

POLITICAL ECOLOGY IN THE UPPER NILE:
THE TWENTIETH CENTURY EXPANSION OF THE
PASTORAL 'COMMON ECONOMY'

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The environment of the clay plains of the Upper Nile region in the Sudan is peculiarly harsh, imposing considerable restraints on its inhabitants, who almost all survive through mixed cultivation and herding. The combination of erratic flooding, 'unreliable rainfall and uncompromising soil' has forced the development of a mainly pastoral economy, which has been well established throughout the region for at least a millennium.¹ The standard ethnographies and ecological studies of the region have all emphasized the interdependence of cultivation and animal husbandry within local economies, and the variations in local environments which produce different balances of agro-pastoral activity.² What emerges even more clearly from an historical study of the region is that the economies of the various ethnic and political groups contained within it are linked together and form a wider regional system which enables each to survive the limitations of its specific area. They have been linked through a variety of networks of exchange; some based on kinship obligations, some on direct trade. Through these networks the peoples of the region have at times been able to gain regular access to the resources of areas at some distance from themselves, crossing political and ethnic boundaries to do so. Survival of peoples as well as individuals depends on maintaining such access in a number of ways. It is therefore not possible to discuss the local economies of the Nuer without reference to the local economies of the Dinka, nor is it possible to understand the survival of the Dinka without reference to their economic relations with the Nuer.³

The scholarly image and understanding of the Nilotic pastoralists of the Sudan is based primarily on Evans-Pritchard's study of the Nuer, which was produced from fieldwork undertaken between 1930 and 1936. His work has become the point of reference for all comparative studies of pastoralists within

¹ Mefit-Babtie Srl., *Development Studies in the Jonglei Canal Area. Technical Assistance Contract for Range Ecology Survey, Livestock Investigations and Water Supply. Final Report*, vol. 1 (Glasgow/Khartoum/Rome, 1983) [Mefit-Babtie 1983], 34.

² E. E. Evans-Pritchard, *The Nuer* (Oxford, 1940); Jonglei Investigation Team [JIT], *The Equatorial Nile Project and its Effects in the Anglo-Egyptian Sudan*, 4 vols (Khartoum, 1954) [JIT 1954]; Mefit-Babtie 1983, 9 vols; P. Howell, M. Lock & S. Cobb (eds), *The Jonglei Canal: Impact and Opportunity* (Cambridge, 1988).

³ D. H. Johnson, 'On the Nilotic frontier: Imperial Ethiopia in the southern Sudan, 1898-1936', in D. Donham and W. James (eds), *The Southern Marches of Imperial Ethiopia: Essays in History and Social Anthropology* (Cambridge, 1986), 219-45; 'The historical approach to the study of societies and their environment in the eastern upper Nile plains', *Cahiers d'études Africaines*, xxvi, 101-102 (1986), 131-44; 'Adaptation to floods in the Jonglei area: an historical analysis', in D. H. Johnson and D. M. Anderson (eds), *The Ecology of Survival: Case Studies from Northeast African History* (London/Boulder CO, 1988), 173-92; ch. 9, 'Environment and the history of the Jonglei area', in Howell, Lock and Cobb, *The Jonglei Canal*.

the region – and rightly so. It is important, therefore, to test some of his conclusions through an analysis of historical data, comparing the time in which he worked with both earlier and later periods in this century.

Evans-Pritchard emphasized the precariousness of agriculture among the Nuer, pointing out that each year he visited them there was a narrow margin between sufficiency and famine. The ecology required a mixed economy in horticulture, fishing and pastoralism, but with the greatest emphasis placed on pastoralism. Prior to the introduction of rinderpest in the nineteenth century, he proposed, pastoralism had been a more viable activity, and the Nuer were in the habit of making good their stock losses through raiding the Dinka. Seasonal scarcity and recurrent famines produced a high interdependence between members of the same village and cattle camp, and the constant threat of scarcity encouraged a ‘common economy’ of ‘mutual assistance and common consumption of food’ within these groups. While both the nature of pastoralism itself and the erratic distribution of water in the region required establishing economic and political relations beyond the village, the low technology of the Nuer, their meagre food supply and scanty trade restricted social relations: ‘social ties are narrowed, as it were, and the people of village and camp are drawn closer together, in a moral sense, for they are in consequence highly interdependent and their activities tend to be joint undertakings’.⁴

Evans-Pritchard’s identification of a common economy based on the mutual sharing of food supplies is extremely important, not just for understanding relations between Nuer communities, but for understanding the relations which exist between all the Nilotic communities (Shilluk, Dinka, Nuer and Anuak) living in the uncertain environment of the Upper Nile. Yet his assertion that it is precisely this mutual assistance which narrows social ties not only limits the operation of such a common economy specifically to the Nuer, but reinforces his presentation of the Nuer as isolated from their neighbours through a combination of ecology and political hostility. It is our contention here that Evans-Pritchard’s conclusions refer mainly to his observation of a particular configuration of flooding and epidemics, whose destructive effects were exacerbated by the nature of colonial intervention at the time, affecting especially patterns of settlement and land use. We will compare this period (1929–36) with other periods of extreme flooding, one immediately prior to colonial subjugation (1916–18) and one following the end of colonial rule (1961 and after). By analysing the response of the Gaawar and Lou Nuer, their Ngok, Ghol and Nyareweng Dinka neighbours, and the Luac, Thoi and Rut Dinka who live interspersed among them, we will show how some of the social interdependence which food scarcity promoted within Nuer communities can also be seen to operate at a wider level. In addition to that we will suggest that the historical pattern of flooding in the region has been a significant factor in the expansion of the Nilotic common economy throughout the twentieth century.⁵

⁴ Evans-Pritchard, *The Nuer*, 81–93.

⁵ The data for this article were derived mainly from sources found in the Upper Nile region: interviews collected in 1975–6 and 1981–2, and local government documents collected and deposited in Juba in 1981–3 when I was employed as Assistant Director for Archives in the Regional Ministry of Culture and Information in Juba. An earlier draft of this paper was presented at a workshop on African pastoralism, sponsored by the

*Topography and Hydrology: Patterns in Flooding, Herding and Planting*⁶

The Upper Nile plains are intersected by two main tributaries of the White Nile: the Bahr al-Jabal, which is fed by the East African Lakes; and the Sobat, which draws its water from the Ethiopian plateau and the Pibor river system. Because of this there are a number of independent causes of flooding. Ethiopian rains, East African rains, and local rains all produce differences in the Bahr al-Jabal and Sobat flood patterns. Thus there are local variations in flooding and susceptibility to economic disruption and famine. There is no strict ethnic or political equation with geography as the Nuer and Dinka, especially, each occupy a number of areas which vary in vulnerability to floods and have different productive capacities. This is the ecological basis for wider regional ties.⁷

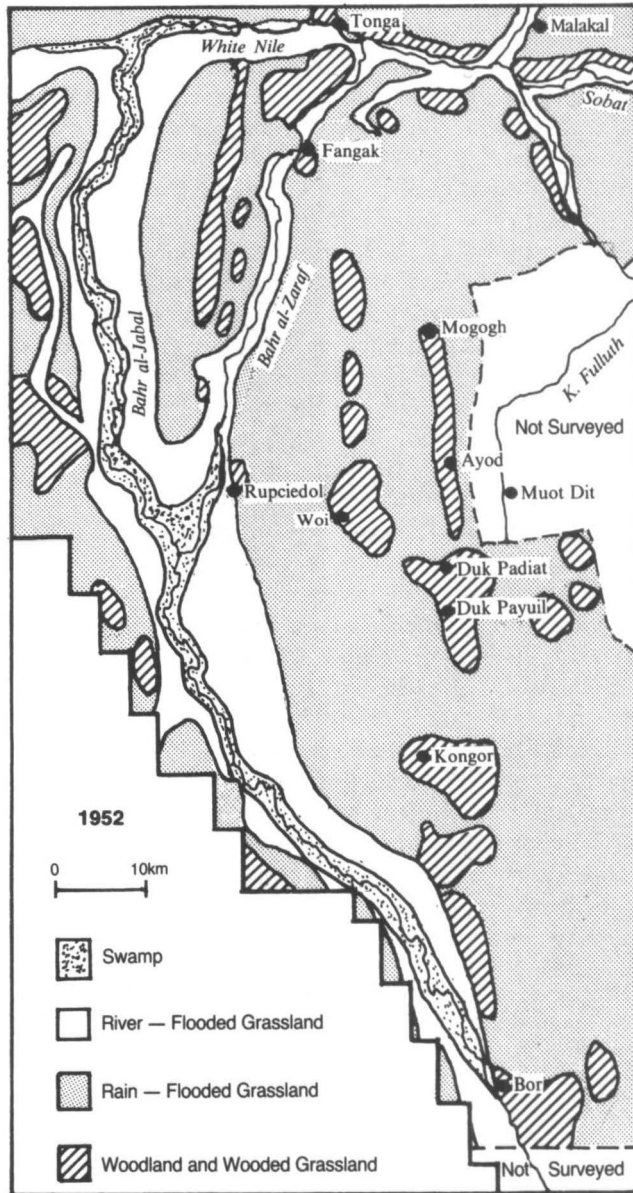
The region's weather alternates between a wet season (April–November) when the rivers rise, the rains fall and the land is flooded, and a dry season (December–April) when the rivers drop, the rains cease and the floods recede. Most of the soils are clay, virtually impervious to water at the height of the rains, but there are some outcrops of sandier soil, slightly elevated above the plains, where woodland can be found, permanent villages built and cultivation undertaken. The combination of soil types and slight elevation produce four main vegetation areas: permanent swamp (mostly along the Bahr al-Jabal and Bahr al-Zaraf), river-flooded grasslands (the dry season pastures, or *toic*, along the rivers), rain-flooded grasslands, and relatively flood-free land which supports woodlands, grasslands or cultivation (see Map 1a and Map 1b).

The transhumant life of the Nilotic pastoralists is so well known that it need only be summarized here. Two crops of sorghum (three among some Nuer) are sown during the rains: once at the beginning in fields close to the permanent villages along the elevated ridges, and once at the end as the water recedes, exposing lower-lying moist soil. During the dry season cattle are moved away from the villages in stages, following the water as it dries up and exposes new pastures, until they come to rest on the *toic* of the riverine marshes. With the

C.N.R.S., in Paris on 26–7 August 1985. Revisions are based on workshop discussions and comments by the workshop co-organizer, Dr John Galaty of McGill University. I am also grateful to Dr P. P. Howell for his extensive comments on the earlier draft, and for additional information he provided. I do not wish here to become involved in the complexities of the Nuer–Dinka debate in anthropology. The interests of the principal participants in that debate have been mainly theoretical. None have been able to familiarize themselves with a comprehensive range of historical sources (both oral and documentary). Whatever their contribution to the refinement of anthropological discourse, all have inevitably misunderstood, and unintentionally misrepresented, the history and ecology of the Upper Nile region; therefore, they cannot be reliably used as a starting point for an historical study of ecological change. I feel that no useful purpose would be served by charting either my disagreements or agreements with the points raised by previous authors and have confined my use of secondary materials to those based on fieldwork or local historical research.

⁶ Except where specifically noted this section is based on: J. Winder, 'Notes & queries', 1946–7, Sudan Archive, University of Durham (SAD) 541/9; JIT, *Report on the Jonglei Scheme. Third Interim Report* (Khartoum, 1948) [JIT 1948]; JIT 1954; and Howell, Lock and Cobb, *The Jonglei Canal*.

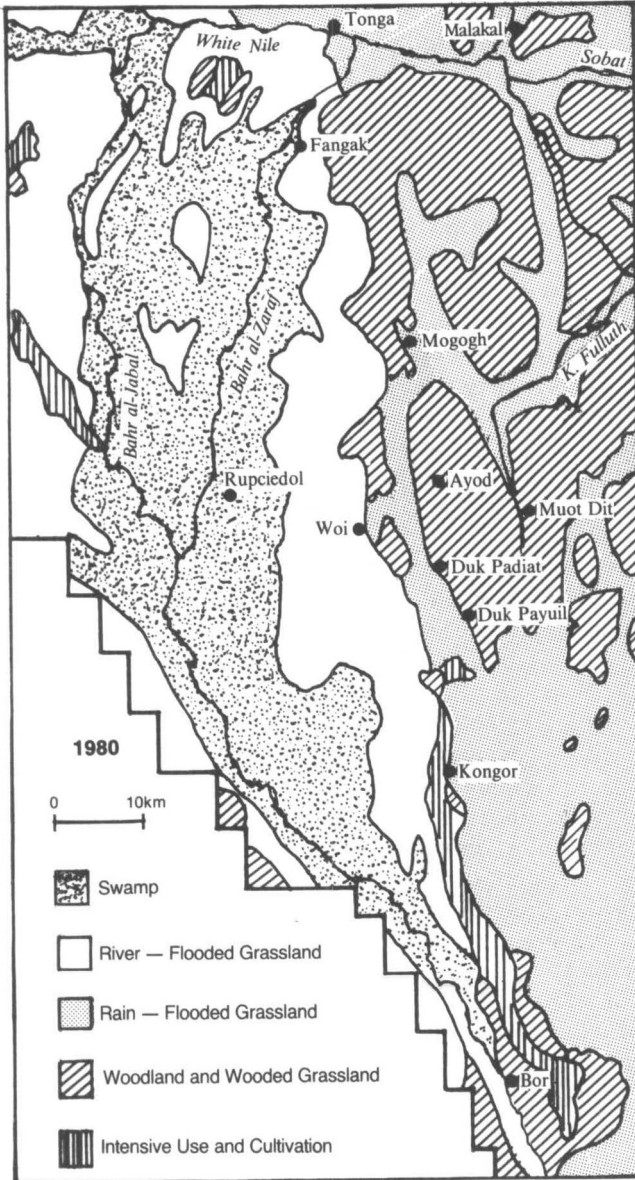
⁷ D. H. Johnson: 'The historical approach to the study of societies and their environment'; 'Adaptation to floods in the Jonglei area'; and Howell, Lock and Cobb, *The Jonglei Canal*, ch. 9.



Map 1a. Main vegetation areas, 1952 (based on Mefit-Babtie 1983).

onset of the rains there is a more rapid retreat to the ridges as the low-lying countryside quickly fills with water. The transhumant activities in both seasons are therefore crucially influenced by the location and extent of water.

The extent of wet-season flooding and the distribution of dry-season water depend on three factors. (1) the Bahr al-Jabal is the source of most of the river-flooded areas; the level of river-flooding in any year depends more on the inflow from the East African lakes than on local rainfall, but it is also affected by the course of local channels through the swamp. In the past, shifts



Map 1b. Main vegetation areas, 1980 (based on Mefit-Babtie 1983).

in blockages within the swamp have altered the patterns of local flooding (i.e. blockages along the lower Bahr al-Jabal have perhaps re-channelled water through the Bahr al-Zaraf).⁸ (2) The banks of the Sobat are both steep and high enough to prevent much direct overflow from the river to the surrounding plains, but when in flood the Sobat does back up into the major *khors* (seasonal watercourses), which also collect water from local precipitation. A high Sobat

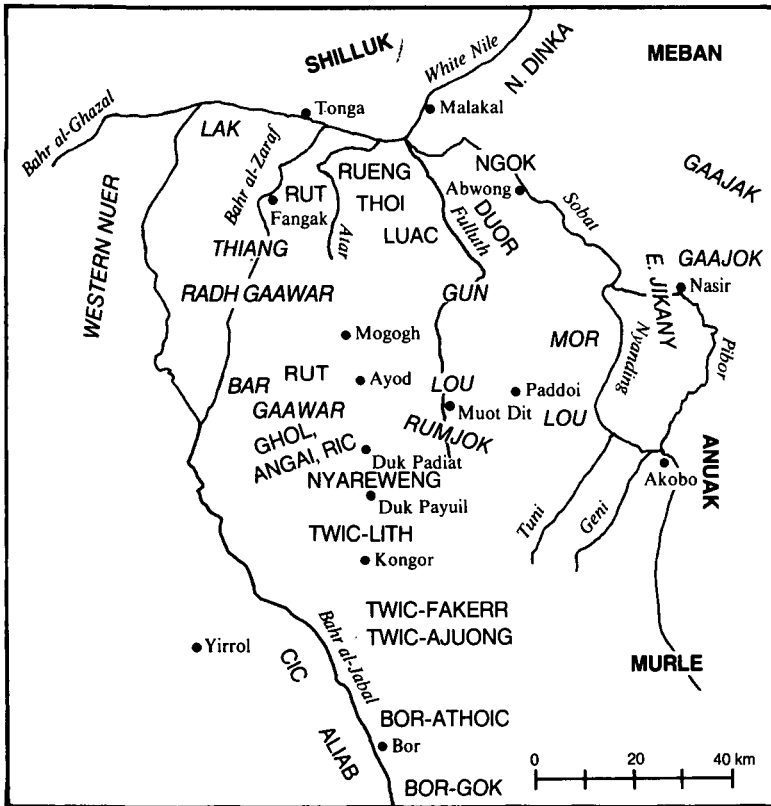
⁸ Johnson, 'Adaptation to floods in the Jonglei area', 183.

can keep the *khors* filled long into the dry season; thus providing a source of inland water. (3) The area affected by river-flood is relatively small and is most important for the grazing and water it offers in the late dry season. Most of the land surface of the Upper Nile plains is subject to rain-flooding, when rain seeps only very slowly through the heavy clay soil, forming large pools of standing water on top. In most years these dry up rapidly during the dry season. In some years heavy rains can combine with an overflow from the Pibor, causing a 'creeping flow', a slowly flowing flood up to two feet or more in depth, moving from south to north along the eastern plains, adding to the standing water already created by the local rains.

It is the timing and level of the different types of floods which influence agriculture and pastoral schedules and the selection of areas to be exploited in any given year. Heavy late rains and high 'creeping flow' can destroy the second crop which is planted on lower land, as well as keep early pastures under water long after grazing around the villages has been exhausted. A high minimum flow of the Bahr al-Jabal (i.e. a high level when the river is at its lowest point during the depth of the dry season) can mean that riverine pastures remain under water and inaccessible throughout most of the dry season. For this reason those living closest to the river prefer drought to flood years, as in the former they still have access to (reduced) pasture and water. The lack of inland water becomes a particular problem the further east one goes from the Bahr al-Jabal. It is for this reason that the inland *khors* become extremely important in years of sustained high Sobat levels, allowing groups to congregate around the pools in the *khors* rather than go to the rivers. In some years high rivers and heavy rains combine to produce widespread devastation and dislocation, but only in exceptional circumstances have there been long-term alterations to flooding patterns and the availability of water.

The pattern of flooding limits the reliability of cultivation areas. The most stable cultivations are found along those parts of the Sobat and White Nile where flooding is most restricted, due to a combination of deep banks and high ridges. These areas include the Shilluk and the northern Dinka along the White Nile; the land between the mouths of the Khors Atar and Fulluth where the Rueng, Thoi and Luac Dinka are now settled; both banks of the lower Sobat around Abwong, occupied by the Ngok Dinka; and the area immediately around and to the north of present-day Nasir, occupied by the Gaajok section of the Eastern Jikany Nuer. In the far north-east corner of the Upper Nile plains, separated from the White Nile by a broad stretch of waterless country, the Meban very frequently produce abundant grain, which is just as frequently exported out of their country by Arab, Dinka and Nuer neighbours in such quantities as to cause repeated hardship.

South of the Sobat and White Nile the pockets of cultivable land become smaller, more scattered, and more subject to flooding. The Duk ridge – a series of sandy knolls now occupied by the Gaawar Nuer from Mogogh to south of Ayod, the Ghol Dinka at Duk Padiat, and the Nyareweng Dinka at Duk Payuil – was frequently productive throughout the first half of the century, as were the Bar Gaawar settlements around Woi. By far the most productive land south of the Duk ridge was in the area of Kongor among the Twic-Lith, the largest division of the Twic Dinka. The area of Kongor is dark soil, but it lies in a depression, subject to much flooding. The area of permanent habitations and cultivation is in fact 'an island won from the marsh and protected by banks



Map 2. Settlement in the Upper Nile region.

round all the villages' offering some security from the seasonal floods.⁹ These low mud embankments are a distinctive feature of Twic Dinka villages, not found to the same extent elsewhere in the region.

Areas of relatively stable productivity are situated next to areas of chronic shortages. The southern Shilluk, living on over-cultivated and narrow ridges around Tonga, are frequently subject to food shortages and sometimes have to rely on the Lak Nuer, who are not constant over-producers and have other demands upon them from the Gaawar and Thiang. The Lou Nuer are subject to rain flooding but also to extremes of aridity throughout most of their territory during the dry season, which can force them to rely on grain from their Eastern Jikany, Gaawar and Dinka neighbours. The Twic-Lith of Kongor have frequently been productive, but to the south the smaller Twic-Fakerr and Twic-Ajuong sections and all of the Bor Dinka live in areas chronically vulnerable to rain and river flooding which historically have had low productivity. 'Sufficiency', then, is relative. An area need not produce an absolute surplus enough for its own needs with some left over, to be called on by others. Demands will be made when one area produces more grain than another, whether the amount is enough to feed the local population or not. By the

⁹ R. T. Johnston, 'Handing over report on Bor & Duk district, 13/3/1934', National Records Office, Khartoum (NRO) UNP 1/51/3 & SAD G/S 586.

middle of this century the Upper Nile plains as a whole probably produced enough grain for its own needs.¹⁰ It was the erratic distribution of grain which caused local famines. We will see below just how important access to the main growing areas of the region has been, not only for those habitually short of grain, but for those who can normally provide for themselves.

Access to grazing and water has been no less problematic. Good grazing is dependent as much on sufficient drinking water as on abundant nutritious grass. Some areas of reasonable cultivable land have only limited pastures, such as the northern end of the Zaraf island (Lak Nuer), the area between the Khors Atar and Fulluth, or around Abwong (Dinka). Peoples living in these areas must seek access to the more extensive river-flooded pastures along the east banks of the Bahr al-Jabal and the Bahr al-Zaraf. The east bank of the upper Zaraf is particularly sought after, especially by peoples living along the Duk ridge and lower Zeraf valley. The Dinka living south of the Duk ridge go mainly to the Bahr al-Jabal.

Inland grazing along the eastern plains presents other problems because of the uneven distribution of water. The Lou Nuer country between the Khor Fulluth and Pibor river contains some of the best grazing land in the region, especially around Paddoi, Muot Dit, the upper Fulluth, and along Khor Geni where water can usually be found. The eastern plains are not affected by the height of the Jabal floods, where a sustained high river can keep riverine pastures under water even during the dry season. A high Sobat, on the other hand, can keep the *khors* backed up, making it unnecessary for people to move their herds to the river. There are, however, large tracts of good grasslands which usually have insufficient water in the dry season and which cannot be used. These are found especially to the east of the Ghol, Nyareweng, Twic and Bor Dinka. They can be used in exceptionally wet years, and were so used during parts of each of the three periods under study here. However, a high Bahr al-Jabal, which makes the riverine pastures inaccessible, will not necessarily coincide with high rainfall which might make these eastern lands usable.

In any year the variations and combinations of river and rainfall levels produce a changing and unstable mosaic of accessible pastures, available water and safe cultivations. Conditions can change to such an extent that successive years present different patterns of lands available for use. The economic viability of local communities is determined not so much by occupation and possession of land and water resources, as by regular access to alternative resources. By looking at the three periods of most extreme variations in flooding this century we will be able to see just what strategies pastoralists employed to maintain access to these alternatives.

*1929-36 : Natural Catastrophes and Political Subjugation*¹¹

The political independence of the Nuer came to an end in the 1920s, following a series of military campaigns intended to bring them under closer adminis-

¹⁰ JIT 1954, vol. 1, 357.

¹¹ Except where specifically cited this section is based mainly on materials deposited in the Southern Records Office, Juba (SRO). These are: the Upper Nile Province Monthly Diaries and the Bor District Monthly Reports in files BD 57.C.1 and BD 57.D.1; the Nuer Settlement and Nuer-Dinka Intertribal files UNP 66.B.10, UNP 66.B.11, BD

trative control. These campaigns were concluded in 1929 by a new policy of tribal segregation, whereby security was to be improved through the separation of the Nuer from the Dinka in the central Upper Nile area.¹² Evans-Pritchard first visited the Nuer when these policies were being implemented, and he last visited them only shortly before the policies were reversed. His field observations, therefore, reflected the special circumstances of this early period of subjugation.

The settlement patterns and seasonal movements of the Gaawar and Lou were severely restricted by government actions throughout 1929–36. Large numbers of Dinka formerly settled among the Gaawar or along the Khor Fulluth near the Lou were forcibly moved south to become part of new political amalgamations within the Ghol and Nyareweng Dinka. A 'No-Man's Land' was fixed with the Gaawar and Lou on one side and the Ghol and Nyareweng on the other. Resettlement, repatriation and restrictions of movement broke, for the time being, ties between Nuer and Dinka groups which had been in the making for some three-quarters of a century.¹³ This coincided with and contributed to a massive regional rinderpest epidemic and outbreaks of other cattle diseases. Further dislocation and hardship was caused by a series of floods and a severe locust plague. The strain placed on the networks of the common economy in the region simultaneously by the government and the environment, and the effect this had on Evans-Pritchard's observations, will be described in detail in this section.

At the beginning of the 1928–9 dry season (November–April) both the Gaawar and Lou were ordered to evacuate their southernmost territory and concentrate in areas well away from the border of the new No-Man's Land. The Mor Lou concentrated on the Sobat, the Gun Lou inland around Muot Dit, and the Bar Gaawar on the northern end of the Duk ridge and in the already crowded and precariously settled woodland of Rupciedol. Armed government patrols traversed most parts of Nuer country throughout 1929 enforcing this order. A small band of Angai Dinka living among the Gaawar had already been relocated to Duk Payuil, and in the 1929–30 dry season the Luac Dinka living along the Khor Fulluth were expelled from their homes and sent south.

The Bahr al-Jabal was low that year, the rains unexceptional if uneven, and crops among the Lou and the Dinka of northern Bor District (who were soon

66.B.1/3 and BD 66.B.3. A number of taped interviews in the 'Ecology and History of Jonglei Province' (EHJP) series have also been used. These interviews were undertaken by Philip Diu Deng and myself in April 1981 and May 1982, financed by a Fulbright-Hayes senior research grant. Those used in this paper are: EHJP-1, Rut, Thoi and Luac Dinka elders; EHJP-2, Lueth Ayong Yor & Malok Lam (Luac Dinka); EHJP-3, Luac Dinka elders; EHJP-4, Ruot Rom, Cuol Macar & Gai Thung (Gaawar Nuer); EHJP-5, Ruot Diu (Bar Gaawar); EHJP-6, Cuol Cany Bul, Pok Tuot & Jal Wang (Gaawar Nuer); EHJP-7 and 8, Kulang Majok (Bar Gaawar); EHJP-11, Family of Moinkuer Mabur (Ghol Dinka); EHJP-12, Twic Dinka elders. The table in JIT 1954, vol. 1, 239 has also been used.

¹² D. H. Johnson: 'Colonial policy and prophets: the 'Nuer Settlement', 1929–30', *J. Anthropological Society of Oxford*, x (1979), 1–20; 'History and prophecy among the Nuer of the southern Sudan', Ph.D. dissertation, University of California, Los Angeles (1980); 'Tribal boundaries and border wars: Nuer-Dinka relations in the Sobat and Zaraf valleys c. 1860–1976', *J. Afr. Hist.*, xxiii (1982), 183–201.

¹³ Johnson, 'Tribal boundaries and border wars', 198–201.

to receive an influx of other Dinka) were sufficient. But by the end of 1929 rinderpest broke out among the Gaawar and the Dinka of the Duk Padiat/Duk Payuil area. It spread throughout the Upper Nile Province until July 1931, reducing herds by up to 50 per cent in some districts. The Dinka of Bor District (from Duk Padiat to Bor) lost nearly 25,000 head of cattle out of an estimated total cattle population of 40-67,000. The Nuer, forcibly concentrated as they were by government order, were not able to segregate and disperse their herds as they usually did when an epidemic struck. In fact the Gaawar, among whom the disease first appeared, were reported to be segregating their herds only towards the end of the epidemic. Some Dinka were forced by government orders to move into, rather than away from, the heart of the epidemic. The Luac Dinka arrived at one of the hardest-hit areas in time to lose most of their cattle.

There was a resurgence of rinderpest at Duk Padiat in mid-1932 from infected Gaawar cattle, extracted by the government and paid to the Dinka in compensation for earlier Gaawar raids. Further outbreaks occurred in 1934 among the Bor, Twic, Nyareweng and Ghol Dinka, and the Gaajok Nuer on the mouth of the Nyanding. In 1935-6 sections of the Bor, Nyareweng, Twic-Fakerr, southern Shilluk, western Nuer and Aliab Dinka were hit, and particularly heavy losses occurred among the Eastern Jikany. There were fewer losses over-all than in 1929-31, and the Gaawar and Lou, who suffered greatly in the earlier epidemic, were unaffected. But the net effect of the outbreaks of 1929-31, 1932, 1934 and 1935-6 was that nearly every herd in the region was struck at one time or another by rinderpest during this eight-year period.

Other cattle diseases also spread at this time. Contagious Bovine Pleuropneumonia (CBPP) increased partly because of the wetter conditions caused by widespread flooding during 1932-4. Trypanosomiasis also spread as game, fleeing the floods, came into closer contact with cattle.¹⁴ Herds in Bor District suffered from CBPP throughout 1932, and it developed in the rest of the province in 1933, following the 1932 flood. The southern Lou in particular seemed to become infected in 1933 and 1935 after outbreaks among the Gaawar and in Bor District. Incoming Luac Dinka cattle brought it to Duk Padiat in 1932 and as with rinderpest, infected Gaawar compensation cattle sent to the Dinka brought more CBPP in 1931. The Ghol and Nyareweng Dinka thus experienced an influx of diseased cattle in 1930-2 which they otherwise would have been spared.

Crop production was uneven throughout 1930-2 and became particularly parlous with the onset of the 1932-4 floods. The rains of 1930 were exceptionally light and the harvest correspondingly poor, with the Ghol, Nyareweng and Bor Dinka all facing famine. Only the Twic-Lith around Kongor reported average crops. The land on which the Luac and Duor Dinka had formerly settled was good cultivable land. On their departure the Ngok Dinka immediately occupied it, but the total area under cultivation along the Khor Fulluth dropped with the loss of Luac labour. This reduced the grain reserve on which the Lou and Gaawar normally drew in times of shortage. Locusts appeared in Nasir and Kongor just as the 1931 crop was being sown. They spread south and south-west and infested the entire province for the rest

¹⁴ Johnston, 'Handing over report on Bor & Duk district', NRO UNP 1/51/3 and SAD G/S 586.

of the year. Bor District and Yirrol, across the river (on whom the Bor frequently relied for grain), were hardest hit.

The difficulties of 1931 were further aggravated by the variability of river and rain. Early 1931 continued exceptionally dry and both the southern Shilluk and their Lak Nuer neighbours across the river suffered severe reductions in already limited pastures. The rains were delayed until the first week of July and then merged with an exceptionally high Bahr al-Jabal flood at the end of the year, damaging many crops throughout Bor District. The Bor and Ghol Dinka were saved from starvation in 1931 only by the rinderpest epidemic which, while depleting their herds, gave them a temporary excess of meat from dead animals.

There was enough grain harvested in 1931 in Bor District, especially around Kongor, to feed large numbers of people. The Twic-Lith supplied grain to some Nuer, the Ghol and the Bor-Gok as late as July. After that the Bor-Gok turned to the Aliab Dinka of Yirrol. But the Ngok Dinka and the Jikany Nuer on the Sobat, and the Mor Lou east of Paddoi all lost substantial amounts of early maize and the first sorghum crop to locusts. The southern Shilluk, already in a precarious state at the beginning of the year, were afflicted by their worst famine in living memory. They sold off large numbers of cattle to buy grain. The Nuer, who had lost cattle to rinderpest, came to Malakal to buy them.

The high floods which occurred in 1932-4, reaching their peak in the 1933-4 wet season, resulted from a combination of high rivers and heavy late rains. The destructiveness of their impact varied. In late 1932 crops around Akobo on the Pibor were flooded out; only a restricted area around the two Duks in Bor District remained dry; and the triangle between Khor Atar, the Zaraf mouth and Fangak was submerged. Late rains and almost unprecedented floods along the Zaraf the next year destroyed the crops of the Lak, Thiang and southern Shilluk and forced the Gaawar out of most of their settlements. Despite a lower Bahr al-Jabal at the end of 1934 the Gaawar and Thiang again suffered high floods, and even the Sobat flooded cultivation north of Nasir. Throughout these repeated assaults it was the newly arrived immigrants who suffered the most: the Gaawar who had been evicted from their homes along the Duk ridge, and the Luac Dinka settled in the now flooded regions outside Duks Padiat and Payuil.

Late rains and sustained high floods in 1932-4 meant that not only were crops destroyed but harvests were delayed. The backing of the *khors* throughout the region compensated for this to some extent by opening up some normally arid lands for both cultivation and grazing, as well as bringing fish further inland. For a while this altered, and in some cases reversed, the patterns of exchanges between communities within the region.

Grain was harvested late in January 1932 in many parts of the region because late receding floods in 1932 had delayed the planting of the second crop. This offered some relief in a normally hungry time. The Bor Dinka began to run out of grain by April but were supplied from the Duk ridge. The riverine pastures of the Bahr al-Jabal continued to be submerged by the high river, but the extreme wetness of the year meant that the Bor-Gok and Bor-Athoic were able to move to normally dry lands far to the east of Bor where they not only grazed their animals but cultivated some crops. Late rains further north caused considerable hunger among the Lou and Zaraf Nuer when planting was

delayed. The first harvest of the Ghol Dinka, on the other hand, was plentiful and neighbouring Nuer were able to get some grain from Duk Padiat. At the end of 1933 heavy rains and almost unprecedented high floods washed away the crops of the Gaawar, Lak, Thiang and southern Shilluk. This flood is remembered as *Nyoc Thoini*, the flood of the heglig nuts, because the Zaraf Nuer were reduced to eating heglig fruit when their crops were destroyed. But even in the flood area there were variable effects. One patch of the northern Lak remained fairly dry. Around Fangak the crops were spared by the flood, while the cattle starved when their pastures were covered by water.

The grain-import figures for 1933-4 indicate that these two years were particularly hungry ones for the Zaraf Nuer and southern Shilluk, while local grain supplies generally improved for the Dinka of Bor District. At the end of 1933 the northern Dinka, Lou and Eastern Jikany all had good harvests, while the Ngok were suffering from hunger and had to go to the Lou and Jikany for food, the reverse of previous patterns. Most of the grain harvested on the Sobat seems to have been consumed locally in 1933, and more grain had to be imported by the government, again the reverse of recent trends where there had been an annual export of grain in 1930-2 and again in 1934-5.¹⁵ The ample supplies of the northern Dinka brought many Nuer, and even Meban, to the White Nile well into the 1934 dry season, exchanging tobacco for grain.

The beginning of 1934 seemed to bode better as the Bahr al-Jabal began to drop to safer levels, but the rains failed in August, when they should have been at their height, and a province-wide grain shortage that month affected even normally productive areas like Abwong and Nasir. The overall cultivation area among peoples such as the Gaawar was reduced by famine-induced weakness and lack of seedgrain. Even grazing suffered, for hunger inhibited the people's movements, and in the area between Fangak and the White Nile cattle grazed in a much restricted area. Then, at the end of the year, there was a resumption of heavy flooding along the Bahr al-Zaraf (despite a continued drop in the Jabal), and the Thiang and Gaawar again lost crops.

The floods of 1932-4 directly affected government plans to separate the Nuer and Dinka. The Dinka among the Gaawar - the Rut and Thoi communities and individual Angai families, a total of about 1200 persons - had resisted government orders and refused to budge. The Rut and Thoi stood to lose their old riverine pastures along the Bahr al-Zaraf, where they grazed by special arrangement with the Gaawar,¹⁶ if they moved south and had to share the less attractive Bahr al-Jabal pastures of the Ghol and Nyareweng. They had been ordered to move to Bor District after the 1931 harvest, but by December 1932 floods had so restricted potential settlement lands that there was no room for the new immigrants. Plans for their repatriation were permanently abandoned.

The Luac Dinka from the Fulluth were an even more pathetic case. About a thousand had been forced to move to join the Nyareweng. Once in Bor District they lost most of their cattle and crops to epidemics and floods. By the dry season of 1933 many had begun to drift back to their old homes, some of which had been taken over by the Ngok. In April 1933 even those Luac who

¹⁵ Southern Development Investigation Team, *Natural Resources and Development Potential in the Southern Provinces of the Sudan* (Khartoum, 1954) [SDIT 1954], table 49.

¹⁶ JIT 1954, vol. 1, 292.

had accepted the idea of moving south wanted to return home and petitioned the government to do so. The Lou District Commissioner had always opposed their move, as they contributed significantly to the grain production of his district, so permission was granted.

Before 1932 some 4000 Lou of the Rumjok section had been forced to move out of their territory adjacent to the Nyareweng Dinka. This area was comparatively well watered, suitable for both permanent villages and inland grazing. Prior to the evacuation order half of the Rumjok there used to graze east of the Khor Fulluth, while the Nyareweng used the pastures to the west. The other half of the Rumjok went further east, towards the Khors Geni and Tuni, closer to the Anuak and Murle. There had been no conflict over grazing between the Rumjok and Nyareweng. In fact, some Nyareweng continued to graze their cattle in Lou camps as late as June 1933, and the Rumjok had frequently protected Nyareweng cattle in the past from Gaawar and even Mor Lou raiders.¹⁷

The attempted evacuation of the southern Rumjok area meant that other Lou further inland had to be moved to make way for the newcomers, Lou use of Gaawar and Anuak pastures increased, and a large tract of extremely good grazing land became unused. The Nyareweng, being smaller in number than the Lou, had no need for and did not use the evacuated land. Quite naturally the Rumjok began to return, against government orders. By the end of 1931 they were reported to be 'begging most abjectly' to stay in their old territory.¹⁸ Since by this time the Luac Dinka were beginning to return to their old homes, the idea of keeping the old Rumjok territory free for eventual Dinka occupation was no longer valid. After paying a token fee to the Nyareweng (in July 1932) for permission to remain, the Rumjok were allowed to return.

The pattern of flooding along the Bahr al-Zaraf during this time indicates a temporary shift in the channels through the swamps, intruding the area of the swamp into new lands. Rupciedol, one of the few elevated woodlands in the area, became overcrowded in 1930 when the government expelled many Bar Gaawar from the Duk ridge. From 1930 to 1935 the Gaawar along the Bahr al-Zaraf were forced to live 'a precarious amphibious existence'.¹⁹ It is no wonder that the 'No-Man's Land' was repeatedly breached. As early as the 1932 dry season small bands of Gaawar, Lou and Dinka were found living or camping in the areas the Gaawar had been forced to evacuate. The high 1932 flood made it impossible to fix and patrol a tribal boundary there, so the government conceded to the Gaawar the right to graze and fish in their old pastures in the 'No-Man's Land'. But by the end of the 1933-4 dry season floods had forced even more Gaawar to return to their old permanent settlements on the Duk ridge. In 1935, even as the Bahr al-Jabal dropped dramatically, the government abolished the 'No-Man's Land', and the Gaawar returned to the ridge in time to sow their crops and reap an ample harvest for the first time since 1929.

The two years of 1935-6 showed remarkable fluctuations in the fortunes of the different areas of the region. The late heavy rains of 1934 which had destroyed the crops of the Zaraf Nuer also damaged many of the cultivations of the Nyareweng, Twic-Fakerr, Twic-Ajuong and Bor-Athoic Dinka, leaving

¹⁷ Johnson, 'Tribal boundaries and border wars', 197.

¹⁸ A. H. Alban to Governor Upper Nile Province, 25 April 1933, SRO UNP 66.B.11.

¹⁹ Upper Nile Province Monthly Diary (Jan. and Feb. 1935), SRO BD 57.C.1.

only the Twic-Lith and Bor-Gok with any grain reserves. While the Lak and Thiang recovered in the 1935 harvests, the rains between Duk Padiat and Bor were too light, leaving only the Twic-Lith and one section of the Bor-Gok with good harvests. Very few Nyareweng harvested any crops at all and most scattered abroad looking for food throughout June–November. By contrast the Eastern Jikany had a massive harvest and the entire Sobat valley exported 636 tonnes of grain in 1935, its highest grain export figure for the period 1930–44.²⁰

The year 1936 looked as if it might maintain this trend. Kongor continued to supply grain to Dinka to the north and south and even to government famine relief projects elsewhere, until by June all the Twic-Lith grain was also exhausted. The Bor Dinka had to sell cattle to buy grain. But the 1936 harvest brought a brief reverse. There were good harvests again along the Zaraf and Sobat, and among the Nyareweng, while crops failed from Kongor to Bor. Throughout 1936–7 there were heavy imports of grain into Bor, while the Aliab and Cic Dinka across the river exported it in large amounts. Many Bor and Twic crossed the river to buy grain while others went to the Nyareweng for food. With the complete abolition of the 'No-Man's Land', parties of Dinka women from throughout Bor District travelled to the Nuer to get food. Other Dinka sold hides of cattle killed in renewed rinderpest outbreaks to buy imported grain in the Bor market. By the end of 1937 the situation was again altered. All Dinka crops north of Kongor were washed out by the rains, but there was no shortage around Kongor itself.

We may now summarize this year-by-year, almost month-by-month, account. Throughout much of the period 1929–36 the Gaawar and Lou Nuer were artificially restricted in both their permanent settlements and their seasonal movements. Large sections of each tribe were prohibited from visiting or fully using their normal dry-season pastures. Restrictions on their movements inhibited their normal precautionary measures against the spread of animal diseases – such as the separation and segregation of herds – and this may have contributed to the severity and spread of the 1929–32 rinderpest epidemics, as well as the resurgence of rinderpest in a number of areas throughout 1934–6. The climatic conditions of the period, including a succession of high rivers in 1931–4, favoured the further spread of CBPP and trypanosomiasis, so that cattle continued to be endangered by disease over a wide area throughout the period. The government's dual policy of concentrating Nuer settlements and relocating large numbers of Dinka had an adverse effect on the region's agriculture, taking large tracts of land out of cultivation precisely at a time when extreme inundation and locust plagues further reduced grain yields. The artificial separation of peoples inhibited their ability to make full use of scattered areas of grain supplies. Only a few Nuer were able to get grain from the Nyareweng, Ghol and Twic at Kongor, and even fewer Dinka could apply to the Nuer. It was only in 1936–7 that free movement between Dinka and Gaawar and Lou Nuer was resumed. Before that time even contacts between normally adjacent Nuer (such as the Gun Lou and Bar Gaawar) were reduced through relocation. The government did make new sources available to some pastoralists through the cattle and grain markets

²⁰ SDIT 1954, table 49.

at Malakal and Bor, but such centres were not opened up in the areas where the older ties of mutual assistance were most severely restricted.

Evans-Pritchard's description of Nuer society and ecology clearly reflects the dislocation of Nuer suffered during this time. He visited the Lou at Muot Dit and Abwong, and the Jikany at Nasir and Khor Nyanding in 1930-1, and returned to the Eastern Jikany and western Nuer in 1935-6. He witnessed the rinderpest epidemics of 1930-1 and 1935-6, which occurred in different places in Nuer land, but made no observations among the Zaraf Nuer or along the Nuer-Dinka border. Drought or excess of water caused considerable damage to crops each year he visited the country (though he did not visit the same places each time). Locusts also caused 'immediate and wholesale destruction'. He observed the Lou gaining access to Ngok Dinka agricultural land and produce, and also exchanges of cattle for grain between the Lou and Eastern Jikany (who, we will remember, regularly produced a greater supply of grain than the Lou during this period), but he did not believe that such exchanges between major political groups had at any time been extensive, and he did not observe any major trading activity. Being nowhere near the Dinka border he did not witness such exchanges between Nuer and Dinka as continued despite the imposition of the 'No-Man's Land'. His impressions of a meagre food supply and shrinking social ties were quite accurate, but not necessarily for the reasons he gave.²¹ The Nuer food supply had been reduced by an unusual combination of high floods, locusts and cattle epidemics, while Nuer access to a wider food supply had simultaneously contracted due to government restrictions on their movements and contacts with other peoples. We will now turn to the floods of 1916-18 to see how far the conclusions based on observations in 1929-36 can be applied to earlier periods.

*1916-18: The White and Red Floods*²²

The floods of 1916-18, which occurred before colonial rule was fully established, were the greatest to afflict the peoples of the region in the first half of this century. They were produced by a combination of extremely high rivers, heavy rains and 'creeping flow'. In the aftermath of the floods the networks of reciprocal exchange between Nuer and Dinka grew, even though this was a time when there was marked hostility between specific Nuer and Dinka communities, exacerbated in part by environmental problems. The very extremity of the environmental problem forced the Nuer and Dinka to attempt to overcome their hostility if both were to survive.

The floods came in two waves. The Gaawar gave them two distinct names: *Pibor*, the White Water, a frothy flood which came from the river, and *Pilual*, the Red Water, which seemed to come up from out of the ground. Among the Lou and Twic they are seen as the same flood, coming twice. The main source of the floods was the East African lakes which rose from mid-1915 to 1918 and

²¹ Evans-Pritchard, *The Nuer*, 50, 57, 69-70, 78, 81-93.

²² Except where specifically stated this section is based on: interviews SRO EHJP-1 to 8, 11-12; Winder, 'Notes & queries', SAD 541/9; and contemporary corroboration of some points in 'Report on Lau patrol 1917' and 'Diary of political officer "C" column Lau patrol 1917' (both in SRO UNP SCR 15.10), and *Sudan Intelligence Reports*: 268 (Nov. 1916), 3; 283 (Feb. 1918), 3; 291 (Oct. 1918), 3; and 292 (Nov. 1918), 2.

then rapidly dropped to more normal levels. This by itself would have affected only the Bahr al-Jabal and Zaraf valley, but throughout 1916–18 the Sobat, fed by heavy Ethiopian rains, also rose to its highest recorded level in the first half of this century.²³ There seems also to have been consistently heavy rain throughout much of the Jonglei region during these years, producing a high ‘creeping flow’ in the Murle and Lou country. What was different about *Pilual* was not just its height and expanse, which were extraordinary, but its duration, because it did not recede after the first dry season as most floods did.

The Zaraf valley is especially vulnerable to floods. The Gaawar see much of their recent history as having been dominated by floods, forcing them from the west bank of the Bahr al-Jabal during the first quarter of the nineteenth century, across the southern end of the Zaraf island, and on to the Duk ridge by the 1890s, where they settled in relative ease until 1916.²⁴ During the wet season of 1916 the river rose, reaching its height in September. October was a period of heavy rains, covering the area from Bor and Kongor to the Murle country on the Pibor river with water. The Twic fled east to relatively drier ground. Among the Gaawar the wooded area of Rupciadol, usually a safe refuge from floods, was overwhelmed, and everyone there had to flee with their cattle to the Duk ridge between December 1916 and March 1917. Even Lou Nuer country was reported to be almost completely under water. The heavy rains produced a strong ‘creeping flow’ that year which, because the *khors* flowing into the Sobat were already backed up with water from the higher river, did not readily drain away.

The flood did not recede until the late dry season (March–June) of 1917, thus delaying the commencement of a government military patrol in Lou and Gaawar country until March. Even then, while the Duk ridge was dry, there were large pools of water to the east and west of it, and the area between the Bahr al-Zaraf and Woi remained flooded and swampy. Both the Twic and Gaawar were able to return to some of their pastures; the people of Rupciadol cultivated around their homes; Lou country was dry enough to move about in, with many Lou moving early to Khor Tuni to secure the exceptionally good fishing there.²⁵ Very heavy local rains began in April, the high 1916 levels of the East African lakes began to make themselves felt along the Bahr al-Jabal in 1917, and the river rose dramatically in May that year. The new flood (*Pilual* to the Nuer, *Amol Thit* to the Twic) hit the Gaawar in August–September, just as the crops planted after the previous flood were ready to be harvested. Rupciadol was again washed out and the Duk ridge remained one of the few places of refuge.

Pilual did not recede that subsequent dry season. Water covered a vast area, from Bor to Malakal and from Kongor to the Pibor river. The highest discharges of the Sobat and the White Nile for the first half of this century were reached within a month of each other, February and March 1918. But not all areas within the region were equally affected.

The Luac and other Dinka living along the Khor Fulluth, an area more subject to Sobat river inundation, were relatively safe. It was the outlying

²³ H. E. Hurst, *Short Report on Nile Gauge Readings and Discharges* (Cairo, 1920), 30–2. JIT 1954, vol. 1, 30.

²⁴ Johnson, ‘Tribal boundaries and border wars’, 185.

²⁵ C. R. K. Bacon, ‘The Lau Nuers’ (Khartoum, 1917) (mimeo).

Dinka communities who were forced by the Zaraf flood to come to the higher wooded ground along the left bank of the Fulluth. Murle country was flooded in 1917,²⁶ and it was probably these waters which reached Paddoi the same year.²⁷ The Lou were reported in 1918 to be dying of starvation and fleeing to the Jikany, but modern Lou accounts stress that they were fleeing the consequences of the government invasion in April 1917 – the early planting season – when troops burned villages (where grain was stored) and seized cattle. That Lou country was not as heavily flooded in 1918 as in 1916 and 1917 is further indicated by the fact that in the same year the Murle, in whose country ‘creeping flow’ originates, had a drought.²⁸ The Lou appear to have suffered less from floods than the Gaawar.

The area of the greatest flood-borne distress ran parallel to the Bahr al-Jabal from Bor up past the Duk ridge. Many of the southern-most Dinka were said to have been forced into the treetops.²⁹ The Twic around Kongor raised embankments along the *toic* and around each homestead, but the flood topped the embankments, and heavy rains destroyed the protected cultivations inside them. People once again fled east. After two years there was no sorghum left and people lived off fish and the water lotus, a traditional famine food. By the end of 1918, when the flood waters began to recede, the entire sorghum crop of the Dinka of Bor District failed.

The Gaawar were the hardest hit of all Nuer.³⁰ The Duk ridge was crowded with refugees from Rupciedol, and even the area around Mogogh was partially washed out. The sorghum harvest of 1917 had been destroyed by the onrush of *Pilual* and people could cultivate only small plots around their huts. Some groups of young men still went out into the flooded pastures to build embankments around the surviving outcrops of land, raising them further with palm trunks and mud. These became new camps where young men, instead of tending cattle, fished and hunted hippos. But no one else went to the *toic* for three years. At the end of this time the Gaawar, too, were surviving mainly on fish and water lotus.

Cattle suffered both during and after the flood. In western Nuer and around Fangak brief outbreaks of rinderpest and other cattle diseases followed *Pilual*.³¹ Some Luac Dinka lost cattle to the flood waters, but they quickly replaced them with cattle obtained from the Ngok Dinka on the Sobat, or from the cattle market in Malakal. The Gaawar, too, lost large numbers of animals, but not to water or disease. Many Gaawar cattle were sent east to relative safety with the Lou Nuer. Those that were kept behind were slaughtered for meat. The Twic did not then have access to Lou protection and thus had to keep their animals with them. As was to happen in Bor District after the 1932 flood, many Twic animals suffered from the excessively damp and unhealthy conditions and were soon attacked by a lung disease, probably CBPP.

With the end of the flood and the return to a more normal distribution of water in the 1918–19 dry season, the Dinka and Nuer living along the Bahr al-

²⁶ B. A. Lewis, ‘Beir notes’ (n.d.), B. A. Lewis Mss., Institute of Social Anthropology, Oxford University.

²⁷ JIT 1948, 99.

²⁸ Lewis, ‘Beir notes’.

²⁹ Johnston, ‘Handing over report for Bor & Duk district’, NRO UNP 1/51/3 and SAD G/S 586.

³⁰ JIT 1954, vol. 1, 212.

³¹ Winder, ‘Notes & queries’, SAD 541/9.

Jabal and Bahr al-Zaraf had to revive their cultivations and regenerate their herds. There was a general grain shortage with the reduction of cultivation areas and crop yields during the flood, and the most immediate need was seed grain. The government did bring some grain for famine relief to the river ports after 1918, but the Nuer got very little of it: in fact a good portion of Bar Gaawar tribute to the government throughout 1923–6 was actually paid in grain.³² The Gaawar had long been in the habit of approaching the more reliable grain-producing areas in times of their own scarcity, so they now took cattle to exchange for grain with the Lak and Thiang Nuer and the Luac Dinka of the Khor Fulluth. Such exchanges, often following marriage lines, had been going on with some sections of the Luac Dinka since at least the turn of the century. Prior to *Pilual* there had not been the same range of exchanges between the Gaawar and the Ghol and Twic Dinka. In fact from 1908 through 1914 there had been considerable hostility and raiding between them. By the end of the first decade of the twentieth century, however, the Gaawar were being approached by all of the southern Dinka in times of need. For a short time before 1913 the Bar Gaawar specifically limited their exchanges with the southern Dinka, refusing grain and insisting that the Dinka bring girls for marriage if they wanted cattle. The Gaawar paid a lower rate to the Dinka than was customary among the Nuer, but higher than most Dinka could afford among themselves, so there was an economic incentive for intermarriage on both sides.

The result of all this was that by the time of *Pilual* the southern Dinka were used to marrying their daughters to the Nuer in times of need, in spite of intermittent periods of conflict, and there were already a number of Dinka women living among the Nuer in marriages mutually recognized by both peoples. When the Twic needed sorghum to eat, seed grain to plant, or cattle to replace those lost in the flood, they went to those places where such things could be found in greater abundance than in their own land: south to the Bor Dinka and north and east to the Gaawar and Lou. When going to their Nuer in-laws they were given grain free, 'for it is scarcity and not sufficiency that makes people generous,' as Evans-Pritchard so perceptively remarked, 'since everybody is thereby insured against hunger. He who is in need today receives help from him who may be in like need tomorrow'.³³ The Twic did not confine themselves exclusively to existing Nuer relatives. After *Pilual* they approached anybody for grain, and they began to marry their daughters much more frequently to the Lou, since Lou herds had suffered the least.

The Dinka also had recourse to another system of exchange, one which Evans-Pritchard, writing from the vantage point of post-conquest Nuer, dismissed as limited and unimportant.³⁴ This was the ivory–cattle–firearms trade between Ethiopia and the Nilotic people, carried on through the mediation of the Eastern Jikany from c. 1910 to 1930.³⁵ The main items of exchange were ivory, cattle and guns but also included metalware, tobacco and grain. Following *Pilual*, until the trade was restricted by military action in

³² P. Coriat, 'Transfer of Barr Gaweir to Zeraf valley district' (1926), document 1.3 in P. Coriat, *Governing the Nuer. Documents in Nuer History and Ethnography, 1922–31*, with notes and an introduction by D. H. Johnson, JASO Occasional Papers (Oxford, in press).

³³ Evans-Pritchard, *The Nuer*, 85.

³⁴ *Ibid.* 87–8.

³⁵ Johnson, 'On the Nilotic frontier', 231–7.

1928–30, the Gaajak and the southern Dinka traded freely in cattle and ivory. The Twic took ivory directly to the Gaajak to trade for cattle, which they then drove home. Gaajak came to the Twic, buying ivory for cash, and the Twic used this money to buy more cattle in the new markets at Kongor and Bor.

Pilual was followed by a seven-year period of low rivers (1920–26). At the same time the environment around the Duk ridge deteriorated; the ridge itself became excessively dry and the nearby pastures produced unpalatable grass. The Jamogh-Bar Gaawar began to move south and south-west in search of better pastures and homestead sites, encroaching on Dinka territory. This move was resisted by the Ghol Dinka as well as by some smaller Gaawar sections already living among them. The incipient confrontation was avoided by government mediation between the Gaawar and Dinka in 1925, mediation which both Gaawar and Dinka leaders welcomed and abided by.³⁶

Despite this tension along the southern Gaawar frontier, there was remarkably little cattle-raiding between Nuer and Dinka following *Pilual*. Instead, what we see – and this quite clearly – is an expansion of the networks of reciprocity between Nuer and Dinka: reciprocity based mainly, but not exclusively, on marriage ties, expressed most often in exchanges of cattle, but allowing access to grain resources as well. This network was different in quality from the trading activity based on ivory and guns which operated in the Upper Nile at the same time. Both types of exchange between Nuer and Dinka expanded in the aftermath of flood. Both types of exchange were subsequently restricted by government intervention in the early 1930s. The reciprocal network survived this brief period of artificial isolation, but the ivory–cattle–gun trade contracted severely with government restrictions.

Pibor and *Pilual* were the most destructive floods of the early twentieth century in the Upper Nile region. They forced all peoples to contract their movements and settlements and narrow their social ties, as one might expect from Evans-Pritchard's analysis of Nuer economy. But the recovery from the floods was accomplished by expanding an existing network of cross-community ties. It was as if the balance could be restored only by equal movement in the opposite direction. Later government action inhibited the scope of this type of counter-active expansion in 1929–36. As we will see in the next section, though, ties established to recover from *Pilual* assumed even greater importance during the aftermath of the great floods of the 1960s.

1961 and after³⁷

The flood which is called *Pawer* by the Dinka began in 1961 and, unlike all previous remembered floods, it has never fully subsided. Survivors of *Pilual* are unanimous in declaring that the 1916–18 floods were lower, shorter, and less destructive than the most recent floods. There were four years of progressively

³⁶ Winder, 'Notes & queries', SAD 541/9. Coriat, *Governing the Nuer*, documents 1.3 and 2.1.

³⁷ This section is based mainly on: Howell, Lock and Cobb, *The Jonglei Canal*; Jonglei Socio-Economic Research Team, *An Interim Report* (Khartoum, 1976) (mimeo); Mohamed Osman Elsammani & Farouk Mohamed Elamin, *The Impact of the Extension of the Jonglei Canal on the Area from Kongor to Bor* (Khartoum, 1978) (mimeo); W. J. A. Payne & Farouk Mohamed el Amin, *An Interim Report on the Dinka Livestock Industry in the Jonglei Area* (Khartoum, 1977) (mimeo); and interviews SRO EHJP-2, 3, 5, 8, 12.

higher floods, beginning in 1961 and peaking in 1964, again related to the rise in the East African lake levels. Since that time the river discharges have remained high. They are almost double the previous fifty-year average at the beginning of the swamp in the south, and one-and-a-half times the previous average at the tail of the swamp near Malakal in the north. The area of the permanent swamp and seasonal floodplain has increased two-and-a-half times, the swamp having increased the most, and the seasonal floodplain is now one-and-a-half times its size thirty years ago (see Maps 1a and 1b). This massive alteration in water distribution has lasted for nearly a quarter of a century and has caused considerable changes in settlement and grazing patterns among the Upper Nile pastoralists.

The most noticeable changes have been in settlement. The Dinka living along the Fulluth were once again beyond the reach of the highest waters. They did, however, have to evacuate some of their pastures. The Zaraf Nuer (especially the Thiang) then came, escaping their own flood. When the floods left the Fulluth area the Nuer, unable to return to their old homes which were still submerged, stayed. Luac grazing has thus been reduced by Nuer occupation. The Gaawar have lost all their westernmost settlements along with many of their old pastures. Ruciedol and many other places are once again under water and abandoned. The Twic-Lith of Kongor were, as in 1916-18, temporarily flooded out from behind their low protective embankments by the combination of flood and rain. Human and livestock populations are now restricted to a smaller space and cover the high lands more densely and uniformly in some areas than thirty years ago. But the floods and the simultaneous reduction of pastures were a further impetus to Dinka movement out of Bor District and permanent settlement among the Lou. Following the high floods of 1948-9 (*Amol Alier*), many Dinka from Bor District moved to the Lou, where some 2000 were listed as unassimilated settlers in 1955.³⁸ There has been no reliable census of the area since then, but Nuer and Dinka testimony is unanimous in stating that Dinka settlement among the Lou greatly increased after *Pawer*. This influx of population into the Lou area, however, may be a factor in the continuing eastward movement of Nuer settlements. Throughout the 1970s and early 1980s the Nuer steadily moved into Anuak territory around Akobo, an area previously given over mainly to cultivation.

There were great stock losses during *Pawer*, greater than those remembered during *Pilual*. Not only were animals killed in the flood, but a number of diseases, such as rinderpest, broke out afterwards, in marked contrast to the remembered aftermath of many previous floods. Veterinary services in the rural areas declined at this time because of the intensification of the civil war in the late 1960s. This, plus increased raiding during the war, reduced the livestock population throughout the region so that it is now scarcely higher than the minimum estimate of thirty years ago. In the aftermath of the flood, stock levels have remained low. The flood caused massive deforestation around Kongor, on a far greater scale than *Pilual*, and after 1972 animals were regularly sold to raise money to import building materials from Bor, Mongalla and even Juba.

³⁸ The 1955/56 census gave a figure of 1,842 Bor Dinka, but this must be taken as a minimum estimate rather than a precise count: Population Census Office, *First Population Census of Sudan 1955/1956. Final Report*, vol. 3 (Khartoum, 1962), 165.

People tried to regenerate their reduced herds in a number of ways. The settlement of Twic and other Dinka among the Lou led to a number of marriages there, with the Dinka keeping their cattle with the Lou. Other Twic men resorted to the old method of marrying their daughters to the Lou in order to bring cattle back to Twic country. Those Dinka already with marriage ties to the Lou and Gaawar also received cattle from the Nuer. When their sons married, they got cattle from the Nuer to help make up the bridewealth; when their Nuer grand-daughters married, cattle also came back to the Dinka grandparental home. The fact that the eastern edge of the seasonal *toic* has now moved further inland seems to have had a countervailing effect on Lou movements. The Gaawar *toic* is closer to the Lou than it was throughout the first half of this century, and more Lou than before appear to have negotiated the use of that *toic* for part of the dry season, bringing more cattle through the Duk ridge and adjacent territories.

Since the 1960s an increasing number of men have gone into migrant labour, mainly in the northern Sudan, but also in other parts of the Middle East. They returned with money which was used to buy cattle in Malakal and Bor, as well as in numerous smaller local markets. Many Twic also bought cattle from the Lou. After the end of the first Sudanese civil war in 1972 the demand for meat in the growing regional capital of Juba rose, most of it being supplied by the Bor Dinka until 1982, with the proceeds of sales in Juba going back to buy cattle in other markets where prices were lower.

The most novel development in the aftermath of *Pawer* was the expansion of the dried fish trade. A number of persons who lost cattle in the flood turned to fishing to live, just as the market demand for dried fish in the southern Sudan increased. Many Dinka and Nuer began catching, drying and transporting fish to Juba and Zaire, where it became a major item in Sudanese-Zaire trade. The money accumulated in this trade was returned to the Upper Nile region to buy cattle. Like so many other promising efforts in the southern Sudan, this trade suffered from the outbreak of the second civil war.

Conclusion

The Upper Nile plains of the Sudan have often been presented in anthropological literature as a uniform zone of unvarying ecological relationships, inhabited by sharply defined ethnic groups locked in enduring hostile opposition.³⁹ The historical study of changing ecological and social relationships – the ‘political ecology’ of the region – reveals a far more complex picture. Underlying ethnic, linguistic and political differentiation is a dynamic response to changes in the environment. There are subtle, but significant, variations in local ecologies, which in turn influence the balance between pastoral and agricultural activity throughout the region. Individual as well as community

³⁹ See especially M. Sahlins, ‘Segmentary lineage, an organization of predatory expansion’, *American Anthropologist*, XLIII (1961), 322–44, and R. Kelly, *The Nuer Conquests* (Ann Arbor, 1985). Neither is based on comprehensive archival or field research. Sahlins constructs his theory from no more evidence than can be selectively taken from Evans-Pritchard. Kelly has read more widely, but still not systematically. He does use some colonial primary sources, but only those which randomly found their way to Britain. As a result he presents a distorted and false picture of Nilotic history, demography, bridewealth exchanges, and ecological relationships.

survival depends on being able to shift the balance when environmental circumstances change. This has encouraged the development of a common economy linking various ethnic and political groups – however tenuously – together.

The physical characteristics of this region have remained essentially the same for centuries,⁴⁰ and as long as pastoralists have occupied it there has been an enduring pattern of vulnerability to a regular succession of floods. The succession of natural catastrophes within the region is a constant fact of life. Times of major natural disaster are part of the collective living memory of the Nilotic peoples; I collected information on *Pilual* in 1981–2 from survivors of that flood who could compare it with their direct experience of *Pawer* and with their parents' accounts of the great floods of 1878 and the 1890s. Rarely, however, is a catastrophe universal, as we have seen in both the high floods of 1916–18 and 1961–4. There are usually reserve areas of cattle and crops on which others draw, even if the margin of surplus is narrow, and even if it is a surplus only in relative terms. The peoples of the Zaraf valley and the Duk ridge are periodically forced to rely on peoples of the Sobat hinterland for grain and cattle. In turn the peoples of the Sobat hinterland are periodically forced to rely on some of the more secure agricultural areas of the Sobat valley and the White Nile.

Raiding for both cattle and grain, especially throughout the nineteenth century, was one way in which these reserves were tapped. It was also a way which degraded reserve areas, principally by depopulating them. While raiding was more common in the nineteenth century than in the twentieth, it is an exaggeration to suggest that raiding was the principal economic link between the Nuer and Dinka. The Nuer and Dinka communities of the Upper Nile region are currently linked in a variety of networks of reciprocity whose construction began in the nineteenth century.

We should recognize that people go where the food is, that in this region lines of kinship frequently follow and strengthen lines of feeding. Social ties, eventually leading to kinship links, were, and still are, the main way in which the Nilotic peoples survive and recover from the natural catastrophes which are endemic to their region. The greater the extent of the natural disaster, the greater the expansion of the social network during the period of recovery – except in the 1930s when government policies interfered with the social network. Certain facets of the modern economy – trade and migrant labour – have been open to the Nilotes in varying degrees for most of this century, but they have not yet fully supplanted the networks of reciprocity.

The very regularity of the appearance of floods, and their erratic behavior when they do appear, influences human settlement to the point where there are few strict political or ethnic boundaries in the region. As Elsammani and Elamin noted about the southern Dinka settlements after *Pawer*, individuals from various political groups often settle within the territory of another group. 'This has resulted in continuous fusion, and even distribution of human settlements over space', they observed. 'It follows that any spot potentially suitable for settlement is occupied, which is one of the factors accounting for the continuous spread of human settlements over the high lands'.⁴¹ Evans-

⁴⁰ Johnson, ch. 9 in Howell, Lock and Cobb, *The Jonglei Canal*.

⁴¹ Elsammani and Elamin, *The Impact of the Extension of the Jonglei Canal*, 8.

Pritchard earlier recorded a similar mixture of immigrant Nuer and Dinka settling in territories of dominant Nuer groups. We have seen from this study that settlement constantly crosses ethnic boundaries, especially recently when numbers of Dinka were forced by floods to settle among and marry into the Nuer. One Twic elder specifically linked this pattern of Twic marrying out to the occurrence of floods, saying 'if we had no flood, we would not take our daughters to Lou'.⁴² Yet floods have been a part of the region far longer than pastoralist settlement. There has never been an ideal time when communities could remain self-contained and flood-free. It is because of the floods that 'Nuer expansion' is part of an older and more general eastward pastoralist movement and still continues.⁴³

The current anthropological understanding of the region is derived mainly from Evans-Pritchard's study of the Nuer, which was undertaken within the 1929-36 period. We have seen that this was a period of an unusual concurrence of floods, cattle disease and locusts, as well as a period of exceptional disruption of ties amongst the Nuer and between Nuer and Dinka through forced resettlement and segregation. We have confirmed, through contemporary documents, Evans-Pritchard's observations. The Nuer during this period were restricted by their ecology, and their social ties and economic options were limited. Evans-Pritchard was unable, however, to compare the impressions of his own time with the record of any earlier time. We are able to compare his with earlier and later periods, and we have seen a pattern in the response to natural disasters carrying through most of this century.

Had the Nilotic peoples lived in the small, narrowly self-defined units in which they appeared to live when Evans-Pritchard observed them in the early 1930s, their options and resources would most certainly have been severely limited. However, the reconstruction of their local economies which followed *Pilual* and *Pawer* indicates that a broader system of interdependence than that described by Evans-Pritchard operates throughout the region. Much of the common economy which he suggests as exclusive to the Nuer can be seen to extend to and include other peoples as well. The ties may lie submerged, to be activated as circumstances require, but this is precisely the strategy for survival which Evans-Pritchard accurately identified among the Nuer themselves. Neither the Nuer nor their Nilotic neighbours may be able to control their environment, but their own responses to environmental change have neither been static nor cyclical. Equilibrium with nature is achieved only through dynamic responses by each community, responses which progressively alter their own internal composition and their social and economic relations with their neighbours.

SUMMARY

The enduring ethnographic image of the pastoral Nilotes of the Upper Nile of the Sudan is that of peoples structurally opposed to each other with only limited social and economic ties between major ethnic groups. This image is derived from Evans-Pritchard's study of the Nuer, which was based on field work in the early 1930s. This was a time when both the Nuer and the Dinka of the region were subjected to a series of extreme natural calamities (floods, cattle disease, locusts, and crop failures), but were limited in their responses to these challenges through

⁴² SRO EHJP-12.

⁴³ Johnson, 'The historical approach to the study of societies and their environment'.

the restrictions on movement and social intercourse imposed on them by government pacification policies. By comparing the 1929-36 period with preceding and succeeding periods of great environmental stress, it is possible to discern a pattern of developing interdependence between contiguous Nuer and Dinka groups, as each sought the resources of the other in reconstructing their economic lives. Evans-Pritchard's description of a 'common economy' among the Nuer can be applied to the wider pastoral community in analysing this expansion of social and economic networks.