ceded to a private party or registered by such (i.e. a definitive concession can not be made) until two years after the land is integrated as Domain land.

As I read the law this means that if land to be concessioned is owned prior to the attempt to get it declared Domain land and proof of this is produced in the time allowed and the owners are duly compensated then concessions can proceed according to the two month schedule but if no owner is found (the land is presumed vacant) then procedures follow the schedule outlined in the special provisions - the owners being possibly absent have two and a half years from the start of proceedings to turn up and produce their proofs. I have discussed the legislation in more detail elsewhere (Park 1986).

The legislation has several implications for the Dirol Project. Ideally any land to be included in infrastructure of future small irrigated perimeters should be declared Domain land because then the procedures for modernizing tenure on it are cut and dry - within a well defined time frame ownership can be definitively settled for all time. No other method of definitively resolving ownership is available and traditional tenure does not fit well with either irrigated perimeters or simple compensation of those who lose land to the infrastructure (the latter would include all ture generations in the traditional system).

Summary of data on land holdings

There are many sources of error in data collected quickly from interviews and though we feel our interviews were well received and taken seriously some errors undoubtedly crept in. The following table summarizes the land holding and household data by major group for those interviewed in the Dirol Plain:

GROUP	# OF FIELDS	# OF HOUSEHOLDS
Yirlaabé	265	404
Hebbiyaabé:Bagoudine	1353	1922
Hebbiyaabé:Fondou	485,5	1068
Hebbiyaabé:O.Hatar	348	448
	2451,5	3842
Nérénabé	449+	299
Booseya	338	223
Total Halpulaar-en	3238.5	4364
*Hijaj Haratine	54	62
*Tamoudek Haratine	156	254
Total	3448.50	4680

*rough estimates of non-redundant claims in target area

N.B. When household figures are enclosed in parentheses () this figure was given as individuals and when enclosed in square brackets it was given as gallé (several pooye or households).

Our most reliable data for households is number of pooye (nuclear households). In those cases where the interviewees kne

the exact number of people as well as the number of pooye we took both figures. From data of this sort we have an average of 6 people per nuclear household which is the same as the 1977 census figure calculated earlier. Using this figure we would have a total of 23,080 people recorded as having property rights in the Dirol Plain. If we include the Yirlaabé, Hebbiyaabé, and Haratine as well as 60% of the Nérénabé we would have about 26,000 probably directly concerned by the proposed development.

We focused on the area of concern to Development (north of the possible dike) and did a fairly superficial job interviewing people in the Booseya area - most of the land has not been cultivated in years and for lack of time we focused on people actively cultivating in the plain. In addition many people in Senegal have lands in the southern part of the Dirol plain below the proposed dike and these also were excluded. Thus there are undoubtedly significantly more people with potential cultivation rights in the Booseya area than our survey suggests.

Our figures are significantly higher than those for the 1977 census but they include a number of families living in Senegal but cultivating in Mauritania as well as an unknown number of migrants who were included in our figures by their relatives. In many cases we have 40-50% migration rates admittedly included in our responses but the admitted rate may be lower than the real migration rate in many other cases.

It is difficult to estimate what hectarage our count of fields corresponds to but we can easily figure out what assumptions make it compatible with Lericollais' 1970-1 data. In the few fields whose area we did try to estimate we found ranges from half a hectare to well over two hectares. My adjusted figures for Lericollais' data (excluding area south of Ferala) was 1530 cultivable hectares (6186 cultivators) in the northern half (AMC) and 2950 ha (3925 cultivators) in the southern half (KKA) of the plain. If we take our household data for land owners and include the Haratine, Yirlaabé, Hebbiyaabé and 60% of the Nérénabé we get an estimate of about 4337 land owning households for the area most concerned by the proposed dike (roughly Roufi Aoudi to Dioke and north west). The same calculation for fields would give 2931 fields. These include, however, 472 fields in Senegal and a number outside the area proper. An estimate of 2400 fields in the area would be more likely to be an over-estimate than an under-estimate. Much more precision would be artificial because the real limits of the area depend on the full range of water impoundment systems eventually proposed and these have not yet been determined.

When we assume two cultivators per nuclear household for Lericollais' data we get 0.49 ha per household for the northern half and 1.54 ha per household for the southern half of the plain. Using our data and an estimate that the area includes 2500 cultivable hectares all reported to us this would give 0.58 ha per propertied household and somewhat less per cultivating household. The same assumptions would give an average field size of 1.04 hectares and an average of 0.55 fields per nuclear land

owning household for the area most concerned by the proposed development.

This seems reasonable from the qualitative data in our interviews (in a number of cases there were as many as 5 households sharing a field) and fits well with Lericollais' data. Nevertheless it should be understood as a very rough estimate since we collected no statistically significant data on field size.

Disputed lands

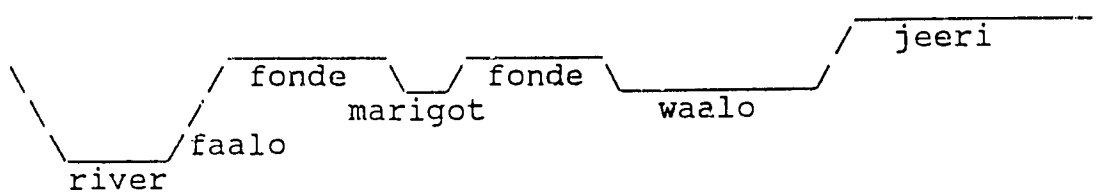
The Hijaj and Tamoudek Haratine claim large amounts of land in the plain but they have no leñiols and the only way to assess exactly how many fields they claim would be to interview each household - something we did not have the time to do. The Hijaj Haratine include the population of the village of Hijaj as well as a significant proportion of the populations of Mbahe, Niabina, Mbagne, and Heimedat. The Tamoudek Haratine include (in the Dirol area) the majority population of Boubou Aoudi, the population of Debaye Doubel, and a significant minority of the population of Ouloum Hatar. In each case the elders claim that virtually all families have land - and usually in several different places. We can not pretend to accurately evaluate their claims on the basis of the few interviews we made.

It is difficult to estimate how many fields this corresponds to but those interviewed indicated that when they claim many fields in a collaďé this means a significant proportion of all Hijaj Haratine have fields there. Certainly this must be significantly more than 20 fields. As a first estimate let us say 40 fields. Mbeyzigra is a large collengal and the main area in which the Hijaj have fields. The area is however jejougol and this means that in practice they cultivate depressions in the area. Let us assume a conservative 40 fields - though if the area were properly inundated it could have many more. This would give a rough total of 159 fields of which about 54 would be in the Dirol Plain. There were 62 families in Hijaj in the 1977 census and others living in Mbahe and Niabina who would be included in these fields so this does not seem exhorbitant though it is admittedly a rough estimate.

The Tamoudek claims amount to a large number of fields. If we use an estimate of 40 fields per collengal we get 277 fields. Of these, 156 may also be claimed by Halpulaar-en. The 1977 census gives about 254 Tamoudek in Boubou Aoudi and Debaye Doubel to which must be added the Tamoudek population of Ouloum Hatar and subtracted the Halpulaar-en families of Boubou Aoudi. These are very rough estimates and should be improved in a more detailed study.

Ecological Constraints

The main ecological constraints are of course the drought and traditionally the variations in the level of the annual flood. Halpulaar-en in the Dirol Plain divide the land according to soil quality, elevation, and probability of inundation (which depends not only on the elevation of the land in question but also on the elevation of any lands between it and the flood). The classical Senegal valley classification of land is shown in the following sketch:



The basic schema is a four-fold categorization of land as faalo (river bank), fonde (higher land rarely inundated), waalo (lower regularly inundated land where main recession activity occurs), and jeeri (higher land where only rainfall agriculture is possible). The different areas of waalo are linked by channels (French:marigot). This classification is generally expanded to include a differentiation between different types of waalo soil (hollaldé) - varying from light sands to heavy clays.

The inhabitants of the Dirol Plain refer to several types of waalo soil by local terms which seem to fit into a schema some what as follows:

Jejougol - Ititi - Dedal

Jejougol is high land almost jeeri land but marginally cultivable - we were not able to discover from interviews what the real difference between jejougol and the classic soils was but at a rough guess I would say it refers in a general way to waalo like soils (as opposed to jeeri soils which in principal are more sandy and are never inundated) which are now so high that they are rarely inundated or are only inundated by local rainfall run off - people largely cultivate depressions in the jejougol areas. Dedal appears to refer to the best soils (though under what conditions it is best is unclear). Ititi appears to be soil that is a bit marginal. This classification really needs to be worked out by a soils expert in the context of a more detailed tenure study.

Dedal is the category of land most cultivated at current low

levels of flooding while Fonde land is preferred when the flood goes to higher levels. The standard Toucouleur categorization substitutes "waalo" for the two central terms. The standard system defines "waalo" land as a series of hollaldé soils running from heavy to light. We found the farmers in the Dirol Plain understood the term hollaldé but did not tend to use it. We did not have time to do work in the colladé themselves and feel that the whole question of local classification of soils should be pursued further in a more detailed follow up study.

We found numerous examples of land planted after much less than 40 days inundation. In fact some land was planted with good results after only 10 days inundation while planting after 20 to 40 days inundation was common. Farmers indicated that the length of inundation required depends on the type of soil - and the crop to be planted; in general niebe is left out if the land is inundated less than 25 days. Our data on seed rates is too thin for firm generalization but we have indications that the likelihood of insect infestation, whether intercropping with niebe is planned, the soil type, and the length of inundation combine to determine how much seed to plant how close together. The details of these relationships should be worked out in a further study.

Advantages of Jowré tenure

It might seem that there is a trend toward individualization (to family level) at work in the plain and that this should be encouraged. This would be a bit simplistic. We need to distinguish between recession agriculture and irrigated agriculture. Both are expected to be important in the short term future of the Dirol Plain. Jowré tenure at the leñiol level has several obvious advantages over individual tenure in traditional recession agriculture. These are linked to its role in what ecologists refer to as risk management.

The variability of the annual flood means that different areas are flooded different amounts each year and this in turn means that an optimal adaptive strategy would be to spread ones holdings across the plain to include land of many different types and at many different elevations. Individuals do not have enough land to spread themselves very far and would run enormous risks over the long term - several years out of ten most of them would have no agricultural revenue if land were all individual tenure. The leñiol system allows the land owning unit to have, as it were, a much larger and broader portfolio of lands expressed as holdings in numerous colladé. The collective risk is, consequently, much smaller. As the size of the leñiol decreases this advantage disappears.

Another leñiol practice which diminishes risk is the division of leñiol land into fields only at planting time. The leñiol land is surveyed after the flood to see which lands are cultivable and only then is it allocated as individual fields to those who have rights in each collengal. The ruling principle is

that everyone with rights gets some land however little it may be. Even so when a particular collengal is not inundated, or otherwise not cultivable those with rights in it can not transfer those rights into claims in other colladé. If they have no other rights to land they must throw themselves open to the community welfare system or make use of one of the various tenure arrangements listed in Section 5.

The leñiol jowré system goes hand in hand with a system of tithes. This system has in part been assimilated to one of the classical Muslim duties: the requirement to give 1/10 of one's income to the poor. This in classical Arabic is referred to as zakat. Along the Senegal river it is called assakal and though it is paid to the rich by the poor instead of the other way it is paid with the understanding that the rich will then manage the community welfare system and take care of the poor with the tithes received. Assakal is paid to leñiol heads who save it in a community granary to be distributed to the poor or spent on communal expenditures. Some of the other tithes (such as ndioldi) also have their communal component. These community collections provide further insurance against the vagaries of the flood and its effect on individual families.

Comparison of irrigated and recession agriculture

Labor requirements

We did not ourselves have the manpower and time to adequately assess the labor requirements of recession agriculture or irrigated agriculture in the plain but we did collect a small amount of information relevant to this question. The literature suggests several possibilities about the relationship between labor requirements in irrigated and recession agriculture and we attempted to include in our interviews questions which would help to clarify this issue.

Recession agriculture is a form of extensive agriculture in which there are high returns to labor as well as fairly high returns per hectare (for extensive agriculture). In contrast, irrigated agriculture is designed to compensate its labor requirements with high returns per hectare. This suggests that in the Dirol plain there might be a tradeoff between returns to labor and production per hectare. Clearly, if there is not enough flooding for traditional recession agriculture the irrigated agriculture in the Senegal valley will also give higher returns per hour of labor. Thus, depending on the rainfall there is a continuum at one end of which irrigated agriculture is preferable both for its returns to labor and for its returns per hectare while at the other end though irrigated agriculture may be preferable from the standpoint of its returns per hectare it will not compete with recession agriculture in terms of return

per hour of labor.

We set out to see if farmers in the Dirol were aware of this potential trade-off and found that they indeed perceived recession agriculture as preferable to irrigated agriculture when conditions were good for recession agriculture. Everyone questioned viewed irrigated agriculture as an inferior substitute for traditional recession agriculture.

It is difficult to disentangle all the reasons for this unanimous view but at least the following seemed important: a) in good years there is more than enough land and the traditional constraint is labor not hectarage so a family can produce more in recession agriculture than they could expect in irrigated agriculture, b) traditional authority structures and elites depend on the traditional recession agriculture for their livelihood, c) most of the irrigated perimeters known to the people of the Dirol plain are not management successes, and d) people are afraid encouragement of irrigated agriculture will lead to state expropriation of their traditional tenure rights.

One example shows the interplay of credit, recession agriculture, irrigated agriculture, and labor supply rather well. Ouloum Néré has a 1 ha. irrigated perimeter for vegetables cultivated by the women's cooperative. Roughly half of the women in the village work in the cooperative. The head of the cooperative (the wife of the Elimane Néré) claims that these same women could, with the present level of technology, cultivate another hectare and the village is in the process of building a second perimeter on the other side of the village. This means that the whole female labor force of the village could manage 4 hectares. The head of the cooperative claims as well that the main present constraints on women cultivating even more irrigated land are credit: for the initial construction costs, and the amounts of female labor presently required for hauling water and pounding grain for meals. These two tasks take up the majority of women's daily labor. If they were mechanized there would be almost twice as much female labor available.

Recession agriculture also plays a role because the main reason women's labor is currently available to be used in irrigated vegetable perimeters is because so little land was inundated this year that it does not even require the full male labor force to cultivate it. The women in Ouloum Néré were quite firm in maintaining that should there be more demand for their labor in recession agriculture this would take priority over work in the irrigated perimeters.

One issue which we tried to get some information about in our interviews was that of the relationship between marginal land and excess labor. We wanted to know whether, given that land ownership is for practical purposes fixed, families which had surplus labor from older children could expand the area they cultivated by making use of the various tenure arrangements to cultivate marginal land (land perhaps not optimally inundated that year) that would produce significantly less per hour of input than that sufficient to attract heads of households. We

did find a number of people who indicated that this was in fact a common practice in the past but not recently because since the drought there has been so little land inundated that the minimum requirements of the resident household heads have not been met. In consequence whatever potential excess labor there might be has migrated to find work.

The migration issue is important in its own right. On many occasions leñiol heads indicated that more than half of the leñiol's households were resident elsewhere having migrated to look for work. It is likely that such alternatives to employment in the Dirol Plain will continue to exist.

The development goal must therefore be seen as developing alternative income opportunities in the plain which can compete with migration opportunities. If irrigated agriculture ends up offering high costs and low yields plus high labor requirements it may not entice many to return and others may leave. The local view is that everyone would return if there were excellent recession agriculture opportunities.

The near universal aversion to rice cultivation suggests that, however exaggerated the former view is, there would be few people returning to cultivate rice unless the benefits were substantially greater than they are thought to be locally. It is difficult to ascertain, however, but much of the aversion to rice may actually be a simple fear of expropriation. If this is so, profitable rice perimeters might be more successful than conversations with the local populace would lead one to think.

Links to pastoral groups

All groups in the Dirol Plain have strong ties with nomadic groups. Many of the Halpulaar-en are in origin Peul and all have strong ties with other Peul who are either nomadic or would be if the rainfall allowed. The Haratine lived largely in tents until quite recently, and are still in part transhumants, and certainly have strong ties with various nomadic Bidan groups. The latter undoubtedly have fairly strong claims on the Haratine. Thus in all cases it would be misleading to view the villagers of the Dirol Plain as sedentary with little or no animal herding proclivities.

Beyond this in Mauritania there are few opportunities for investment and in the rural areas livestock are the most profitable available investment. In the near, and perhaps distant, term we can expect people in the Dirol to continue to invest in livestock at every available opportunity. The constraints jowré ownership put on private investment only make livestock seem even better.

One can, therefore, expect all groups to want to maintain traditional ties with nomadic groups even as they try to improve the outlook for agriculture. Livestock and agricultural production are viewed as complementary. Potential crop devastations by livestock are a serious threat that is dealt with in various ways (enclosures, uniform harvests so livestock can

eat the stubble without eating someone else's harvest, and compensation for damages). No one we interviewed was antagonistic to herders as such because all viewed themselves as potential or actual livestock owners. Anger is expressed at particular crop depredations but never, in our experience, at herding per se.

Livestock should be included in any model which attempts to predict expected behavior as agriculture in the plain is improved. The returns to labor for livestock are probably higher than those of irrigated agriculture (as is the case for recession agriculture) and it may be that if the conditions are right many Peul will opt for herding rather than irrigated rice agriculture. This will undoubtedly depend in part on what the costs of inputs are and what the production is as well.

Assessment of obstacles to development of the Dirol plain

In this section we summarize the obstacles to development noted in the earlier sections. This section is divided into two parts; economic obstacles and tenure system constraints. The former summarizes briefly our observations on labor and investment incentives. The latter looks in more detail at tenure constraints to development of recession and irrigated agriculture.

Economic obstacles

Traditional tenure imposes a disincentive to investment to the extent that cultivation is done by sharecroppers or holders of usufruct or even joint collective (jowré) owners. Individual investment in land infrastructure of crops such as tree crops would give the individual rights to the investments and in consequence in practice greater rights to the land itself. In the jowré case this would elevate one individual's rights over that of the others and this is not accepted by the traditional system. In the case of holders of usufruct or sharecroppers their investments would give them permanent rights in the land in question and this conflicts directly with the rights of the owner to evict them should it be necessary or desirable.

The lack of a land market and the virtual lack of a long term labor market (in good years there is too little labor to go around and in bad years the potential excess labor migrates elsewhere) and the nature of recession agriculture also minimize the incentives to improve land under recession agriculture. It can not be sold or consistently rented out at a higher price and the variable nature of the flood means that with or without improvements it still may be good or poor in a given year entirely depending on the flood.

In sum there may be a collective incentive for major improvements which will increase the general productivity of land (the example of the Ferala and Lewe dikes) but there is little incentive at the individual level except for land cultivated by its owner as an individual devoid of ties to any collective entity (the example of Mona's dikes).

There appear to be a number of labor constraints to development in the Dirol Plain though none of them seem insuperable. Recession agriculture is perceived as preferable to irrigated rice cultivation because of its greater returns to labor under normal conditions (pre-drought). This is likely to affect the labor supply available for both irrigated perimeters and vegetable gardens if recession agriculture improves dramatically as a result of the proposed dike.

If the infrastructure requires extensive maintenance there may be difficulty in obtaining a regular labor supply (the example of Mbahe freeloading on the Ferala dike is the most obvious reason to suspect this as a possible problem). In the long term sharecroppers or usufruct holders may feel that their contributions to the infrastructure maintenance entitle them to ownership rights and so may refuse to contribute unless given such rights.

A significant improvement in the extent and reliability of the flood may entice people away from sharecropping at 50% on core lands to doing so under a less onerous burden (ndioldi or assakal) on newly available but slightly marginal lands. This could also affect the labor supply willing to cultivate in perimeters or work on maintenance.

Impact of water impoundment systems

The water impoundment systems so far proposed can be divided into two parts; a)the main dike and weir and b)other smaller dikes or canals whose location is not yet clear. Since the location of the latter is not clear we can only make general remarks about their impact. For the main dike we can be more specific.

Let us begin with the suggested main dike and weir system (the 14.7 km dike from south of Ferala past the mouth of the Dirol to just east of Dicke). The eastern half of this dike goes along high ground which appears to be called locally Fonde Diounne. This is rarely if ever cultivated though there may be adjacent areas or pockets of lower land that might be covered by the dike. In general, for this section of the dike there should be few if any tenure problems resulting from the construction of the dike. It should be easy to reach an agreement with those few who actually lose land to the dike infrastructure. There may be many more who lose water cut off by the dike than lose land directly to the dike.

From north east of Roufi Aoudi to Ferala the proposed dike

passes through fertile cultivable areas where its impact may be much more serious. A marigot that flows to the Senegal near Roufi Aoudi comes from farther east and may be crossed by the dike. This marigot inundates a whole series of colladé (Koylal, Mol Diakudo, Tako Teringuel etc.) which generally produce well. The route for the dike from the mouth of the Dirol to Ferala also goes through numerous cultivated colladé. There may be significant impacts on agriculture by fields lost to the dike in this area as well.

The main negative impact of the dike will be that it cuts some areas off from water or retains water so long in other areas that they become infertile and unusable. The disadvantages should of course be offset by the dike's main advantage that it will retain water long enough to inundate adequately many times the area currently adequately supplied with water. Yet since in many cases it will be one group that will reap the advantages and another that is disadvantaged it is imperative that a thorough assessment of those who will be disadvantaged be made. This will require a detailed tenure study of those areas most likely to be disadvantaged (cut off from water or inundated too long) based on good topographical mapping and the most up to date plans for water impoundment systems.

The most obvious areas that may be cut off from their water source by the dike are the areas immediately south of the dike (Dialbougou, Sawamo, Toule, and Boubdoubel) though these areas like those a little further south such as Kofel probably get their main inundation from the Roufi Aoudi marigot and so would be little affected by the dike. The dike may also negatively impact colladé immediately south and east of Dioke (such as Nawel or Manga).

One representative area that may be seriously disadvantaged by the dike lies further up the Dirol: the marshy area apparently referred to as Louguere. This area includes over 150 claimed fields from our interviews (and Lericollais claims 300 cultivators in 1970-71) though it is classified as not irrigable with deficient drainage and high saline content on the FAO/OMVS soils maps. The dike would quite possibly make this area less cultivable than it is because it would not drain out the Dirol until appreciably later each year. There are several other areas that fit into this category: the two main ones are east of the Dirol mouth near Ouloum Hatar and Ouloum Néré and normally drain into the east branch of the Dirol.

Most of the faalo land (the banks of the Dirol channels in this case) in the northern half of the Dirol plain might be rendered unusable as well - though it is difficult to estimate how much land this encompasses.

In both cases the amount of damage from too lengthy inundation undoubtedly depends on several factors; type of soil and its water retentiveness, the speed with which the water leaves the area (this might be improved by some minor dredging), and the date at which the water leaves (the crops need to mature before the hot summer winds arrive). These factors may indicate

significant differences between superficially similar areas as far as indemnification is concerned.

It may be that by careful planning and discussion 90% or more of potential indemnifications can be officially waived as greater or equal benefits will be made available to those impacted negatively by the development. It is primarily in those cases where a leñiol's only land holdings in the area impacted by the development are negatively impacted that indemnification really becomes an issue.

Small scale irrigation

One of the goals of the Dirol Plain development plan is to construct a series of small irrigated perimeters in the plain. In principle these perimeters are to be built on higher lying lands not liable to inundation from the seasonal floods. The past experience of irrigated perimeters suggests that new perimeters may have similar mixed success depending on soil types, the resulting yields, costs and timeliness of inputs and the alternatives available to the plot holders.

It is certain that all lands suitable for such perimeters will be already owned and there is a high probability that the owners of most areas suitable for a perimeter will come from several or numerous leñiols. If this involves turning formerly jowré land into individual freehold the establishment of perimeters may encounter serious obstacles. I questioned the Elimane of Dioke on this subject. He recounted how a member of the lineage who was one of the Colonels in the ruling military committee in Nouakchott wanted to set up an irrigated perimeter and tried to buy land for it. The land was high fonde land rarely inundated and belonging entirely to the leñiol. As head of the leñiol the Elimane had to tell the Colonel that he could not sell leñiol land - it was jowré land and belonged to the whole leñiol; past, present, and future.

The real obstacle to selling jowré land is that it deprives future generations of their claims to land. If the land were given to all the individual families with claims to the land this might not be an insuperable obstacle but it would still be a major social constraint that needs to be considered. If the Elimane of Dioke could not arrange to sell land to a member of the ruling junta who was a leñiol member, alienation of jowré land is not easy. In consequence construction of irrigated perimeters will require careful study of the traditional tenure for the site and resolution of tenure problems if the transition is to be successful.

It should be noted that hitherto perimeters have primarily been established by government fiat without recourse to legislation or explicit compensation. In many cases they have

also given rise to serious objections and may yet end in serious litigation (should a civilian government take over).

A potential problem that would need to be resolved is that of the difference between current rights and heritable rights. Traditionally, the eldest members of a leñiol with property rights have larger fields than younger members such as their own children. When the elders die the new elders - not the former elders' children - take over the larger fields by right of seniority - and so it goes generation after generation. If current rights are turned into permanent perimeter rights the current elders will obtain a share of the land in perpetuity to which they are not traditionally entitled -- to the disadvantage of other members of the community. Leadership does not circulate through all families but it is not confined to individual nuclear families either. The number of disadvantaged in such an arrangement would thus be considerable.

An attempt should be made to see that irrigable land is distributed more equally among the leñiol members than it might occur in traditional recession agriculture. The moral justifications for such a proceeding would be the lower risk of irrigated agriculture, the permanence of tenure and the lesser need for communal risk management provisions and hence the lessened role of elders in providing for others in the irrigation context. On the economic side, the lower productivity of sharecropping in the perimeter situation, with virtually no free market for plots, would argue for trying to encourage owner productivity. Though this has proved impossible to guarantee in other perimeters in Mauritania a complete lack of concern with this issue could be damaging in the long run.

Political considerations

The potentially most significant obstacle to development of the Dirol Plain is the conflict between Haratine and Halpulaar-en claims to land in the core Hebbiyaabé area. These claims have been listed in detail above.

The Haratine, after centuries of being third class citizens (to glorify their former status quite a bit) have begun to be politically active and will only become more and more politically aware in the years to come. Thou~' ..e have not investigated the legal details of their claim. to tenure the following is a reasonable hypothetical summary. in numerous cases they may have cultivated land for over 10 years which they first cleared from the brush which had grown on it after its former cultivators abandoned it (possibly for as much as a century). They, therefore, feel that in Islamic law they are entitled to full rights as property owners on this land. Given the hypothetical situation I, and probably all qadis, would concur with their evaluation of the situation.

There are a couple obvious possible complications to this

scenario: a)they may have paid tithes to Bidan as protection during this period and this could, though it is not clear that it ought, be stretched to infer they were not owners of the land - which had been acquired by the Bidan by right of conquest and b)they may have recently been forced off the land by Halpulaar-en and or paid some form of tithes recently to Halpulaar-en on some of the lands in question.

On the first point, in the Foum Gleita area Haratine have paid tithes to Bidan and are still considered by the local Bidan qadi to be land owners - the deciding point being that they cleared the land as free men. The tithes are interpreted as merely protection money - payments still made by many holding plots in the Foum Gleita perimeter.

The second point is more sticky because everything would depend legally on how long payments were made, why they were made, and how long it has been since they were made. These are matters that might need to be established for every individual plot in question. We think this would be virtually impossible to do and consequently something that should be avoided at all costs. Any events more than ten years prior to the drought should be viewed as legally irrelevant - though they may help to explain current attitudes.

Some simple generalities about this politically sensitive situation should be underscored. The great majority of lands are firmly in the hands of one or the other party, lands still always cultivated exclusively by Haratine should be viewed as in their hands while lands (the vast majority) cultivated by Halpulaar-en should be viewed as in their hands.

The path most likely to lead to a resolution of this conflict, it seems to me, lies in a) making an effort to get the <u>status quo</u> accepted firmly as such and b)trying to develop the plain in such a way that both communities benefit and neither, therefore, has anything substantial to complain about. If the development brings significant advantages to the Haratine they can almost certainly be relied upon to accept the situation. If only the Halpulaar-en benefit from the development and they do so on lands claimed by the Haratine there is almost certain to be lengthy and continuing confrontation on this issue. The Haal Pulaar can probably also be persuaded to accept the status quo in terms of occupation of lands (which is entirely in their favor though they would like us to believe that Haratine are intrinsically incapable of owning land - a simple matter of definition) if the development stipulates this explicit recognition as a condition of development.

This leaves the question of just what is the status quo (in detail at field level) and this is something that a more detailed land tenure study needs urgently to address.

Another political issue that could be an obstacle to development is the general fear of expropriation. This is centered around a belief that the raison d'etre of the new legislation is to provide a way for Bidan to acquire lands in the Senegal Valley now that the drought has rendered their

traditional territory less valuable. This local belief is expressed in a general mistrust of Sonader and a concomitant reluctance to consider anything but recession agriculture - which requires no major tenure modifications.

Summary of tenure constraints

In summary the main constraints traditional land tenure poses to the development of the Dirol Plain are the following:

1) The political problem of a potentially serious conflict between Haratine and Halpulaar-en communities.

2) Jowré or collective ownership includes rights of those yet unborn and this makes monetary compensation of the living for loss of land generally inadequate.

3) Jowré or collective ownership has advantages in recession agriculture from the point of view of risk management so everyone with collective rights may have reason to resist attempts to convert them to individual ownership as envisaged long term by the new legislation.

4) The elite who reap profits along with their communal responsibilities from the traditional system of tithes may resist any attempt to incorporate large areas into individualized tenure (as proposed in the idea of putting significant areas into irrigated perimeters).

5) The traditional system, complete with share-cropping and tithes provides incentives for owners to lease out land which they choose not to cultivate themselves each year (perhaps because that year it is more marginal than other land they own) and this adds flexibility and adaptability to the system along with its inherent propensity for hierarchy. The advantages might outweigh the disadvantages in the traditional context but in the modern context it is doubtful if this is still the case.

There is no land market at all and the incentives to improve land that might work in a market situation do not exist. The unequal distribution of land ownership is likely to continue to discourage investment in the land and improvement of its productive capacity. The sharecroppers can go elsewhere if yields go down and can not insist on a right to stay on should they improve or maintain the land.

Further, Islamic law gives rights to the land to those who

make investments in it. This has traditionally implied that owners do not let usufruct holders make improvements in the land because their usufruct would then turn into ownership. The same is true for part owners of jowré land. There is no reason this prohibition would be lessened in the modern situation. Mona's loss should serve as an example to developers. Should the development involve channels and other elements needing maintenance it may be difficult to reach an acceptable long term agreement about who does the maintenance. Thus, the traditional hierarchical tenure system may make modernization of recession agriculture significantly more difficult.

Legislative constraints

The constraints to the development of the Dirol Plain posed by the new legislation are twofold:

1) The politically derived animosity toward the legislation due to fear that it is a cover for expropriation of land.

2) A series of time constraints which need to be met and paper work that must be filled out in order get land declared Domain land in time for it to be developed on time and with in the budget.

Recommendations

Strategies to avoid land tenure conflicts

1. Do as detailed a study of tenure in the Dirol Plain as the budget allows with particular emphasis on the specific areas of the plain likely to be significantly impacted by the most obvious features of the proposed developments: the areas discussed above.
2. Use the procedures of the new legislation to deal with any serious potential tenure obstacles in a permanent way.
3. Have only the minimum amount of land declared Domain land - primarily land incorporated into the infrastructure of water containment systems. Compensate any former owners and concession the land to a local representative organization that will be responsible for the maintenance of the land and its investments/infrastructure.
4. Arrange to compensate people for loss of valuable land either with value added to other lands they have rights in or with plots in an irrigated perimeter to be developed in areas not now or in the future useful to recession agriculture. Compensation of land lost with land gained (in area or value) will take care of the rights of future generations.

5. Diversify the development plan for the Dirol to include several much smaller dikes further up the Dirol. These will benefit the Haratine communities and may be used to defuse the potentially serious confrontations which might occur between Pulaar and Haratine communities if only lands cultivated by Halpulaar-en, though in many cases claimed by Haratine, have their value increased by the development. In addition, such smaller water impoundment systems will dramatically increase the benefits to the area from run-off from the local watershed. With a single dike this water will be redundant and will not increase the area flooded beyond that reached by the Senegal flood. Containment structures higher up the water course will inundate higher lying lands and be complementary to the dike at the mouth of the river.

6. To the extent possible prioritize any additional smaller water containment structures to benefit communities or leñiols which might benefit least from the main dike system. This will greatly facilitate the acceptance of the main system.

7. Include the local communities in the planning of all water impoundment systems and ask them to provide as much labor as they can for the construction of all such systems.

Ways to comply with the land tenure legislation

1. Fund a detailed land tenure study of those areas of the Dirol likely to be included in infrastructure or irrigated perimeters or otherwise adversely affected by the development. Such a study should carry out as a minimum the tasks outlined in the attached Scope of Work. From the perspective of the legislation it is imperative that one be able to legally and justly compensate people for the value of land lost to the development. This requires confirmation of ownership and evaluation of the land lost to the development.

The preliminary study already completed could be used to dramatically reduce the amount of area for which a detailed study is required and the consequent costs of such a study. This is a matter on which some thought should be expended. If large areas of the plain are to be incorporated in irrigated perimeters it may be more cost effective to fund one full detailed study than to fund other tenure studies as each irrigated perimeter is developed. The results of other feasibility studies may make it possible to determine all areas potentially likely to be included in irrigated perimeters and these could be made part of the priorities of the detailed tenure study.

2. Follow the legislature's procedures (see the translation in the appendice) for getting all land on which major investments are to be made declared Domain land and then concessioned out to an organization charged with implementing and maintaining the investments. Make sure the process is fully carried out to the

definitive concession stage.

3.Arrange to legally compensate those suffering losses from the development if at all possible by giving them land in exchange - from a new area to be cultivated or in an irrigated perimeter.

4.Ensure that procedures are started sufficiently in advance that construction only takes place after the land is provisionally concessioned.

5.The great advantage of following the legislature's procedures is that it sets limits (at most two initial months, six waiting months and two years for the statute of limitations to run out on claims for compensation or 32 months) from start to the last time any one has recourse in law to compensation for damages. This is a very short and finite period in practical terms.

Optimal farming systems to encourage

1.Encourage continuation of recession agriculture and make the transition to irrigated perimeters depend on their likelihood of success given costs of inputs, probable yields, and alternative uses of labor for the population.

2.Consider prioritizing the landless in some irrigated perimeters. This may make a dramatic difference in their success and one success may encourage those with an abundance of recession land to favor development of other perimeters. Despite the low regard in which locals have viewed the Kaédi Gorgol Pilot Perimeter it should be remembered that the only initial takers of Sonader's offer of plots in the perimeter were the landless who had been traditional sharecroppers and it was their convincing success over several years which persuaded land owners to take parcels as well. The perimeter is now an apparent complete success.

3.Consider the possibility of including enough land in the Domain land used for infrastructure to plant trees for erosion control, charcoal, and fodder for animals.

4.Assume livestock will have an important role in the economy of the Dirol Plain and include them in calculations where ever possible.

NOTES

1. This general survey of land tenure in the Dirol Plain was carried out by a team from the Land Tenure Center (University of Wisconsin-Madison) in February of 1986 under contract with USAID-Nouakchott (PIO/T 625-0929-3-60014). The team was made up of Dr.Thomas K.Park (COP), Glenn Rogers, and Tidiane Ngaide plus assistants hired in Mauritania. The team spent three weeks interviewing in the Dirol PLain.

Originally we planned to split our time between interviews of leñiol heads, household heads, and surveys of fields but a complete lack of diesel fuel in Kaédi during this period severely constrained our mobility so we were unable to do systematic field surveys. In addition a misconception on the part of the population - that we were officially registering lands -led to us being inundated by leñiol chiefs (mawdu) who all insisted that we record their land holdings.

As a result our study ended up much more heavily weighted toward interviews of leñiol mawdu with only a minor emphasis on the other two original goals of our study. This had some advantages of its own - we were kept late each night in the villages inventorying land holdings - and feel that we may have recorded 95% of the Dirol Plain lands held by Halpulaar-en resident in the plain.

We have certainly missed holdings by some residents of Senegal, though many Senegalese came to our village meetings to have their lands inventoried, and we must have missed others as well. Nevertheless, we feel we were very fortuna e to have been exceptionally well received by the residents of the Dirol Plain and managed, despite some logistic problems, to obtain more land tenure data than we had actually expected.

We were greatly facilitated in our work by the staff of USAID-Nouakchott and in particular by Bud Lane and Joe Guardiano. An accident destroyed our project vehicle on our first day in Nouakchott but we were still able to leave for Kaédi four days later with a USAID vehicle and chauffeur. We can not thank the mission too much for this efficiency.

2.See the works of Vidal, Gaden, and MISOES in the bibliography.

Bibliography of works on land tenure in the Senegal River Valley
Thomas K. Park

Adams, Adrian
1977 The Senegal River Valley: What Kind of Change?. Review of African Political Economy 10:33-59.

Andrieu, Ch.
1953 Rapport - Contribution à l'Etude de la Plaine d'Inondation du Sénégal dans la Subdivision de Boghé. MAS.

Audiger, J.
1957 Etude Humaine du Bas-Ferlo. Mission Aménagement du Sénégal (MAS), Bull.112, St.Louis, Sénégal.

Balans, Jean-Louis
1975 La Mauritanie entre Deux Mondes. Revue Française d'Etudes Politiques Africaines 113:54-64.

Baro, Mamadou Amadou
1985 Traditions et Changements du Régime Foncier Rural de la Moyenne Vallée du Sénégal. Mémoire de D.E.A. Université de Dakar.

Binet, M. Jacques
n.d. Rapport Sociologique. Rapport de la Mission des Nations Unies pour l'Etude du Bassin du Fleuve Sénégal.

Black-Michaud, Andrée and Jacob
1978 Encadrement du Paysannat et Vulgarisation Agricole au Sénégal: Elements d'une Evaluation et Perspective.

Bloch, Peter
1986 Overview and Policy Analysis. In Land Tenure Issues in River Basin Development in Sub-Saharan Africa. Peter Bloch, ed. pp. 1-28. Madison, Université de Wisconsin: Land Tenure Center.

1986 Senegal: Senegal River Basin. In Land Tenure Issues in River Basin Development in Sub-Saharan Africa. Peter Bloch, ed. pp. 29-41. University of Wisonsin-Madison: Land Tenure Center.

1985 Senegal. Country Profiles of Land Tenure in Africa 1985. Land Tenure Center, University of Wisconsin - Madison, pp 140-144.

Boutillier, J.-L. P.Cantrell, J.Caussé, C.Laurent, Th.N'Doye
1962 La Moyenne Vallée du Sénégal. INSEE Ministère de la cooperation, Presses Universitaire de France, Paris.

Bruce, John
1984 Anticipating Land Tenure Issues in Planning Projects and Agricultural Development Strategies in Africa. Draft Report for the Land Tenure Center, University of Wisconsin-Madison

1985 Land Tenure Issues in Project Design and Strategies for Agricultural Development in Sub-Saharan Africa. Land Tenure Center, University of Wisconsin-Madison.

Chastanet, Monique
1983 Les Crises de Subsistances dans les Villages Soninké du Cercle de Bakel, de 1858 à 1945. Cahiers d'Etudes Africaines 89:5-36.

Copans, Jean
1978 Paysannerie et Politique au Sénégal. Cahiers d'Etudes Africaines 69:241-256.

Cottingham, Clement
1970 Political Consolidation and Centre-local Relations in Senegal. Canadian Journal of African Studies 4:101-120.

Crousse, B.
1986 Etatisation ou Individualisation. La Réforme Foncière Mauritanienne de 1983. Politique Africaine 21:63-76.

De Lolme, M.
1936 Rapport sur l'Agriculture dans la Vallée du Sénégal. MAS.

1937 Rapport sur les Renseignements Divers sur les Terres, les Cultures, les Biens et les Coutumes dans la Vallée du Fleuve Sénégal. MAS Bulletin #37

Dia, A.
1967 Contribution à l'Etude de l'Evolution de Régime Foncier Rural dans la Région du Fleuve. OMVS.

Downs, R. and S. Reyna
1976 Socio-economic Report on the 10th Region of Mauritania. Department of Sociology and Anthropology, University of New Hampshire

Dubois, Jean-Paul
1961 La Basse Vallée de Gorgol (Mauritania): Etude de Géographie Régionale. Diplôme d'Etudes Supérieures.

FAO/OMVS - SEDAGRI
1973 "Carte d'aptitude culturale des terres de la Vallée du Fleuve Sénégal" feuille Kaédi 1B, 1C. Paris.

Frankenberger, Timothy
1986 Farming Systems Research Along the Senegal River Valley. A Dry Season Reconnaissance Survey in Guidamaka, Gorgel Brakna and Trarza Regions. USAID/University of Arizona.

1986 Farming Systems Research Along the Senegal River Valley. A Dry Season Reconnaissance Survey in Guidamaka, Gorgel Brakna and Trarza Regions. Mauritania Agricultural Research Project II.

1986 Farming Systems Research Along the Senegal River Valley. A Rainy Season Reconnaissance Survey in the Middle Valley Between Podor and Matam. Senegal Agricultural Research Project II.

1987 Farming Systems Research Along the Senegal River Valley. Agricultural Research Alternatives. Report No 3. Senegal Agricultural Research

Gaden, H.
1909 Du Régime des Terres de la Vallée du Sénégal au Fouta Antérieurement à l'Occupation Francaise.

Grayzel, John Aron
1977 The Ecology of Ethnic-Class Identity Among an African Pastoral People: The Doukoloma Fulbe. Ph.D. dissertation - University of Oregon

Guéye, Yousouf
1957 Essai sur les Causes et les Consequences de la Micropropriété au Fouta Toro. Bulletin de l'IFAN série F.XIX, no.1-2 pp.28-42.

Hervouet, Jean-Pierre
1975 Types d'Adaptions Sahelienne? L'Example des Eleveurs de la Mauritanie Centrale Méridionale. Thesis (Université de Rouen)

Hervouet, Jean Pierre
1971 Les Eleveurs Riziculteurs du Moyen Delta du Sénégal: Les Peul et l'Aménagement. Université de Dakar.

Hochet, J.M.
1971 Note Socio-économique Préliminaire à l'Implantation des Périmètres Irriguées Expérimentaux dans la Moyenne Vallée du Sénégal. OERS/FAO.

1972 2ème Partie - Eléments d'Appreciation Sociologique pour l'Introduction et l'Organisation de l'Agriculture Irriguée Intensive. FAO.

Jabara, Cathy Lynn
1979 Agricultural Comparitive Advantage Under Uncertainty: the Case of Senegal. Ph.D. dissertation, Purdue University.

Jacquesson, J.
1960 Etude des Collades du Lao et du Oualo du Gorgol. Ministère de l'Economie Rurale, GRIM.

Jammet, A.
1953 Etude de Milieu et de l'Agriculture Traditionnelle des Populations de la Vallée. Mission d'Aménagement du Sénégal, Division Agronomique. Bulletin No. 20.

1954 Reconnaissance Agricole de la Vallée du Gorgol. MAS.

Johnson, Douglas
1973 The Response of Pastoral Nomads to Drought in the Absence of Outside Intervention. Special Sahelian Office, UN

Kadic, B.
1972 Situation Socio-économiques des Villages de la Zone Pilote du Centre de Formation et de Vulgarisation Agricoles de Kaédi. GRIM/FAO.

Kane, Abdou Salam
1935 Du Régime des Terres Chez les Populations du Fouta Sénégalese.

Kane, Saidou
1986 "Rapport Verbal: mission d'enquête sociologique dans la Plaine du Dirol" Nouakchott, 1 Mars.

Kintz, D.
1982 Pastoralisme, Agro-pastoralisme et Organisation Foncière le cas des Peuls. In Enjeux Fonciers en Afrique Noire. E. le Bris et al, ed. Pp. 212-219. Paris: ORSTOM/Karthla.

Lebloas, Jean
1984 Aménagement Hydor-Agricole de la plaine du Dirol. USAID Mission de Dakar. Mars.

1986 Utilization d'Images Satellite et de Couvertures Aeriennes Video pour l'Evaluation des Superficies Inondées. Dakar: OMVS, USAID.

1987 OMVS is Facing the Management of the two Dams. USAID/Senegal

Lericollais, André and Jean Schmitz
1984 La Calebasse et la Houe. Techniques et Outils des Cultures de Décrue dans la Vallée du Sénégal. Cahiers ORSTOM, Série Sciences Humains 20:427-452.

Lericollais, André
1980 Peuplement et Cultures de Saison Séche dans las Vallée du Sénégal. Introduction. ORSTOM, Notice Explicative No 81, 19p.

Lericollais, Andre, Yveline Diallo, et C.Santoir
1980 Peuplement et Cultures de Saison Séche dans la Vallée du Sénégal. Carte A. Rao-Nord, Ross-Bétio, Keur-Massène, Rosso-Ouest. ORSTOM, Notice Explicative No 81.

1980 Peuplement et Cultures de Saison Séche dans la Vallée de Sénégal. Carte B. Mbane, Tyilé-Boubakar, Rosso-Est, Rkiz. ORSTOM, Notice Explicative No.18.

1980 Peuplement et Cultures de Saison Séche dans la Vallée du Sénégal. Carte C. Ndioum, Bogué-Ouest. ORSTOM, Notice Explicative No.81.

1980 Peuplement et Cultures de Saison Séche dans la Vallée du Sénégal. Carte D. Kaskas, Saldé, Boqué Est, Bababé, Mbagne. ORTSOM, Notice Explicative No.81.

1980 Peuplement et Cultures de Saison Séche dans la Vallée du Sénégal. Carte E. Tilogne, Ourossogui, Kaédi. ORSTOM, Notice Explicative No.81.

1980 Peuplement et Cultures de Saison Séche dans la Vallée du Sénégal. Carte F. Kanel, Sémé, Magama. ORSTOM, Notice Explicative No.8.

Le Roy, Etienne
1974 Etudes sur le Droit de la Terre en Afrique Noire - Modes Négro-africaines de Production et Systèmes d'Exploitation des Sols. Université de Paris.

1974 Modes Négro-africains de Production et Systèmes d'Exploitation des Sols. Université de Paris.

MAS (Mission Aménagement du Sénégal)
1959 Etudes Sociologiques et Economiques. MAS.

1960 Les Hommes du Fouta-Toro. Bulletin No.121.

1961 Un Secteur de la Vallée du Sénégal: La Région de Boghé. Bulletin de MAS #131.

Mathieu, P.
1983 Agriculture Irriguée, Reforme Foncière, Participation Paysanne: Le Cas de la Zone du Lac de Guiers dans la Vallée du Fleuve Sénégal. Article présenté au Colloque International, Centres d'Etudes Juridiques Comparatives.

1983 Stratégies Foncières Paysannes et Agriculture Irriguée dans la Vallée du Fleuve Sénégal. Article pour le Colloque International de Saint Riquier.

1983 De la "Matrise de l'Eau" à la Privatisation de la Terre? De l'Eau dans le Gasoil ou les Enjeux Fonciers et Sociaux de l'Agriculture. Article pour le Colloque du Lac de Guiers.

Minvielle, Jean Paul
1977 La Structure Foncière du Waalo Fuutanké: Les Terres Inondables de la Moyenne Valléé du Sénégal - Région de Matam. ORSTOM.

MISOES
1959 La Démographie du Fouta-Toro (Toucouleurs et Peulhs). Document de Travail pour la Mission Socio-économiques du Fleuve Sénégal.

1959 L'Exploitation Agricole Toucouleur. Document de Travail pour Mission Socio-économique du Fleuve Sénégal.

1961 La Structure Foncière au Fouta Toro. Documents de Travail. St. Louis, Sénégal. MAS.

Mission d'Aménagement du Fleuve Sénégal
n.d. Les Paysans de la Vallée du Sénégal dans la Région de Podor. MAS.

Moussa, Diagana
1983 Evaluation des Cultures de Décrues du Resevoir et des Mouvements des Populations. Rapport pour le Bureau Social Projet Gorgol Noir, Foum-Gleita.

1983 Rapport sur le Récensement pour la Constitution d'un Fichier Villages, - Zone du Périmètre. Rapport pour le Bureau Social, Projet Gorgol Noir, Foum-Gleita.

Ngaide, Tidiane
1986 Socio-economic implications of irrigation systems in Mauritania: the Boghe and Foum-Gleita irrigation projects. Thèse de M.A., Université de Wisconsin-Madison.

Niang, M.
1982 Réflexions sur la Réforme Foncière Sénégalaise de 1964. In Enjeux Fonciers en Afrique Noire. E. le Bris et al, ed. p.219-228. Paris: ORSTOM/Kathala.

Niang, Mamadou
1975 Réflexions sur le Régime des Terres au Sénégal. Bulletin de l'IFAN.

1976 L'Evolution du Statut Juridique, Politique et Social de la Femme en Afrique Traditionelle et Moderne. Bulletin de l'IFAN.

1979 Régime des Terres et Stratégie de Développement Rurale au Sénégal (Un Example de la Résistance du Droit Coutumier Africain). African Perspectives 1:45-51.

OMVS
1980 Etude Socio-économique du Bassin du Fleuve Sénégal - Partie E: Interpretation des Résultats dans le Domaine du Développement Rurale.

1980 Etude Socio-économique du Bassin du Fleuve Sénégal - Partie A: Présentation Général du Bassin du Fleuve.

1980 Etude Socio-économique du Bassin du Fleuve Sénégal, Partie B: Le Milieu Rurale Traditionnel.

1980 Etude Socio-économique du Bassin du Fleuve Sénégal - Partie C: L'Introduction de la Culture Irriguée.

1985 Bassin du Fleuve Sénégal. Aspects Foncières et Organisationnels dans le Développement de la Culture Irriguée. Direction du Développment et de la Coordination, OMVS.

OMVS, Haut Commissariat
1985 Bassin du Fleuve Sénégal. Aspects Fonciers et Organisationnels dans le Développement de la Culture Irriguée. OMVS, Document de Travail.

Park, T.
1987 Land Tenure Study of the Dirol Plain. Land Tenure Center, University of Wisconsin-Madison. (English and French)

1985 Mauritania. Chapter in Country Profiles of Land Tenure in Africa 1985. Land Tenure Center, University of Wisconsin - Madison, pp 107-114.

1986 Preliminary Land Tenure Study of the Dirol Plain. Land Tenure Center, University of Wisconsin-Madison. (English and French)

1986 Mauritania: Senegal River Valley. Chapter in Land Tenure Issues in River Basin Development in Sub-Saharan Africa. edited by Peter Bloch, ed. Pp. 52-73. University of Wisconsin: Land Tenure Center.

Pelcot, Monique
1961 Un secteur de la vallée du Sénégal: la région de Boghé; Etude de Géographie régionale, Tome 2. Les Facteurs historiques et Humains. St. Louis, Sénégal MAS Bull. 131, Oct. pp.60-163.

Pollet, Eric and Grance Winter
1968 L'Organisation Sociale du Travail Agricole des Soninké (Dyahunu, Mali). Cahiers d'Etudes Africaines 32:509-534.

Ramond, C.
1970 Analyse des Rendements Parcellaires en Milieu Paysan: Résultats Obtenus Pendant le Campagne 1970. Rapport d'IRAT.

Reboul, C.
1972 Structures Agraires et Problèmes du Développement au Sénégal. Rapport pour l'Institut National de la Recherche Agronomique.

1974 Structures Agraires et Problèmes de Développement au Sénégal Nations Unis.

Riddell, James C.
1981 Accelerated Impact Project in Land Tenure in Mauritania. AIP Technical Background Draft.

Riddell, James, ed.
1985 Mali. Country Profiles of Land Tenure in Africa 1985. Land Tenure Center, Université de Wisconsin - Madison, pp 102-106.

Rivière, Claude
1973 Dynamique des Systèmes Fonciers et Inégalités Sociales: le Cas Guinéen. Cahiers Internationaux de Sociologie 54:61-94.

1974 Dynamique de la Stratification Sociale chez les Peuls de Guinea. Anthropos 69:361-400.

Robert, Dieter
1985 Compendium sur l'Abolition de l'Esclavage et la Réforme Foncière en Mauritanie. Nouvelles Etudes et Notes. Ministère Mauritanien du Plan, Nouakchott.

1985 Compendium de Rapports et d'Articles au Sujet de l'Esclavage et des Haratines en République Islamique de Mauritanie. Etudes et Notes Choisies Préparées pour le Ministère du Plan et de l'Aménagement du Territoire, GRIM.

Robineau & Woillet
1964 Etude Socio-Economique de la Plaine de Boghé. T.I & II. Nouakchott, RIM MinistEre d'Economie Rural, Service de Génie Rural.

Robinson, David, Philip Curtin and James Johnson
1972 A Tentative Chronology of Futa Toro From the Sixteenth Through the Nineteeenth Centuries. Cahiers d'Etudes Africaines 48:555-592.

Rochegude, Alain
1977 Tendances Récentes du Droit de la Terre en République du Mali. Revue Internationale de Droit Comparé 29:721-746.

Roger, Glenn Roy
1986 The Theory of Output-income Multipliers With Consumption Linkages: an Application to Mauritania. Ph.D. Thesis (Agricultural Economics), University of Wisconsin-Madison.

SAED
n.d. Demande de Financement au Fonds Européen de Développement - Micro Réalisation Petits Périmètres Moyenne Vallée (Matam). SAED Document.

Santoir, Christian
1983 Raison Pastorale et Politique de Développement: Les Peuls Sénégalaise Face aux Aménagements. ORSTOM Working Paper.

Schmitz, J.
1980 Sedentary Peulhs of the Senegal Valley. Paper Presented for the Workshop on Sahelian Agriculture, Purdue University.

1983 Un Politologue Chez les Marabouts. Cahiers d'Etudes Africaines 91:329-352.

1985 L'Etat Géomètre: les Anciens Territoires Agro-pastoraux (Leydi) des Peuls du Fuuta Toro (Sénégal) et du Masina (Mali). Symposium du Centre d'Etudes Africaines, l'Etat Contemporain en Afrique, Paris.

1986 Project d'Irrigation de Kaskas et Situation des Périmètres Villageois de la Zone. SAED/ORSTOM.

Schwartz, Ron
n.d. Land Tenure and Irrigated Agriculture in the Senegal River Basin. OMVS/IDP Social Analysis.

Scudder, T., C. Howe and M. Horowitz
1986 Senegal River Basin Activities Report for FY 86. SARSA, Institute for Development Anthropology for USAID/Dakar.

Seck, Sidi
1978 Conceptions et Aménagements Techniques des Cuvettes OAV. In Experiences d'Aménagements Hydro-agricoles dans la MVS. Sidi Seck, ed. pp. 7-99. Dakar: ORSTOM.

1985 Bassin du Fleuve Sénégal: Aspects Fonciers et Organisationnels dans le Développement de la Culture Irriguée. St. Louis: Haut Commissariat de l'O.M.V.S. Mars.

Soisson
1959 Etude sur le Chemama du Trarza, de Dagana à Rosso. MAS. Division Socio-Economique. Bulletin No.124 juin.

Université de Paris - Laboratoire d'Anthropologie Juridique
1971 Documents de Recherche 1) Ethnologie Juridique de la Parenté, du Mariage et de la Terre 2) Note Introductive aux Problemes Généraux.

University of Arizona
1986 Technical Proposal: Dirol Plain Studies Project. Proposal Submitted to USAID.

Vidal, M.
1924 Rapport sur l'Etude de la Tenure des Terres Indigènes au Fouta dans la Vallée du Sénégal. MAS.

1935 Etude sur la Tenure des Terres Indigènes au Fouta.

Vincent, Linden
1984 Prospects for Irrigation Development in Hydrological Environments of Africa. Water Management Synthesis II Project, Utah State University, Logan Utah.

Wane, Mamadou
1980 Reflexions sur le droit de la terre toucouleur. Bulletin de l'IFAN, T42, sér.B, no.1.

War on Want
1979 Projet de Développement Agricole du Guidamaka. Rapport d'Activités et de Recherches. War on Want, U.K. and Ministère du Développement Rural, GRIM.

Weigel, J.-Y.
1982 Organisation Foncière et Opération de Développement. Le Cas Soninké du Sénégal. Dans Enjeux Fonciers en Afrique Noire. E.le Bris et al, eds. p.315-25. Paris: ORSTOM/Kathala.