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ANTHROPOLOGICAL MODELS OF AFRICAN PRODUCTION: THE NATURALIZATION PROBLEM*

By Jane I. Guyer

For several decades Baumann's article of 1928 remained the major attempt at generalization about the relationship between African farming techniques and the division of labor by sex. In the past decade, there has been a resurgence of interest in the issue, and several works have been published, grappling with it from different theoretical viewpoints (Goody and Buckley 1973; Meillassoux 1975; Lancaster 1979; White et al. 1981). This literature makes remarkably frustrating reading. While each piece of work has a certain plausibility and elegance, the conclusions, taken together, contain such direct contradictions that one must acknowledge either inadequacy in the basic data or bias in their selective use.

How is it possible, for example, that White et al. can claim that "the boundary of female agriculture also tends to coincide with that between root crops and cereal grains" (1981:829), while Goody and Buckley note that "clearly there is a fit between female farming and the house-property complex" (1973:114), that is, a form of social organization typically associated with agro-pastoral systems which combine livestock raising with grain production? And how can either of these distinctions coexist with Lancaster's statement that female involvement in farming is "one of the most conspicuous uniformities to be found throughout the agricultural regions of Sub-Saharan Africa" (1979:338, emphasis added)? How can Meillassoux associate the "long, complicated, demanding and low return processing treatment" required of root crops with female farming (1975:49) while White et al. claim that "cereal crops require more secondary processing (winnowing, grinding etc.) than do root crops, and . . . the high involvement of women in the secondary processing of cereal crops prevents a high involvement in production in the field" (1981:826, emphasis added)? How can Meillassoux and White et al. associate root crop production with small groups and no peak period labor mobilization - "the work of plantage-bouturage (planting agriculture) does not require large numbers of workers and can be undertaken by teams consisting of a few people" (Meillassoux 1975:49); "tropical root crop systems . . . require medium labor inputs with no periods of peak demand" (White et al. 1981:827) - when several classic studies describe large groups of workers brought together to construct yam mounds (Bohannan 1954:24; Forde 1934:155)? How is it that Meillassoux and White et al. imply historical primacy and evolutionary simplicity to root crop production by comparison with cereal cultivation, when the archeological record suggests that cereal cultivation may have developed somewhat earlier (Oliver and Fagan 1975: 14, 32), and a well known agricultural source notes that maize, sorghum and millet (i.e. cereals) do "fairly well when grown under quite primitive conditions" while "yams . . . are fairly demanding in the care needed for their production" (Johnston 1958:102, 114)?

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It would be unrewarding to go through these factual issues point by point; more important is analysis of the arguments whose construction seems to demand such different and apparently opportunistic uses of the research record. Both the factual and the theoretical issues have been addressed by Paul Richards in a recent review article (forthcoming). What I want to amplify here is that many of the "conceptual and theoretical contradictions [which] fly like bees" (Richards) are due to continued recourse to reductionist and evolutionary assumptions about domestic organization. Given the paucity of detailed historical knowledge of African kinship, production and political organization since the neolithic revolution, anthropologists have constructed models of types of productive and political organization, ranged on a scale of complexity and posited in sequential order. At the basis of the model of primitive farming communities lies a combination of elements whose nature and association with one another is simply assumed, namely the evolutionary primitiveness of female farming, root crop cultivation, and "domestic" (i.e. non-political) organization of production and distribution.

These propositions have been carried forward from Baumann almost unchanged: that hoe cultivation by women is the earliest form of agriculture, that root crops precede cereals, that the techniques of root cultivation are "often very superficial" (Baumann 1928:295), and that intensive cultivation is associated with cereals and with male labor. It is claimed that progress towards larger social units, institutionalized leadership, and male labor in farming have been realized through the transition from root crops to cereals: "The domestic mode of production finds its highest expression in cereal cultivating societies" (Meillassoux 1975:70).[1] According to White et al., the transition from extensive to intensive systems of cultivation corresponds closely with the transition from roots to cereals and from female to male labor: "Bantu societies appear to have originally practiced tropical root crop agriculture, with a high female contribution to agricultural labor" (1981:836), because "agricultural regimes that require medium labor inputs with no periods of peak demand are more compatible with the child rearing constraints on women's activity than are regimes which require sudden mobilization of large numbers of people" (1981:827). Cereals tend to banish women from the field, both by the demands on their labor for increased processing and by the women's greater difficulties of integrating the exigencies of cereal cultivation with child care.

The underlying constant in all this is the assumption that domestic relations can be explained in terms of the combined dictates of crop ecology and child care. We seem locked into a vision of the division of labor and resource control by sex in Africa as (a) primitive, in the evolutionary sense of the term, (b) an epiphenomenon of natural forces such as the demands and constraints of cropping systems and/or the child-care demands on women's labor, and therefore (c) a passive factor in the relationship between political and economic change. In my view, such positions can only be maintained by a selective use of the data on African agriculture because the basic propositions are historically false. The present paper argues that the current confusions are a direct result of the tenacity of natural models of domestic relations. Assimilation of the critical relationship between production and the division of labor to an outright naturalist category of domestic relations, or to a poorly theorized and empirically ambiguous "domestic domain"[2] leaves a great deal of leeway for ad hoc statements which derive only from the logic of the overall model.

Feminist scholars have been hammering at the problem of the domestic domain for several years, insisting on theoretical grounds that "domestic relationships are part and parcel of the political structure of a society" (Yanagisako 1979:191), and that any other position "treats as invariant and natural a relationship that is, in fact, variable and social" (Collier and Rosaldo 1981:316). In their view, important social processes have been relegated to an explanatory context which is secondary, subordinate and residual, by comparison with the theoretical context for analysis of relationships defined as "political." In African studies, agricultural production tends to be relegated in precisely this way, with consequent distortions of empirical knowledge, confusions of interpretation, and circularities of argument.

Parts 1, 2, and 3 of this paper address three dimensions of the naturalist position: (1) the reduction of labor organization to the demands of particular categories of crops, (2) the converse reduction of cropping patterns to the differential child-care responsibilities in "male" and "female" farming systems, and (3) the relative independence of "domestic" production from "political" processes. Part 3 is also a brief exploration of possible methods for describing the organization of farming and historical changes in cropping systems in such a way that we are not forced, by our own categories, into the false problem of the "natural" and the "political," and how they are spliced together.

Part 1

Recent generalizations have linked root crop cultivation systems to individuated work patterns and female labor, by contrast with cereal systems which require peak period mobilization and male labor. There is a fundamental problem with this formulation, namely that the labor organization characteristically associated with both roots and cereals differs at least as much within those two categories as it does between them. Characteristics claimed for root crops in general only apply to cassava, and those claimed for cereals do not apply to maize.

In the study of root crops it is critical to distinguish between yams and cassava. The social organization of yam production, as it was described earlier in this century or reconstructed from oral sources, involved a complex interdigitation of male and female, group and individual, tasks. While the descriptions given of the Yako and Tiv yam cultivation systems by Forde (1964) and Bohannan (1954) respectively, differ in certain details, the importance of group labor and of alternating, gender-specific, tasks is quite similar. The Yako men clear the new yam farms, in groups of twelve or more. The women then make the heaps. Planting is a joint activity, weeding is female, staking and training the vines is male, harvesting is joint, washing and carrying is female, storage stacks are built by men. Men and women mark and claim their own yams, ownership being determined by the source of the planting material, not the relative amount of personal labor put into cultivation. The harvest is ritualized in a collective ceremonial of First Fruits.

There is a similar social and ritual elaboration in Tiv yam farming. The groups of young men who build the mounds can range in size from six to as high as forty-five. Women do the weeding, sometimes in large work parties of

fifteen and up to thirty-five (Bohannan 1954:24-25). Means of acquiring seed yams are socially prescribed and there are explicit rules for their inheritance after the owner's death (Bohannan 1954:29). It hardly needs saying that these systems are a far cry from individualized, female, socially muted activities, and a similar pattern is more the rule than the exception throughout the yam-based farming systems of West Africa (see for example Africa 1981). Even in the Beti system to be described in the following section, where men did a limited range of agricultural tasks in the past, yam cultivation demanded more consistent male labor input than any other crop (Guyer 1980).

By contrast, cassava production is associated with a relative monopoly by a single person of the entire sequence of cultivation tasks. I can find no mention of group labor for cassava, neither does its cultivation appear to be ritualized at all. In early descriptions of African farming, cassava tends to be mentioned as a side crop, even where it accounted for a significant proportion of the diet (e.g. Junod 1913, II:15). Unlike yams, cassava production has not been socially or culturally elaborated. With cassava, labor peaks are easily mitigated because it can grow without mounds, needs no stakes, demands no marked seasonal attention, can be harvested at any time, is not stored from one season to the next and is planted from stem cuttings which require no conservation. Yields of cassava are also considerably higher per unit labor input than yams. The differences in growing conditions and in labor organization between yams and cassava is radical, and must invalidate any generalizations about root crops as an undifferentiated category.

It is on the basis of such observed differences in political and productive organization that Burnham raises objections to the "lineage mode" as a general model (1980:271). He describes the social organization of a cassava-producing people of the Cameroon savanna, and argues that their staple crop is "of signal importance in facilitating the distinctive Gbaya way of life" with its fluidity of social groupings, individuation of work and relative absence of inequality between the sexes and the generations (Burnham 1980:129). Unlike the yam-producers, the Gbaya have little collective management, or social and cultural symbolism invested in the agricultural cycle.

The same variation applies to the cereal crops. Whereas millet, sorghum, and rice production tend to be characterized by the complexity of task specialization and complementarity, peak period labor mobilization and ritual activity, maize is not. The historian, John Tosh, also notes this difference, although his own categorical distinction between savanna and forest systems prevents him from seeing the its significance: "By contrast [with cotton and groundnuts] maize which spread so rapidly as a cash crop in the southern savanna during the early colonial period, was associated with individualistic cultivation" (1980:87fn). Baumann himself commented that "the old Sudanes millet culture of men is confronted by the new maize culture, which has almost everywhere been undertaken by the women" (1928:306).

In Central Africa, it is clear that the norms for cultivation of the old staples of millet and sorghum are task-specific, rather than sequence-specific, and the crop itself carries ritual significance, whereas maize cultivation is individuated and secular. When Audrey Richards observed it in the 1930s, Bemba millet production ideally demanded an integration of separate male and female tasks (1939). Tree-pollarding was carried out by groups of young men, stacking of branches by the women, firing of the field by

the men, planting generally by men followed by their wives to cover up the seed. If necessary, the men fenced the fields against wild and domestic animals. Women did little or no weeding because the burning effectively destroyed the weeds, but reaping was an exclusively female task to which a different terminology was applied than to the harvesting of all subsidiary crops, including maize and cassava. Ritual activity centered on tree-cutting in new millet gardens, while hoeing mounds for other crops "was considered hard and unromantic work by the Bemba, quite unlike millet cultivation" (Richards 1939:304). Maize was grown on individual farms, generally by women, with no set standards of labor mobilization.

The same kind of distinction applies to grain production in Southern Africa; maize is individuated and secular, even where it constitutes the major staple. Junod wrote of the Thonga that "Their king is the maize" (1913 II:9), but millet was the ritual cereal. Maize production was carried out by individuals or small family groups, with very little specification of tasks by sex. Female labor predominated at all stages of cultivation, but men did work their own fields, and every member of the family tilled, harvested and stored the produce from his or her own plot. Kuper confirms the difference in ritual importance between millet and maize in Southern Africa, and adds that there tends to be a gender association of millet with men and maize with women (Kuper 1982:154). Sorghum, the ancient staple, is used for beer, associated with men, and threshed outside the homestead symbolically in the public sphere, whereas maize, the new staple, is used for porridge, associated with women, and entirely processed within the symbolic confines of the domestic sphere.

Descriptions of the organization of production for the old cereal staples in West Africa are particularly detailed and confirm the emerging pattern: the indigenous staples are characterized by complex and ritualized labor organization (see Linares 1981; Lewis 1981) whereas recently introduced staples tend to be individuated, sex-specific and secular. At this point it seems clear that the relevant distinction is not between roots and cereals but between old and new staples. But there are still two possible interpretations, (a) that the natural characteristics of cassava and maize allow (in the possibilitistic terminology of ecological studies) individuated patterns for technical reasons, while the old staples demand group labor, or (b) that the introduction of new crops fed into general historical processes taking place within African society in the eighteenth, nineteenth and twentieth centuries. In my mind, the latter position is the more defensible. The labor demands and productivity of cassava are, indeed, different from yams, but the technical conditions of maize production differ far less from the other grains. The main contribution maize makes to the mitigation of labor peaks lies in the somewhat shorter growing season, and the diminished necessity for a very labor-intensive pre-harvest period, owing to its lesser vulnerability to depradations by birds (see e.g. Kaberry 1962:20). However it is still a seasonal crop, demanding harvest, storage and processing labor. When it comes to productivity levels, Miracle's survey of the literature indicated that maize provides no advantage. Sorghum is consistently higher than the other cereals in terms of million calories produced per man-day of work (Miracle 1966:210-214). The striking difference in labor organization therefore seems implausibly attributed to contrasts in the technical conditions of cultivation.

A further West African study suggests that technical change in agricultural production reflects, rather than determines, social processes. In her classic study of Genieri in the Gambia, Haswell witnessed a process of individuation

and feminization of responsibility for staple food, but in this case it was attendant on a shift from one indigenous cereal to another, from millet to rice (1975). In other words, it is not that the crops themselves determine domestic labor allocation, but that social processes which may have some generality from one region to another, are concretely reflected in changes in cropping systems.

These briefly reviewed, but well known, facts suggest an entirely different breakdown and re-conceptualization of staple food types according to the social and political history of their adoption rather than their superficial natural properties. The ancient African staple foods, those domesticated in Africa, share certain characteristics in their labor organization. While the sheer amount of female labor applied to these crops has probably always been high (but variable), this seems to me much less important as a dimension of the labor process than the extraordinary elaboration of tasks, their complex interdigitation by gender and universal ritualization. By contrast, the New World crops, introduced and spread from the sixteenth century onwards are universally characterized by secularism, relatively little group labor, and the specialization of entire task sequences rather than single tasks, by sex, or simply by individual farmer.[3]

If adoption of the New World crops, which took place in most areas in the immediate precolonial or colonial periods, has tended to be associated with individuation and feminization, then the constructed evolutionary sequence of simple to complex, with the female factor as primordial, is strictly inverted. Rather, African agricultural history suggests the greater likelihood that the last three centuries have seen a movement from complex to simple, group labor to more individuated labor, greater to lesser social value, and probably increasing feminization of labor input. The New World crops, with no symbolic force and no associated institutions, provided a possibility for the renegotiation of social relationships. In many places, they became a medium for the expression of, shifts in the division of labor by sex which defined entire crops, field types or task sequences as sex-specific, rather than tasks themselves.

The recognition that production patterns often assumed to be primordial are, in fact, recent, involves facing the fact that anthropological knowledge of "primordial" neolithic production in Africa is quite limited. Moreover, the data which does exist lends no support to the root/cereal distinction, nor to a vision of unchanging productive systems. On the basis of archaeological evidence of the Kintampo culture in Ghana, Flight even concludes that "the yam-cereal combination may not be a secondary development at all, but the primary form of agriculture in Sub-Saharan Africa" (1976:219). Like many current West African peoples, these early populations grew both types of crop. And of the more than two thousand years between this and the earliest written descriptions, we know only enough to conclude that "we are perhaps overinclined to forget that 'traditional' agriculture, even as described by early travellers, is a recent development. The supposedly conservative African cultivator has a remarkable record of innovation" (David 1976:255).[4]

At this stage it would be conjectural history to reconstruct processes of staple crop change in the precolonial period, or to provide explanations of the rise or the decline of complex, interdigitated task organization. But it seems clear that, as Chauveau et al. (1981) and Rey (1979) insist, the problem can only be addressed by examining changing intra-group dynamics. Naturalistic categories cannot help with this because distinctions which are fundamental to the analysis remain untheorized. The root/cereal distinction is one such misleading framework.[5]

Any understanding of the division of labor by sex in African agriculture demands attention to the fact that the aggregation and disaggregation of task sequences, by means of staple crop shifts, is a socio-political process which has varied historically. The only way to investigate this is by describing both farming and the organization of work in terms which bring the technical, social and cultural means of control to the fore. I argue this on theoretical grounds, but also claim that other positions end up by doing violence to the research record.

Part 2

The association of "female farming" with root crops cannot be supported and involves misleading categorizations of African production systems. But the question remains as to whether such an association, between the types of crops, the routines of cultivation and the gender of the individual farmer has any basis at all, and if so, what form it takes. Does the causality work in the other direction, from gender to work routine to cropping system? Does the division of labor by sex affect farming patterns, and if so, through what processes? On this point, there are many who comfortably fall back on the routine demands of nursing babies as an explanation of the supposed association of female farming with particular patterns of time allocation. White et al. suggest that female task sequences "are more compatible with the child-rearing constraints on women's activity than are regimes which require sudden mobilization of large numbers of people" (White et al. 1981:827. See also Burton et al. 1977; Douglas 179:120).

In this section I compare the cropping patterns in two modern West African food systems, a Yoruba case where men are the main food farmers, and a Beti case where women do most of the food cultivation. I argue that there are systematic differences, but that these relate to the implications of the farmer's resource control for the structuring of their work time, only one dimension of which is directly related to differential domestic duties.[6] In the primarily male system peak periods are evident, whereas the overwhelming pattern in the female system is of a constant level of labor input. When each dimension of the work routine is examined, the diurnal, seasonal and life cycle patterns, it becomes clear that each is a social and cultural construct, reflecting the farmer's social power; only the diurnal work rhythm is plausibly related to "domestic duties."

The Yoruba and the Beti are both ethnic groups whose home regions cross the West African forest-savanna border and therefore share ecological characteristics and the same two rainy seasons per year. Their farming systems can be adapted to either the forest or the savanna environment, and their major cash crop in recent decades has been cocoa.

The farm data I use are from studies done in settlements outside the forest in both cases, further beyond the ecological border in the Yoruba than the Beti case. Idere is a town of 5,000 people in a low-population density area in Western Ibarapa, Nigeria. Nkometou is a large village of about 1,000 at the edge of a relatively high density area 25 km. north of Yaounde, the capital city of Cameroon. In both places, farmers grow food for the urban market as well as for home consumption. Although Nkometou is nearer its major market than Idere, colonial policies delayed the development of local production and marketing, whereas Idere, considerably further from its major markets of Abeokuta, Ibadan and Lagos, has produced a variety of savanna

products for the market for over a hundred years. The social histories and social organization of the two areas differ, but the resource base is less dissimilar. Land itself is not yet a main constraint on farm size in either place, and the farming tools remain the hoe and the machete. Farm planning therefore reflects the organization of work to a great degree.

The data for each case are taken from two sources: single interview surveys and farm measurements, with 55 farms in the Idere sample and 39 in the Nkometou sample, and from intensive studies of 12 Idere farmers over six months (one growing season), and 13 Nkometou farmers for two important months of the agricultural year (July and November).[7] I will first describe the differences in farm size and cropping patterns, and then interpret them in terms of labor organization. (Methods and comparability are addressed in the Appendix.)

a) Farms and Crops.

The critical differences are the following: Idere farms are larger, more compact, and cultivated at fairly constant crop densities over a longer cultivation period, whereas Nkometou farms are smaller, consist of scattered plots, and are cultivated at extremely high crop densities in the first season and diminishing steadily thereafter, for a somewhat shorter total cultivation period. The following paragraphs document these differences in more detail.

An Idere food farm consists of about ten plots, generally adjacent to one another. A plot is kept in active cultivation for about four years, so that each year new plots are opened up and old plots left in cassava fallow. The size of each plot can be measured in terms of ade, units of ten rows by twenty heaps, but the farmers themselves use this concept less to estimate area or total production than labor days. Mean farm size for full-time farmers is 2.8 acres, for cocoa farmers 1.3 acres and for employees or craftsmen, 1 acre (see Table 1, below).

Nkometou farms consist of several non-adjacent plots, also in bush fallow rotations with the cultivation cycle generally lasting three years. Each woman opens up a new field for groundnut cultivation at the beginning of each rainy season, usually in a different place within the land area owned by her husband or father. This shifting of field sites may be adaptive to micro-ecological variation, but its more explicit purpose is to ensure the maintenance of land rights in a system where possession is an important validation of legitimacy. There is no local standard for farm measurement, and indeed, since plots are abandoned gradually, it is difficult for an outsider to arrive at a valid definition of farm size. At any one time, a woman is working actively on her newest plot, those of the previous two seasons, and smaller specialty plots. Using this as a basis for judging farm size, each woman works a farm of about 1.3 acres.

Table 1 summarizes the size of food farms for three categories of Idere farmer, Nkometou women farmers, and Beti farmers throughout the region, as measured in a major farm survey.

Table 1

SIZE OF FOOD FARMS: IDERE (YORUBA) AND NKOMETOU (BETI), IN ACRES

Idere:
Food Farmers (N=36).....Mean = 2.8

Standard Deviation 1.2

Coefficient of Variation 42%

Cocoa Farmers (N=14).....Mean = 1.3

Employed, Craftsmen (N-5).....Mean = 1.0

Nkometou:
Food Farmers (N=39).....Mean (est.) = 1.3

Major Field.....Mean = 0.4

Standard Deviation 0.15

Coefficient of Variation 37%

Second Field.....Mean = 0.3

Center-South Cameroon:
Food Farms.....Mean = 1.5

Source: Marticou 1962:8

The average farm size for an Idere full-time staple food farmer is approximately twice the Nkoumetou farm, whose dimensions resemble the food farm of Idere cocoa farmers and craftsmen. Part of this difference is due to the greater commercial orientation of the Idere farmer, who sells about two-thirds of his crop, by comparison with the Nkometou farmer's 20 to 30 percent. It is also a reflection of the shorter working day of the Nkometou farmer, who generally leaves the field in mid-afternoon to begin the food preparation, water provision, and child care which takes up the rest of the

day. However, Nkometou farms are also cropped entirely differently. Both groups of farmers practice sequential intercropping so that a field is never left empty, but whereas Idere farms are heaped and interplanted at crop density rates which never exceed three plants per heap (12,000 stands per acre, with an approximate mean of 6,000 stands over the year), an Nkometou women's new plot is planted in groundnuts, cassava, maize and vegetables at a density of 75,000 stands per acre. Only when the groundnuts are removed does the crop density fall to within the Idere range, to about 5,000 stands (Mutsaers 1978: Table 5). Figures 1, 2, and 3 summarize the crop sequences, examples of farm composition at any one time, and crop density.

Figure 1

STANDARD CROP SEQUENCES ON A SINGLE PLOT

		Idere	Nkometou
Year 1	Season 1 (Mar)	------	Groundnuts, maize, other
	Season 2 (Aug)	Cowpeas, maize	Cassava, cocoyam, maize
Year 2	Season 1	Egusi-melon	Cassava, cocoyam
	Season 2	Cowpeas, guinea-corn	Cassava, plantain
Year 3	Season 1	Yams	Plantain
	Season 2	Yams/maize	"
Year 4	Season 1	Cassava	Fallow
	Season 2	Fallow	"

Figure 2

FARM COMPOSITION, MARCH.

Idere:	Example of Farm of 14 Plots		
Cleared	Crop	No. of Plots	Acres
Minus 3 yrs.	Cassava	5	1.1
" 1 1/2 yrs.	Peppers	2	0.4
	Cassava		
" 1 yr.	Yam	3	0.9
	Melon		
	Cassava		
" 1/2 yr.	Melon	4	1.8
In active cultivation		9	3.1

Nkometou:	Standard composite		
Cleared	Crop	No. of Plots	Acres
Minus 1 1/2 yrs.	Cassava/plantain	1	0.3
" 1 yr.	Cassava/cocoyam	1	0.4
" 1/2 yr.	Cassava/maize	1	0.3
Present	Groundnuts/other	1	0.4
"	Veg./minor crops	1	0.1
In active cultivation		4	1.2

Figure 3

CROP DENSITY, STANDS PER ACRE

Idere:	All fields:	approx.	6,000
Nkometou:	Groundnut field	"	75,000
	Subsequent seasons	"	5,000

Source (Beti): Mutsaers et al. 1978: Table 5

The ultimate origins of these cropping systems, in terms of ecological adaptation, is impossible to reconstruct. Both peoples have been living on the forest-savanna border for centuries. Within living memory the Beti have greatly reduced their cultivation of yams, not as a result of ecological change but because of the withdrawal of male labor (see Guyer 1980). We need, therefore, to explore the work patterns for whose structure the crops and fields represent a visible manifestation.

b) Work.

The argument I develop here is that the Beti field system allows the individual farmer to manage alone by smoothing the labor requirements evenly over the year. The Yoruba system, by contrast, depends on the mobilization of peak period labor from other sources. What is particularly interesting is that the same pattern of smoothing can be seen over the life cycle as well as the seasonal cycle, as I will show later.

The single most graphic example of the differences in task organization lies in the phasing of planting. Idere men prepare the land and then plant an entire plot within a very short period of time. An effort is made to complete planting quickly, to keep the crops on the same schedule, explicitly so that the group labor mobilized to help with the harvest can complete it in within a day or two. By contrast Nkometou farmers hoe and plant their groundnut fields in a long process which can take up to three weeks. As a result, the crops are at different stages of development throughout the growth period, and hence the harvest itself can be drawn out over several weeks. A woman's annual schedule is made of of long blocks of time, each devoted to a particular task: three weeks clearing, one week burning and cleaning, three weeks planting groundnuts, three weeks weeding, three weeks harvesting, and so on. The basic staples of the diet, cassava and plantain, have a natural flexibility and phasing in their harvest timing, but the phasing of the groundnut harvest is socially and culturally constructed.

In view of arguments that women's routine work schedules are a reflection of the demands of child care it is important to see whether women spend significantly fewer days in farming than men, and therefore have to phase their activities with maximum flexibility.[8] Table 3 does suggest that Nkometou women spent a higher proportion of days either being sick or caring for the sick than Idere men. They also spent more time marketing, for both sales and purchases, which is an activity to which the wives of Idere farmers made a substantial contribution. But work records also suggest that Nkometou women take this time out of the category "social/rest" rather than farming.

Table 2

DAYS IN MAJOR ACTIVITIES (%): IDERE, NKOMETOU

	Idere	Nkometou
Farming	56	57
Market	5	12
Other productive	3	--
Sick	5	11
Social/Rest	31	20
Total Total:	100	100

Source: Idere: 15 farmers, 6 months (182 days).

Nkometou: 13 farmers, 2 months (56 days).

In both cases, the farmers themselves worked at a regular pace, the only real slack period being the holiday season in December and early January. But an Idere farm of average or greater size required additional labor input than the farmer's own constant attention because peaks had been retained, whereas in the Nkometou system the peaks had been eliminated. Since the beginning of this century, yams had been gradually abandoned as a major crop, a field type known as esep for the cultivation of melon-seed had greatly diminished in importance, and the planting patterns in the groundnut field had been intensified (Guyer 1980). All of these changes diminished the seasonal variability of labor requirements. Nkometou women recruit outside labor on a very intermittent basis. A woman does not command male labor except through the mediation of her husband, or through paying wages. Women often help one another, but generally in small groups of two or three, for sociability or to make up for days lost through sickness. There is no accepted set of practices defining women's rights to labor, levels of remuneration, or standard units of work. When a woman hires a young man, for example to clear the bush for a new plot, she bargains over the entire project, with no explicit reference to measurement either of farm size or labor days; consequently the actual rates vary quite widely. In other words, the recruitment of labor by women does not draw on established institutions.

The Idere system is quite different. Production patterns depend on the recruitment of additional labor. The two peaks in the farming calendar involve two different recruitment systems since one is for clearing and heaping, a male task, and the other for processing and marketing, a female task. By comparison with Nkometou it is striking how elaborate are the institutions for recruitment, definition of standard units of work, and the setting of levels and means of payment.

A farmer can recruit male labor through the rural wage labor market or through social ties. In the late 1960s, non-Yoruba laborers came south to this

area in organized groups, managed by the equivalent of a crew boss. A task was bargained for and contracted with the manager. In theory, work in clearing and heaping was calculated by the ade, and translated into day-equivalents on the assumption that one worker could complete two ade per day, that is, two ade cleared, two ade heaped or one ade cleared and heaped. There were current standards of pay per ade which formed the basis of bargaining, but the final cost of a piece of work was set at a lump sum and could differ somewhat from the standard daily rate by the time the work was finished. Although this was the cheapest form of labor, the standard rates in 1968-1969 were in the same range as the rates of return to the farmers' own labor. Local Yoruba workers could also be hired by the day, but at wage rates systematically 20 percent higher than non-Yorubas.

Work parties were another avenue open for clearing and heaping. This was expensive, but had the advantage that the essential feeding and entertainment could be purchased on credit from the women brewers, oil-makers, gari-processers, and so on. The expense of work parties recruited from social equals has been noted in many places (e.g. Saul 1983). It seems clear that one reason they continue is that they serve a political purpose as well as a material one, in that they intensify the deep, but in part contractual, relations on which political mobilization depends. The farmer is creating and demonstrating social esteem as well as getting his field cleared.

Finally, a man can in theory expect his sons and sons-in-law to help with peak period farm work in recognition of his authority over them. In summary, an Idere farmer can recruit male labor by virtue of three capabilities: control of cash capital to pay wage labor, the social influence to recruit and remunerate a work party, and the authority to mobilize men junior to himself.

Recruitment of female labor for the harvest also depends on a set of social institutions and standards of reward. There did exist a standard daily wage level for women in 1968-1969, at about half to two-thirds the standard male rate of pay, but women were only recruited for wages in new sectors of the rural economy, such as tobacco harvesting. Most female labor was paid in kind. Beans and egusi-melon were the high value crops which Ibarapa had produced for the urban market for decades, and the harvest of these crops in marketable quantities demanded work parties of between six and ten women over a period of several days. For egusi, women earned one market measure per day of work, and for beans they kept half of the daily harvest. For these activities the farmer's own wife and other women of his residence group were included and paid in the same manner as more distantly related women; indeed they were often paid more. The main contribution which a man could demand of his wife by authority and without direct counterpart was porterage from farm to village and from village to market. It was striking in 1968-1969 that men insisted emphatically on this right although they entered into a variety of contractual and commercial transactions with their wives for other purposes. In a farming region oriented to quite distant food markets since before the advent of wheeled transport, where farmers now sell to the four-day periodic wholesale market at regular intervals, and where their farming villages are up to four miles from that market, it is understandable that rights to free porterage should be defended as a prereogative of male authority and that women should try various subterfuges, as they do, to get some direct reward for their services.

My argument, therefore, is this: that the seasonality in the cropping system practiced by the Nkometou women is characteristically different from that practiced by Idere men, not primarily because of the limitations of child care but because women lack the institutionalized means of mobilizing labor. The material conditions of farming reflect the farmer's social power.

Finally, one can look at the longer patterns of production over the life cycle. The Idere farmer's productive life has a peak, whereas the Nkometou woman's has a smoother curve. For both samples, age groups younger than 30 and over 60 had smaller farms than the groups in the "prime" years, but the difference between the ends of the age spectrum and the middle is much wider in Idere. The young and the old had farms which averaged 71 percent of the size of the middle age groups, while the comparable figure for Nkometou is 88 percent. (Table 3).

Table 3.

SIZE OF FARMS BY AGE OF FARMER, IN ACRES

(Full-time Food Farmers Only)

		Age group	Mean Farm size
Idere:	Total farm	15-29 (N=7)	2.2
		30-44 (N=12)	3.2
		45-59 (N=11)	3.3
		60 plus (N=6)	2.4
Nkometou:	Main Field	15-29 (N=10)	0.41
		30-44 (N=17)	0.44
		45-59 (N=6)	0.41
		60 plus (N=6)	0.34

On no account can this be interpreted as a biological life cycle. Two different social careers are reflected here. Idere men can start off in a fairly modest fashion because of later marriage and the later assumption of responsibilities, and they can cut back in the older years because increasing seniority brings both ceremonial obligations and other resources to draw on. Nkometou women acquire obligations early and maintain them at a fairly constant level throughout their lives.

When these two systems are compared, only the absolute differences in farm size seem to me plausibly explained in terms of "natural" factors such as the exigencies of child care. The Nkometou woman's working day is shorter than the Idere man's. Beyond that, all the differences relate to access to labor. Retention of peaks of labor demand is, ecologically speaking, an option and not a constraint in this, as in many other African environments. Idere men have retained certain "bottleneck" seasons whereas Nkometou women have not, because the institutions for labor control differ.

If the differences in cropping systems are a reflection of social power, then it follows that they are not reducible to gender as a natural characteristic. Smoothed labor inputs may appear, descriptively, to be associated with female farming but only because women in many (but not all) systems have limited means for labor mobilization. The reductions in seasonal peaks which Cleave sees as a recent general development in African farming (1974:141) may be related to feminization, but should be seen in broader terms as associated with a decline in the social power of farmers. Cleave himself is cautious in drawing this conclusion ("causes of change are not always clear and are probably less simple than reported" [1974:141]), but the work of Linares (1981), Lewis (1981) and Johnny et al. (1981) all indicate that the political aspects of farm labor organization may be crucial. The preservation of periods of peak labor demand within the technical repertoire of farming is related to the preservation of political networks. These considerations are sometimes explicitly articulated, as Johnny et al.'s work in Sierra Leone describes (1981). Upland rice cultivation required peak period labor mobilization, followed by a slack season, both of which were used to create and consolidate political relations and which important men could see no interest in mitigating. Swamp rice was technically and socially a different proposition, and devolved on women who "find it difficult to successfully conclude the social negotiations necessary to coordinate upland labor groups" (Johnny et al. 1981:605).

Put more generally by Richards, "accounting for what farmers do, and when, is a product of the social oranization of agricultural labor, rather than an ecological or astronomical template ordering but independent of social life" (forthcoming).

Part 3

It follows from the previous sections that the division of labor by sex and the organization of work must be analyzed as socio-political relations, responsive to and influential on other relationships. The empirical data cannot be confined within the limits of naturalistic models of domestic organization. In fact, such models are a positive hindrance to framing the questions and developing the methodologies necessary to explore the history of African production. The ways in which power has operated within production systems, and work organization has been altered under changing political and technical conditions, cannot even be described if one assumes a sociologically inert "domestic domain." Goran Hyden's concept of the "uncaptured peasantry" of modern times, characterized by "the economy of affection" (1980) differs from Lancaster's interpretation of pre-colonial systems only in that the former might substitute "passive-resistant" for the simple "passive" of the latter:

> In low density, low energy societies such as those still found on the African savannas, subsistence agriculture is centered on women in the domestic domain, is not directly linked to public policy in the political economy, is not determinative of socio-political relations, and has been an essentially passive force in socio-political history (Lancaster 1979:330).

One can make the simple point here that the conclusions are already contained within the initial conceptual distinction between domestic and political domains. But much more important to note is the implicit assumption that because political intervention in production has not taken certain forms, for example, forms which restrict and make contingent people's access to the material means of production or which imply management on a large scale, that power is therefore irrelevant to the history of agriculture and local group organization. Since naturalist models prevent us from looking at these issues, Lancaster's conclusion that "basic domestic orientations and subsistence practices are likely to persist for long periods" (1979:344) is premature, probably erroneous, and at worst, a simple logical consequence of his conceptual separation of the domestic and the political.

In Part 1, it was pointed out that the Old World and New World staples have been associated with different labor organization. But the political processes which account for, and are expressed in, these organizational forms cannot be deduced in any simple way from the forms themselves. Complex interdigitation of sex-specific tasks suggests an overall authority structure within which each sex (and age group) continually legitimates its rights vis-a-vis the other; it is the form of organization corresponding to the structure of relations which Rey designates as the "lineage mode of production" (1979).[9] But the form itself cannot indicate the nature and extent of the power exercised over the productive process or the product. The problem is yet clearer for organizational forms characterized by the individuation or sex-specificity of entire crops and task sequences, because such a pattern is consonant with both the radical egalitarianism of the Gbaya and the general subordination of Beti women. Power relations are not expressed within agricultural organization itself because in the first case they barely exist at all and in the second they are implemented so forcefully outside of farming that the entire agricultural process is subordinated. Since we know that each of these forms of organization has changed over time - the Gbaya cultivate a New World staple, Beti farming practice has altered over the last hundred years, complex structures were developed and maintained in Mali in response to state taxation policies (Lewis 1981) - then power has to be described in terms which can encompass variability.

Here one has to avoid the hopeless methodological problem of applying either the misleading overprecision of a quantitative index or the underprecision of blanket terms such as patriarchy. The point is to develop ways of describing the qualitatively different kinds of power which activate production, the specific points in the production process at which they are made operative, and the way in which they change. Contrary to the assumptions of "domestic production," it is precisely in the study of African chieftaincy systems that we can find one dimension of power which has been poorly incorporated into past analyses of African farming. According to classic descriptions, indigenous chiefs were critical to the productive process, but far more through their ideological power to cut into the natural cycles to assign meaning and to legitimate rights, than through secular controls over resources. It would be difficult to exaggerate how many times Audrey Richards

stresses this point, that "the belief in the supernatural influence of the chiefs over the land is . . . an integral feature of politico-economic life," and that agricultural rituals, "with their insistence on a hierarchical grading of status, give public expression . . . to the whole system of political values on which food production, land tenure, economic leadership, and the exploitation of tribal resources depends" (1939:355). The power to set processes in motion, and to modify their course, is a critical dimension of African theories of power, whether these define the rights of parenthood, seniority, foundership or mobilization for production. Since natural processes involve infinite regressions and no obvious points of primacy, the assignment of a beginning or a turning point must be seen as cultural, in that it defines order, and ideological, in that it defines rights.

The operation and justification of power at the level of chieftaincy is dramatized and therefore available for documentation. But, as feminist scholarship points out (see for example Collier and Rosaldo 1981), this same attention to the power of ideological definition has to be incorporated into the study of the division of labor by sex and its change over time. The means by which the labor of wives and mothers is drawn on, and by which they make their own claims on resources, are as socially and ideologically complex as the operation of power at any other level of the social order. They cannot be understood by applying generalizations about the restrictions of child care or nursing, the universality of the household, and so forth. The full understanding of agricultural systems demands the recognition of these processes. Crop rotation systems and agricultural calendars describe the material means of subsistence, but they are also symbolic means of validating social arrangements, rendering them, in the short run at least, "uniquely realistic," to apply a phrase from Geertz's definition of religion (1966:4). The Beti women's farming calendar is a product of the cultural definition of the female productive cycle as initiated by the payment of bridewealth, and of the agricultural cycle as initiated by the clearing of new land. It is also a product of the social institutions which limit their access to labor. At the same time, its logic and its technical success is a powerful, though not unchangable, means of validating and reproducing these same conditions. The calendar encompasses the natural process of plant development, the organizational process of task coordination, the political process activating the rights of participants in each other's labor and in the product, and the ideological process through which stages of growth, particular tasks, and specific rights are assigned meaning and legitimated. The only way out of the rigidities of naturalist and static models is to describe production in these terms.

What I have in mind would combine the insights of several traditions within anthropology, primarily the structural analysis of social processes as sequences embodying power and meaning, and the neo-Marxist focus on the dynamics of political-economic change as "struggle." The agricultural calendar could be described as a series of phases whose elements are internally ordered and differentiated in analogous ways to the "ritual process" (Turner 1969), the bridewealth transactional process (Parkin 1980), or the process of incorporation of individuals into descent groups (Moore 1969). Bourdieu has attempted such a description of the Kabyle calendar, on the basis of a strong anti-naturalist position that "Every established order tends to produce the naturalization of its own arbitrariness" (1977:164).[10]

However, what all these scholars indicate as important, but develop to different degrees, is a strategy for examining historical change in the points at which power is exercised, as distinct from cyclical and structure-dependent processes of reproduction. Here Rey's focus on the on-going friction of social

relations provides a way into the exploration of how and why the power points change over time. Technical innovations, such as changes in the crop repertoire, are seen as a vehicle for, and a consequence of, attempts by different groups within a population to exert control over the productive process. The agricultural calendar represents a structured set of constraints, rhythms and evaluations within which people cooperate, against which they rebel and around which they dodge. The vision one has, even if misleadingly mechanistic, is not only of a series of technical tasks, or a set of organizational forms, or a sequence of culturally distinct phases, but of all three in a kind of slide-rule construct, brought into relationship with one another through political processes which shift the points, and the means of control.

African production has changed, both technically and organizationally, over the entire period of its history and was changing well before the great cash-crop expansion of the late nineteenth and early twentieth centuries. The fact that the major thresholds posited in evolutionary theory, such as large-scale irrigation or the private ownership of land, have not been crossed, is a totally misleading indicator of stasis. Naturalistic assumptions about the division of labor by sex lend support to a theoretical approach which closes off areas of enquiry, distorts the research record, and leaves us with the unsolvable problem of constructing some kind of link between a productive process which has been described in adaptive and reductionist terms, a political and cultural process described in culturological terms, and the research record on historical change.

NOTES

[1] Meillassoux's work is contradictory on some of these points; while at times he argues against reductionism, the argument in Femmes, Greniers et Capitaux is couched in other terms.

[2] Fortes's own analytical distinction between domains is not always clear. At one point he defines "the nucleus" of the domestic domain as " the direct bonds of marriage, filiation and siblingship" (1958:8, emphasis added), and at another, discusses "jural infancy" as "structurally located in the domestic domain, but its character is defined by norms validated in the political-jural domain" (1958:12). The shift between naturalistic and politico-jural understandings of primary kin relations is disconcerting.

[3] The concept of "specialization" is inadequate to indicate the different organizational implications of task or tool specialization, versus crop-type or task-sequence specialization. The specialization of entire production groups in a single product, either to the exclusion of all else, or in addition to everything else, is yet again different. In terms of social structure, the four are quite distinct.

[4] Here it is important to note that any misleading model of African production is likely to result in misleading conclusions about the social structures of extensive farming populations in general. In the Ethnographic Atlas used as the basis for cross-cultural studies, Sub-Saharan societies account for 53 percent of all societies practicing long-fallow agriculture (171 cases out of 325: Murdock 1967).

[5] Another, and associated, problematic basis for the categorization of farming systems lies in the use of cut-off points on a single continuum. White et al. base their statistical correlational analysis in two such criteria for indicating levels of female participation: a five-point scale of "predominance," and an index formed by summing three variables - harvesting, soil preparation, and crop tending (1981:835). The three obvious problems with this are (1) that the basic data can be very difficult to translate into quantities unless very detailed time allocation studies were done, (2) all populations change over time in this regard, and (3) the theoretical significance of the cut-off points along the continuum is unspecified, and perhaps unspecifiable.

[6] The extension of the child-care argument to allow for the influence of domestic duties more broadly defined, is done simply to make it plausible enough to examine at all. It does not imply that the assignment of "domestic duties," like cooking, fetching water, and so on are natural extension of nursing or child care. On the contrary, I have argued elsewhere that such logic is faulty Guyer, (1980b). However, cooking does seem to be assigned to women in most African societies, so it makes practical, if not theoretical, sense to take this as given in an examination of farming.

[7] The Idere farming system is described in detail in Guyer 1972.

[8] Work records were not collected in hours because the logistics of such a level of detail conflicted with the aim of broad coverage, which, in the Idere case, meant working with farmers in three different villages. For Idere

men, the major activities of the two main work periods of each day were recorded. For Nkometou women, the main non-kitchen-based activity of each day was recorded, because almost every day, from about 3 p.m. onwards was spent in cooking, fetching water, bathing children and so on.

[9] The elements of Rey's model and his overall approach are very convincing, but the construction of a "mode of production" is less so, at least from the limited portions of his recent work which are available in English. For example, he insists that in the lineage mode there is a form of "real subordination of labor" (as opposed to formal subordination), and therefore a structure and process which "relates to the totality of social relations in such a way that production cannot be continued without it" (1979:48). But on sheer empirical grounds there appear to be cases in Africa where the aggregation and disaggregation of the elements of the productive process seem less traumatic than he implies. And what mode of production do the Gbaya exemplify? It is not that the elements are wrong, but that the boundaries of the model are too permeable, and what lies beyond is hardly theorized. Possibly the distinction which both Meillassoux (1975) and Collier and Rosaldo (1981) develop, between bride service and bridewealth societies may be productive, but less as static types than as an indication of connections.

[10] Like Fortes, but to a much lesser degree, Bourdieu leaves a gap open for the possible intrusion of ad hoc naturalism, although perhaps more in English than in French. Fundamentally, "habitus" is defined in cultural terms as the "generative principle of regulated improvisations" (1977:78). However, in his discussion of the calendar he makes relatively little mention of the use of power to resolve the various contradictions, and uses such terms as "the logic of practical use" (1977:105). It may seem like splitting hairs to note this, but "practical logic" can be used to explain both cases of true resolution of interests where everyone gains, and cases in which one party is able to pass the costs to a weaker one. "Habitus" must be about both culture and power, which it is more emphatically in some parts of his argument than in others.

APPENDIX ON METHOD

The use of different measures as indices of farm size for the two cases derives from the differences between the two systems. Little attention has been given in the literature to the problem of defining farm size for systems in which this fluctuates over the year, where sequential harvesting means that crop densities are constantly changing, where mid-season changes are made, and so on. The data for Idere consist of the sizes of all farms in the single-interview survey, each farm comprising those fields which were under active cultivation. The measure does not include fallow-land cassava. This is a resource held in reserve; it is not worked on, and may not be harvested at all. For the small sample, farms were measured three times during the six-month period of study, and although this did reveal size fluctuation, it was not so wide as to invalidate the survey data as representative.

For Beti farms, the problem of defining exactly when a plot can be considered abandoned, for the purposes of measurement, is extreme. A piece of land may be kept in desultory cultivation, with a little cassava and a few plantains for several seasons. As a result, all measurements intended for comparative purposes within the sample are the sizes of the largest and most important plot in the cropping cycle, the first-season groundnut field.

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