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Agricultural Intensification in the Burji-Konso Cluster of South-western Ethiopia

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In the mountainous area of south-western Ethiopia with its characteristic faulted troughs a number of small ethnic groups, generally known as the Burji-Konso cluster, are well known for their ecological adjustments and intensification of their agriculture. The volcanic soil in this area is naturally fertile, although the rain, which falls in two seasons each year, is irregular and unreliable. The minimum precipitation is around 500 mm whereas the maximum is around 1,500 mm. The Konso--with a population of about 100,000[1]--have been able to preserve their traditional agricultural economy more effectively than other groups in the region and will therefore serve in this article as a source for closer observation. For this reason hoe cultivation of cereals requires more attention here than the planting of ensete in the higher mountains.[2] However, the broader region should be taken into consideration if the various characteristics of the agricultural systems are to be observed and understood.

In the 1930s the ethnologist Jensen took an interest in this region and, influenced by Frobenius' approach, saw Burji-Konso, and especially its agriculture employing stone terracing, as 'megalithic' in culture.[3] More rational to a modern view are the observations of the geographer Nowack in the same decade (but published posthumously only in 1954). Especially valuable is the information collected through new fieldwork by the Frobenius-Institut in Frankfurt in the early 1950s. Much of this remains unpublished, but the works of Wolfgang Kuls and Helmut Straube deserve special mention here.[4] Following this, Christopher Hallpike (1970, 1972) undertook useful research in Konso, but his foremost concern was social anthropology rather than material culture and economy.

Characteristics of the intensive agriculture of this region include permanent cultivation on terraced fields, irrigation by a variety of techniques, soil conservation and fertilising measures, as well as those to combat erosion and moisture loss. Balanced cattle

1. For the population figures of the Burji-Konso cluster, see Amborn, 1989, Chapter 2, note 8.
2. *Ensete edulis* (the 'false banana') grows in Konso only in the lower regions, but elsewhere in the Burji-Konso area it is at altitudes of more than 1,900 m that its cultivation is important. Where the terrain makes it necessary, ensete is planted on terraces just like cereals.
3. Cf. especially Jensen, 1936 (Chapter 14 by Wohlenberg, and Chapter 16); 1960, p. 258ff, 269ff.
4. Kuls, 1958, Chapter 2.2; Straube, 1963, p. 1ff and Chapter 2; 1967, *passim;* Sasse and Straube, 1977, p. 240ff. Straube was in Burji in 1955 and again in 1973-74. All references to Burji derive either from the publications mentioned or from his unpublished manuscripts and field journals. The present author is preparing Straube's field records for publication.

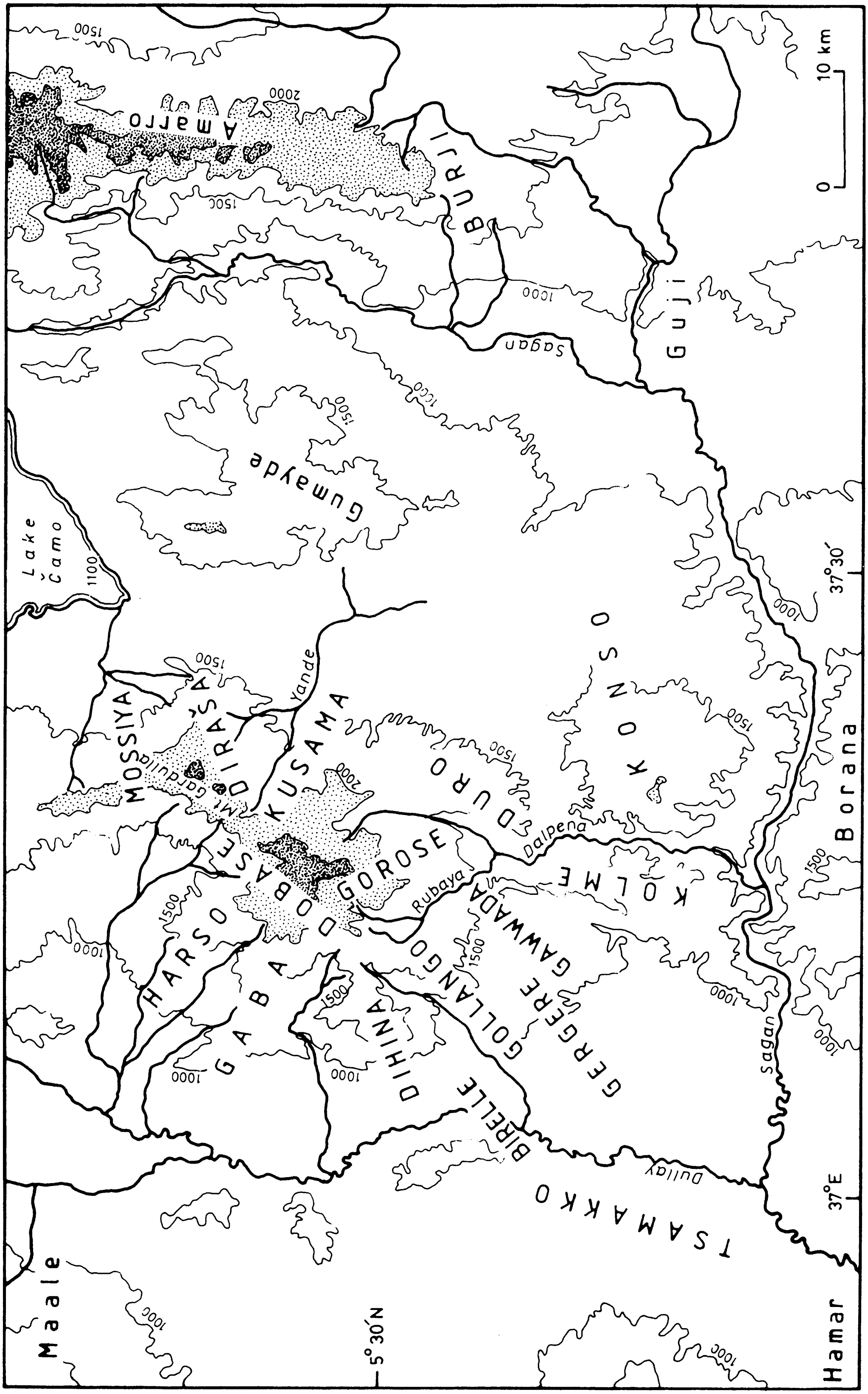

Fig. 1 The Burji–Konso cluster. (Names in capitals: peoples of the Burji–Konso cluster.)

raising is combined with these agricultural methods. That, however, is only the material side of the system. Intensification derives from a long historical process related to the formation of a complex socio-political and socio-economic system whose important political institutions can be traced by genealogies which date back to the sixteenth century at least. According to oral traditions, the agricultural methods are even older than that,[5] but archaeological confirmation has still to be obtained. Here three aspects will be considered briefly. The first is the technology of terrace-building and irrigation, followed by ecological considerations, and lastly the social component of intensification, in particular the organisation of work together with consideration of synchronic and diachronic models of the system. Above all, it is necessary to appreciate the relations existing between these aspects: in a way it is this bundle of relations which constitutes the *system* of intensive agriculture.

Terraces, fields and irrigation

In Konso the main area of settlement, which is at the same time the zone of the most intensive productivity, lies between 1,500 and 1,800 m. The stone-walled terraced fields begin, however, at a low point of about 700 m in the Sagan valley stretching to an altitude of about 2,000 m where the steep slopes of the highest mountains begin. To the north and north-east, a bordering strip of wild vegetation is preserved as an area preferred for ceremonial hunting, although it is also used for cattle herding. As Straube (1967, p. 198) has pointed out, terraces with dry walls meet several functions: beside providing cultivable surfaces on steep slopes, they counteract erosion, assist drainage and ventilation, and encourage the formation of cultivable deep soil. All these factors apply in the Burji-Konso cluster. Here lava nodules and slab-shaped stones are collected from the surface and sorted for size and shape for the careful construction of dry walls (pl. 1). In Kolme in particular the stones are fitted precisely but even then are rarely dressed. Most often they are employed directly after collecting and sorting. Walls which are wider than one metre are filled with rubble--in which case they also serve as pathways. For this purpose, the mural crowns are paved with relatively small flat stones.[6] Where not serving as pathways, wide walls are occasionally filled with earth and planted with bushes (cf. fig. 2,4) which solidify the mural crowns and increase the water-holding faculty of the terraces. The leaves of these bushes are used as fodder and manure.

Terrace walls less than a metre high are constructed almost perpendicularly. Where higher, the walls are often sloped at an angle of 80 degrees. Stepping stones may be tailed in (Nowack, 1954, fig. 12). For stability, wall foundations are sunk into the ground about 10-25 cm. New terraces are constructed by first digging a trench for the foundation stones and then raising the wall to about half its desired height (pl. 2). After this, fill material which has been dug from the upper side of the levelled field is deposited behind the wall. At the same time the wall is raised further. Usually, terrace walls will exceed the level of the fields they retain by 20 to 40 cm in order to avoid fast run-off damaging the wall.

Along the sides of natural gullies special constructions are necessary because of the greater danger of destruction by torrential waters. Altogether the terrace walls combine

5. Straube's ms on Burji, as well as author's information from Dullay and Dirasha (fieldwork in 1973-74, assisted by Gunter Minker, and 1980-81, including Konso).
6. Paths through cultivated land are always clearly demarcated. Sometimes there are even steps made of slab stones more than a metre wide, which means that neither humans nor livestock enter the fields. To cut ways across planted areas is specifically forbidden.

into a balanced network. Bends in the wall-lines are sometimes reinforced by means of turrets. Such turrets seldom rise more than 2 m above the field level; they serve as platforms from which the fields can be guarded from birds and animals. For further stability where required flanking walls are built to cross the terraces perpendicularly some 50 m apart. These are about 1½m high and again serve as pathways for both humans and cattle.

Since the humus layer tends to be light and thin (sometimes less than 10 cm), terracing is employed on any slopes inclined more than 1:25. On flatter terrain or on more extensive fields a chequer pattern of rectangular plots (about 3 by 3 m) is common, divided by small earth ridges often strengthened with sorghum straw or piled stones. Such devices cause rainwater to seep in slowly. As Kuls (1958, p. 108) reports, this effect is taken further in Dirasha where round pits, about 75 cm deep, are dug among the terrace-fields and lined with stones. In places terraces are built on 45-degree and even steeper slopes. In steep gullies transversal stone walls, 1 to 2 m high, serve to retard water run-off and prevent erosion. Gaps in these, of 30–50 cm deep, allow overflow and prevent breakage.

Heights of terrace-walls and the widths of the fields which they retain are determined essentially by the angle of slope. With wall heights of ½ m to 1 ½ m preferred, most fields vary in width between 2 and 8 m, but both wider and narrower examples exist. Walls of 6 m height occur, while those surrounding towns, built by the same techniques, are in some instances more than 10 m high.

Fields are carefully levelled so that moisture may be held as long as possible (cf. pl. 3). This is highly important in Konso where irrigation is almost without exception restricted to the rainy seasons, there being no perennial streams there. Generally, terrace-walls contain small gaps (about 30 cm wide) somewhat above the field level to allow water to seep downhill from one field into the other. (Sometimes they resemble windows in the wall.) These drains require careful construction using specially selected stones in order to resist pressure of water during and after heavy storms. The ideal field system is laid out in such a way that the greatest number of fields are soaked at the same time, but not to the extent that excess water cannot find a way into drains and gullies.

Types of terrace construction in the Burji-Konso cluster are illustrated in figure 2, and may be classified as follows:

1. Constructed essentially by means of two rows of stone. This type can be found in moderately inclined terrain. In height they seldom exceed 60 cm. Where necessary, preventive measures are taken to allow water overflow.
2. Built up from two rows of relatively big stones, the space between filled with rubble. Gaps in the mural crowns that allow water overflow are frequent.
3. With big stones at the base, flat slabs are carefully stacked, the intermediate space being filled with smaller slabs which are piled with similar care. This type is common in Kolme, especially in the area of scattered settlements.
4. With a small earthen wall constituting a mural crown, earth filling part of the inner cavity as well.
5. A variation of type 2, with an outlet for drainage. The intermediate space is filled with gravel to the height of the outlet.
6. Similar to 2, but with irregularly tiered large stones forming an underground base. Occasionally stones from the back row project below the field's surface. The effect of construction is to distribute active earth pressures and gravitational water pressure.
7. A front row of stones backed by rubble, a method providing good pressure absorption and drainage. Preferably built on high-lying wet terrain located on slightly inclined slopes. Walls of this type may reach heights of *c.* 80 cm.
8. Like type 2, but with irregular filling of earth and stones in layers. Generally more

effective than type 5. (Description based on informants' reports.)
9. Rows of piled stones barely constituting terrace walls in the strict sense. Frequently found on flatter terrain to serve as field enclosures.

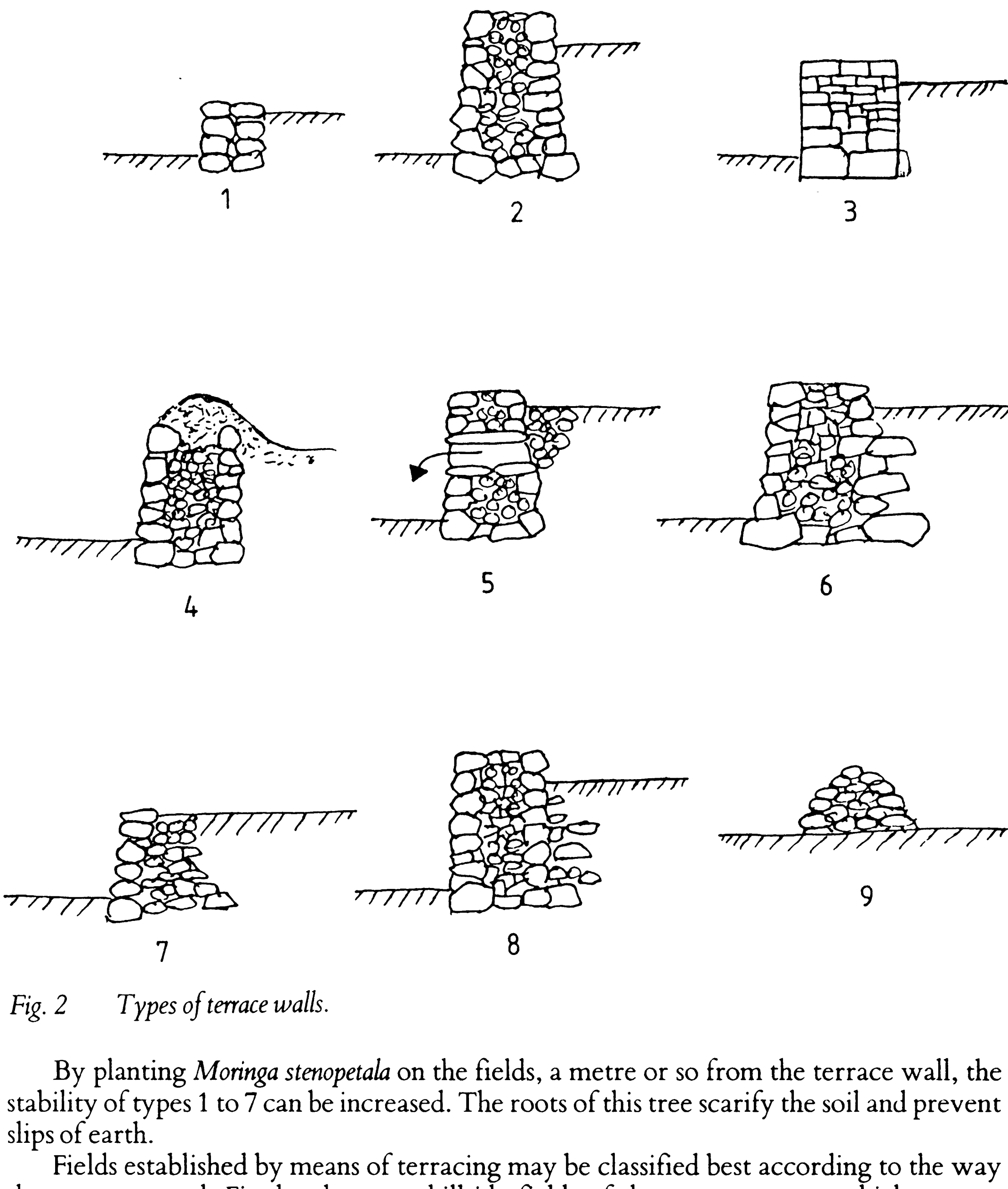

Fig. 2 *Types of terrace walls.*

By planting *Moringa stenopetala* on the fields, a metre or so from the terrace wall, the stability of types 1 to 7 can be increased. The roots of this tree scarify the soil and prevent slips of earth.

Fields established by means of terracing may be classified best according to the way they are watered. Firstly, there are hillside fields of the common type which are not irrigated specifically, but rely on rainfall. Important here is the even distribution of the precipitation. This type includes the rectangular plots *(Kästchenfelder)* to be found on flatter terrain.

The second type consists of seasonally irrigated basins, mostly on valley-sides. Where the terrain allows, in the two rainy seasons hill streams are redirected through artificial channels or furrows which, although generally less than a hundred metres long, can on occasion reach a length of more than a kilometre. In order to ensure an angle of descent as regular as possible, the water is made to run between lava revetments and retaining walls which in some parts constitute real aqueducts. The walls to carry such channels are built between one and two metres apart, although the actual width of flow is less, allowing a depth of 20 to 30 cm of flowing water in a soil and silt bed. If necessary, these channels pass through transversal walls, the passages having a large flat stone as a lintel.

Where the channel separates from the river-bed, it is common to plant Euphorbiae and to drive wooden piles into the ground to prevent erosion. At the dividing points in the main channel, strong stone linings are placed. Steep gradients are overcome by way of traversing, so that the gradient, on average 1:30, never becomes excessive. On reaching the area to be irrigated, the channels are usually run along the side of the fields and irrigate them through gaps in the terrace walls or, where the channel runs on a higher level than the field, through 'sluices' (see also Kuls, 1958, p. 109, fig. 18).[7] Fields irrigated as described often cover more than 100 metres square, thus being larger than standard fields. Such ground is carefully levelled, the soil here consisting of thick alluvium which is highly valued. Moreover, the alluvial deposition of minerals has a manuring effect (Kuls, 1958, p. 109f; Straube, 1967, p. 198).

There is a third type of field, namely permanently irrigated plots along river-beds. In the Konso-speaking area, this is found only on the Duro and Kolme sides of the Dalpena river and on small plots in the Sagan valley. Elsewhere in the Burji-Konso region, such perennial irrigation is practised on the banks of the Dullay and Yande rivers. A slightly different type can be found in the Dirasha highlands with its small but fast-running rivers and springs and also in Burji. In Burji such irrigation plots are, however, restricted to re-entrants in the hillsides. Channels leading to the fields have stone linings on both sides, but in Dirasha and in Burji they are much narrower than in Konso. Since in these highlands it is not usually necessary to water cattle at distant places, wall-top pathways are not constructed. But exposed positions are protected with hedges or stone walls.

In the Dullay valley the flat nutritious riparian soils are also used for agriculture. In years of good rainfall the Dullay is perennial. A system of channels (*c.* 60 cm deep and 40 cm wide) is connected to serve for irrigation as well as drainage, by dividing the cultivations into rectangular plots each about 10 by 30 m (Pauli, 1959, p. 391).[8] According to informants, irrigation has also been practised along the Yaipe river. Nowadays this location boasts large-scale farms.

In Gollango, also in the Dullay-speaking area, are the remains of a dam on the Rubaya, a perennial mountain river, which fed an aqueduct nearly two km long through difficult terrain (fig. 3). The dammed-up water was channelled into a canal, which, with the help of a 15-metre hollow log, was passed over the river to proceed along the valley side above the river-bed.[9] For the construction of this canal, rocks had to be blasted in places. One such groove (approximately one metre long and 50 cm deep) survives. The blasting was done by heating and cooling with water, a task that fell within the duties of the smiths. Through branches the water was run onto an area of fields. After about two km the canal led into a dry river-bed which emptied into a tributary of the Rubaya. Altogether those fields watered solely by irrigation from rivers comprise only a small proportion in this region.

7. This is very similar to the irrigation system at the archaeological site of Engaruka in Tanzania (Sutton, 1986, p. 34ff; for Konso see *ibid.*, pl. II).
8. Pauli's data refer to the Tsamakko. Similar observations have been reported by G. Minker (1986, p. 158f) regarding the small Birelle group on the Dullay river. In the same area an even larger trench (1 m deep, 2 m wide) is recorded as part of a former irrigation system (Strecker ms, 1976; mentioned in Lydall and Strecker, 1979,p. 107).
9. Hollowed logs serving as 'aqueducts' are also reported in Burji: Straube ms.

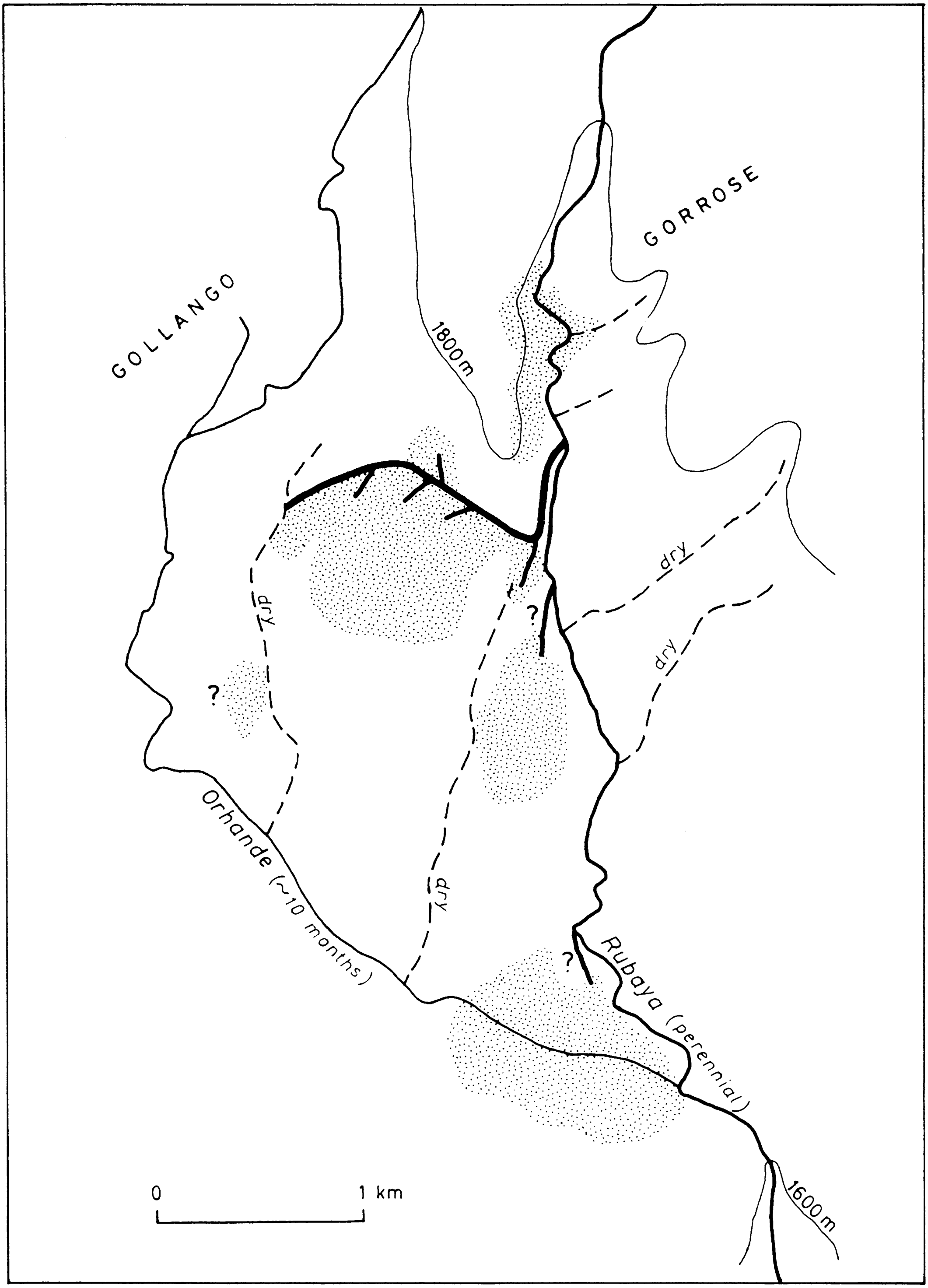

Fig. 3 *The former Rubaya inter-valley canal (bold line) and irrigated areas (shaded).*

A fourth type of field, restricted to high country, mostly above 2,000 m, may be mentioned in passing. These are for cultivating ensete. Here the soils are usually wet enough. Occasionally, however, one sees devices for running storm-water into the plantations. There is some terracing at these levels, but generally it is mild consisting of short sections with wall heights seldom exceeding one metre, despite some very steep gradients. The levelling of field surfaces for these high ensete plantations does not seem to be as essential as it is for cultivation at lower altitudes.

Towards the edges of their lands the Konso, Duro and Gawwada have constructed large ponds in dry valleys by closing one side with an earthen wall in the fashion of a dam, reinforced on the inner side with stones. These ponds serve for watering the cattle. Small basins are recorded upstream to prevent silting (cf. Kuls, 1958, p. 101f, fig. 17, pl. 22; see also Mundal, 1977; Hallpike, 1972, p. 24).

Furthermore, a wide spectrum of measures exists to regulate water conservation and prevent erosion. Most peculiar and most obvious is the park-like character of the landscape, an impression created by numerous self-sown trees and shrubs growing in the fields and along their perimeters. The leaves are used to some extent as fertiliser (the deciduous leaves of a species of *Croton* contributing to a particularly good humus). Some trees are planted whose foliage is used to feed the cattle. The 'cabbage tree'(*Moringa stenopetala*) is the most important, with leaves that serve as a valued vegetable for human consumption in the dry season.

Intercropping is usual, chiefly cereals with legumes (such as peas and beans). A common combination is sorghum, beans, eleusine and cotton. The various combinations indicate long experience, especially in adaptation to soil quality and altitude. Crops are planted at different times using fields in various locations, according to experience, need and feasibilities. This agricultural system enables long harvesting periods as well as compensating for crop failures and low harvests. It also maintains soil quality and protects against evaporation.

A multi-layered vegetation growth is the ideal. It is achieved, among other means, by consciously allowing weeds to grow up to a certain height. This reduces the drying of the soil and prevents erosion. In addition, it helps keep pests away from the newly planted seeds. Removed later, the weeds serve as a protective and nutritious mulch, in which bacteria take care of nitrogen assimilation. Nitrogen is also produced by legumes.

Permanent fields are fertilised with manure, including human faeces and household garbage. (In Konso and Burji the latter is collected at specified places just outside the towns and is later carried to the fields.) Besides, ashes from hearths, burned harvest remains and burned sods (in Burji) are used to improve the quality of the soil.[10]

Land-use zones

As indicated, there is a great variety of crops with different moisture requirements and ripening periods. This results not only from intercropping, but also from the diversity of altitude and the distinct cultivation zones. For Burji, Straube (1967, pp. 205, 207; 1977, p. 241; with Sasse, 1987, p. 108) has described three separate zones which, to simplify, might be seen as concentric circles around the settlements. This cultivation pattern is mirrored throughout the entire Burji-Konso cluster. These zones differ in the degree of intensification and in yields (as they allow the planting of different crops and, according to conditions, pasturing as well). The inner circle, close to the settlements, is used for permanent cultivation requiring constant fertiliser. The intermediate one is also well manured, helped by having the cattle kraals in this zone. Seasonal rotation of crops is a

10. On use of manure and fertilising, see Hallpike, 1970, p. 35; Kuls, 1958, p. 59ff, 111ff; Minker, 1986, p. 196ff; Straube, 1963, p. 263, 1967, p. 199, 202ff; with Sasse, 1977, p. 242, 1987, p. 106f.

frequent practice and these days shorter fallow periods are customary. In the outer zone only those tracts which can be irrigated are used intensively, the rest being used extensively.[11] In places there is a fourth, wilderness zone, intentionally left uncultivated and often constituting the borderland with a neighbouring people.

The three zones of utilisation relate basically to different economic emphases. These are intensive agriculture and horticulture, mixed utilisation of both cattle and intensive agriculture, and extensive agriculture with fallows. As an integrated agricultural system it remains definitely intensive.

Even in the outer zone agriculture may turn intensive on occasion. In fact, if necessary, the area of intensive cultivation may be extended as far as ecological circumstances allow. The zones contain a variety of potential permitting overall a range of reactions to climatic, demographic and political conditions (cf. Amborn, 1987, p. 66ff). The knowledge of these different methods of utilisation makes it possible to develop adaptability in the sphere that is economically most important, and this even in the face of dramatic change. The Burji-Konso cluster provides several examples of this, the most obvious being the transition of the Tsamakko from concentration on agriculture to cattle-keeping. Transforming the basic economy is not merely a technical issue but rather part of a more profound cultural and social change (cf. Amborn, 1988, p. 754ff).[12]

Under favourable circumstances a cultivated zone will correlate with an altitudinal zone. An ideal example is Gardulla mountain. Here no less than eight ethnic groups have successfully claimed a cake-like segment of the mountain, in each case from the river valleys to the virtual top (Amborn, 1987, p. 60; see map, fig. 1). In the highest zone barley flourishes, as well as high-yielding ensete. The intermediate zone, between 1,400 and 1,900 m, contains densely-populated, town-like settlements; here sorghum (in different varieties) is the main crop. In the lower areas cattle are put to pasture and longer-ripening sorghum and eleusine varieties are cultivated.

These diverse agrarian activities, in conjunction with an integrated cattle-raising economy, do not stem from a simple input/output way of thinking. By leaving trees, bushes and other wild plants on the fields together with the various mixed crops, by allowing weeds to grow to a certain height and by fertilising the fields with organic matter, a specific *artificial* ecosystem is created in which the most decisive point is that it simulates the co-evolution of *natural* ecosystems in the co-existence, based on long-standing experience, of domesticated and non-domesticated plants. Of course, the uninhabited landscape must have had a rich or richer variety of plants, but the system described has--through the interaction of different biological demands--become very similar to *natural* ecosystems.

Generally, it holds in Ethiopia and elsewhere that methods of extensive land-use through increased production (usually because of population growth) may lead to soil fatigue and even desertification. The methods employed in southern Ethiopia, however, have allowed good harvests to be obtained continually on small areas. Natural

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11. The different zones of utilisation are likewise to be distinguished by different user titles. The closer to a settlement, the sooner one may talk of 'private property'. In the outer circle, however, all members of a settlement ward have user claims. On account of the established inheritance rules, younger sons often concentrate on this area (cf. Sasse and Straube, 1977, p. 242).
12. The Dullay-speaking Tsamakko, also once intensive agriculturists, have shifted considerably to cattle-keeping in the last eighty years and have culturally adapted to a large degree to the Hamar style of living (even the language being partially Hamarised). (Author's observation, 1981; cf. Jensen, 1959, p. 359ff; Sasse 1986, p. 339.) An interesting case to the contrary, that is the development of irrigation cultivation among pastoralists, is demonstrated by Anderson (1987), regarding Maa-speakers by Lake Baringo in Kenya. (See also this volume.)

preservation can only be accomplished through the cultivation of a subtly selected range of varieties; this alone enables humans to use the land intensively (cf. Egger, 1987,p. 82).

Clearly, the rural populations understand natural processes to achieve 'ecological balance'. In this way a dense population has survived and thrived in this region. But the autochthonous agrarian system is at the same time an integral part of the whole culture, with all its social and religious implications.

The agricultural methods employed consume a lot of work. Tilling the fields, with hoes and digging sticks as the most important tools, is an intensive activity, for the maintenance and repair of terraces and irrigation works and the whole infrastructure (including paths, meeting places, defensive structures, etc).

Even on fields that are not used in a particular season, just as much care is taken with the terraces as with those that are cultivated. Because of uncertain weather conditions, these fields must be held ready for immediate cultivation. Therefore, 'open' terraces in an intensification area do not really lie fallow; rather, they are, in a sense, 'waiting'.

Apart from specifically agricultural tasks, which may be extended to include the care of cattle, sheep and goats, there exist infrastructural responsibilities such as the building and maintenance of pathways. Throughout Burji-Konso the importance of the organisation of agricultural labour is obvious. It is achieved on a community basis, not under a central leadership.

Socio-political aspects of intensive cultivation

Socio-politically, these communities are organised along three principles--territorial units, unilineal descent groups and a generation-group system. Through these arrangements the division and production of tasks and labour work as follows.

The *lineage* controls the availability of land (although there is private ownership as well), regulates marriage arrangements and therefore human reproduction, and takes care of the continuity of the living, the ancestors and the unborn. Alongside this, the lineage has its share of religious functions too.[13] On the other hand, the *territorial unit* has effective responsibility for labour and the organisation of working gangs. Usually at least three such types of working gangs exist, each having its own specific task to accomplish. The number of individuals in these groups relates to the activities performed. The smallest working unit consists of approximately six men who take turns helping one another with difficult jobs. The next larger group is responsible for weeding and minor repairs. Although membership in such corporations is voluntary, a cooperative effort on the part of each member is the only guarantee that he would receive support himself when needed.[14]

The most comprehensive organisation is established through the *generation-group,* that is males of the same generation passing through certain grades at a given time. The group of the 'sons'--known as 'warriors' in much of the literature--is assigned the control of the agricultural layout such as terraces and irrigation systems. When necessary they recruit working groups. Thus, while they facilitate domestic productivity, their duties stretch

13. While there is no lineage common in the inner cultivation circle, nevertheless the lineage has the ultimate supervision over the land. Under certain circumstances, former 'private' land can be distributed anew by the lineage. Lineage elders have priestly tasks. As representatives of the ancestors, they embody fertility and cosmic order.

14. Cf. Amborn, 1989, Chapter 2, especially note 19. Working gangs can also produce the reverse effect, that is, they may contribute to the stratification of society, especially if there is no interrelation between the different social organisations mentioned. (Cf. Donham, 1985, with regard to Maale.)

beyond this. Rights and responsibilities of the members grow with seniority, the highest grade being perhaps best described as 'men of knowledge'. They, or rather their elected representatives, constitute the highest political body. They have full social and economic responsibility. This includes the coordination of large agricultural and infrastructural measures, including the distribution of harvested goods on festive occasions. Individuals in this system are allotted specific economic and social duties according to their respective age. The more complicated the task, the more the need to collaborate, the entire system being rooted in the responsibilities of the whole. This is emphasised through certain social values and norms whereby the generation-group system takes a central role in the process of socialisation of the individual and his integration into his community.

Another important specific aspect of the generation-group system is its control over the right to marry and its consequent demographic function. For one thing, the marrying age for men was usually not below thirty years. Furthermore, initiation could be deferred or omitted in time of need (great droughts in particular), thus purposely effecting a decline in the birth rate (Amborn, 1987, p. 68f).

The structure of the political system is thus characterised by factors designed to counteract tendencies of individual groups to gain dominance. The kinship system, the territorial units, the generation-group system and, with it, all offices of political and religious affairs interact to balance one another. Every individual belongs to each of these systems at the same time, and may hold offices in each, while being controlled by different groups and members representing distinct interests[15] (see fig. 4). In all three areas, there is enormous diversity allowing for a degree of flexibility that balances the overall system even at times of extreme ecological, social and political stress.

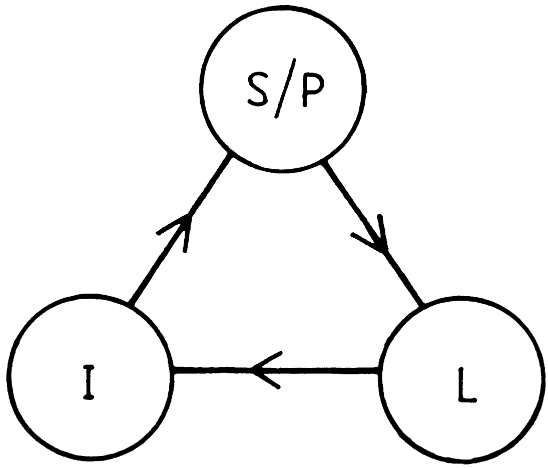

Fig. 4 *I--intensification, including highly-organised diversity and agro-silvo-pastoral interrelation. L--complex labour organisation and the division of duties. S/P--socio-political organisation (with the individual's position within the lineage, territorial and generation group).*

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15. For the interrelation of social institutions and their linkage with agricultural tasks, see Amborn, 1989, Chapter 2. Hallpike takes a different view of Konso. Although he distinguishes clearly between 'descent groups', 'residence groups' and 'generation grades', and even describes the interrelationships of certain offices and institutions, he attributes eventually no more than ideal values to these three categories, without conceding their socio-political importance. He disputes, moreover, the structural character of these institutions, and concludes that the organisation of the towns and the relations between them 'can only be described as anarchical. This is the price which they pay for a disproportional degree of cohesion within the towns' (*ibid.*, p. 129). He fails therefore to find a positive answer to the question of inner coherence within acephalous societies.

The system, however, is *not* stable, as present conditions show pointedly. In the Dullay area at the end of the nineteenth century, when the Ethiopian empire occupied the south, practically the entire warrior grade of the combined ethnic groups was eliminated in a single battle (Amborn, 1976, p. 153). This meant the interruption of the cycle of father and office-holder to son and producer. The fathers had authority over the sons who, for their part, enabled and maintained production which benefitted not only themselves but also their fathers (fig.5). With the annihilation of the warriors (sons), the system failed its purpose. The fathers then had to fall back on their own and their wives' abilities, which meant a reduction of the domestic production. From this disaster the cyclical system could no longer regenerate itself. The collapse of the generation-group system demanded not only drastic socio-political changes but also reforms in the organisation of labour. Thus important activities were neglected, resulting in a reduction in agricultural diversity and increased individualisation of the agricultural activity. This was not merely an instance of temporary population loss but one of permanent disturbance of the entire system. But it did not necessarily mean cultural ethnocide, even though it came to that in parts of southern Ethiopia (for example among the Dime).[16]

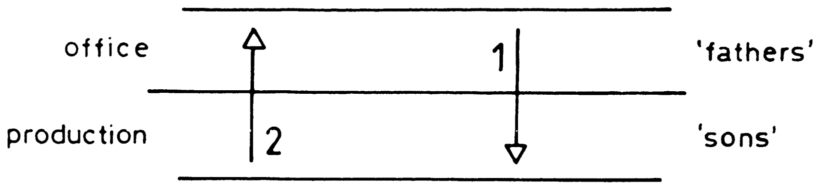

Fig. 5

Nevertheless, in the Dullay area the reduction of the agricultural diversity is evident. The terraces are now attended only in exceptional cases. Instead ploughing over terrace walls has become a common practice, and field trees are cut down more and more. Yet aerial photographs confirm that terracing in the Dullay area was once on a scale comparable to that maintained in Konso. This is corroborated by remains of old irrigation works which, with few exceptions, are now derelict. But intensive methods have not collapsed everywhere, and are still observable in the Gardulla mountains which are generally wetter than Konso and Burji. Careful control of water at an altitude of more than 1,600 m in this area is less of a priority than in Konso. Lush vegetation offers another protection against erosion, although gullying occurs in places.

Elaborate intercropping is still practised almost everywhere in the region; and maize is a recent addition. Fertilising with manure continues in the inner agricultural zone and with ensete stems in the highlands. In the remaining zones, intensification gives way to rotation farming with a short fallow. This tendency has been promoted through the coercive planting of cash crops, especially the cereal *teff,* which is a monocultural grain cultivated by plough wherever possible. With this, an irreversible process has been introduced. Even an increase in population density cannot lead to a revival of the former labour-intensive measures since the old cooperative labour organisation, with its own value system, cannot be resurrected. Instead there is a danger that when the former population density should again be reached the current more extensive farming economy will feel an ecological overload. In Burji, reactions to this have already occurred, with large portions of the population migrating across the Kenya border. This, however, must

16. In Dime, where the northern Ethiopian army made terrible ravages at the turn of the century, there is nowadays only slash-and-burn agriculture on the remarkable terraces. The traditional socio-political organisation has completely collapsed. (Haberland, 1963, p. 235ff; Harold Fleming, pers. comm.; Amborn, 1989, Chapter 5.)

be viewed alongside their traditional mobility (Amborn, 1988, p. 756). Konso apart, the areas of former agrarian and social diversity belong to the past. But until the turn of the twentieth century this diversity had been sufficiently entrenched to allow each of the individual groups to pursue its unique agricultural system and to ensure its ethnic survival.

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