This is to certify that the

dissertation entitled

DIFFERENTIATION AMONG PEASANT HOUSEHOLDS

in

RWANDA

presented by

James Ernest McAllister

has been accepted towards fulfillment
of the requirements for

The Ph. D. degree in Sociology

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Major professor

Date 28 July 1994

DIFFERENTIATION AMONG PEASANT HOUSEHOLDS IN RWANDA

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology

1994

ABSTRACT

DIFFERENTIATION AMONG PEASANT HOUSEHOLDS IN RWANDA

By

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Rwanda presents a unique opportunity to test the theory of peasant differentiation under capitalist incorporation. Rwanda maintained its uni-cultural integrity despite colonialism and entered the "world economy" as a supplier of luxury agricultural items to the West. The movement away from formal colonialism was accompanied by the violent overthrow of an existing social order, and the two post-revolutionary republics have since supported western-style "modernization".

This dissertation is a secondary data analysis of the 1988 Non-Farm Strategies survey and investigates:

1. What factors have a bearing on income, household earnings, and surplus in excess of family consumption for Rwandan farm households?

2. Which part of the variation between farm production outcomes can be derived from categorizing production units according to Marxist class (structure) framework and which to the household phase of Family Development Cycle (demography)?

3. What outcomes are suggested by current trends in existing data for Rwanda's agricultural structural development?

Two hypotheses pursue these questions; they are concerned with the way farmers improve household well-being. A two-sided strategy makes labor available from the farm family into the market -- releasing the labor of household adults, raising a new generation of household members for future labor, and school training of children for the tasks required by modern education and valued in the modern sector of the economy.

Farms with low numbers of consumers per unit area have greater freedom to innovate, whereas conservatism (rather than considerations of conservation) is the predominant motivator of farmers with high consumer density. Extensive farming techniques may be used where there is low consumer density (or labor availability).

Farm decision-making is based on control over, and use of, resources, but traditional kinship ties, and new market meanings, are exploited as farmers attempt to manipulate resources within the Rwandan social context. Larger land-holders tend to accumulate, with resources invested in employing labor and the education of children. There appears to be a tendency for this to produce structural inequality in time, although this cannot be proven with this data.

ACKNOWLEDGEMENTS

There are a number of individuals and organizations to whom I owe a professional debt, and many to whom my debt is also personal. First and foremost, I want to thank Craig Harris, my dissertation advisor, but also my mentor, collaborator, and friend. His constant good-homour, light-handed guidance, and persistent encouragement gave me a sense of security and direction while reenforcing my confidence and sense of autonomy. This disseration is enriched by his academic rigour and advice.

I would also like to thank Harry Schwarzweller, Chris Vanderpool, Bill Derman and Dan Clay for serving as my Dissertation Committee, for guiding me through course materials, in their time, and for their advice and criticism of my proposal and the final draft of this dissertation. Special thanks to Dan Clay for the use of his data set, and for his first-hand knowledge of both its content and the country from which it came; my colleagues on Dan's class in Population and Ecology worried our mutual way through the NFS data, and I hope they each and all fare well wherever life leads them.

Prof. Ruth Simms Hamilton served on my committee up to and beyond the comprehensive exam stage, and her encouragement then and since has been invaluable. John Nalson believed in me as a Sociologist even when I did not, myself; he knew Harry Schwarzweller and passed me on to a new mentor. My debt to him is forever.

The people of Rwanda, who made their lives available to the DSA interview team, were my source of inspiration and with me constantly -

commenting silently from the data set on their own motivations and how their responses ought best be understood. Their mute guidance has challenged my skill as a sociologist and my empathy as another human being. I thank them and hope that I have heard their lives aright and represented them faithfully. Serge Rwamasirabo and Theobald Kampayana gave me freeely the insight that their citizenship brought to the data-set, and I am forever in their debt, too.

The Department of Sociology at MSU and the farmers of Michigan provided financial support which freed me from many money worries and permitted me to focus my energies on this dissertation. Computer facilities within the Department are outstanding; a belated thanks to the late Marv. Olsen. Chris Dailey has been tirelessly good humoured and helpful; and a special thanks for statistical assistance to Frank Jenkins

My colleagues in the Department were friends, fellow Collective members, and co-workers for the Union. Our lives were sundered as I returned home, but the friendships they offered and the good times we shared make the best memories from my time in the U.S. Change has its compensations, however, and I have been grateful for the opportunity to work closely with Marcelinus Molo in preparation of his doctorate; I acknowledge his scholarship and comradeship with gratitude. For the opportunity to work with him at Flinders University, and in association with colleagues for whom I developed a lasting affection, I am grateful to Riaz Hassan.

My father, Leo Bernard (Barney) McAllister wanted me to be "a doctor" from the start; I'm pleased to be able to offer it to him while he still lives. I do not now do most of the things I learned "in my father's house", but I am still, proudly, a Socialist. Judi believes in

me and proved it by marrying me and crossing the world with me. I stand amazed.

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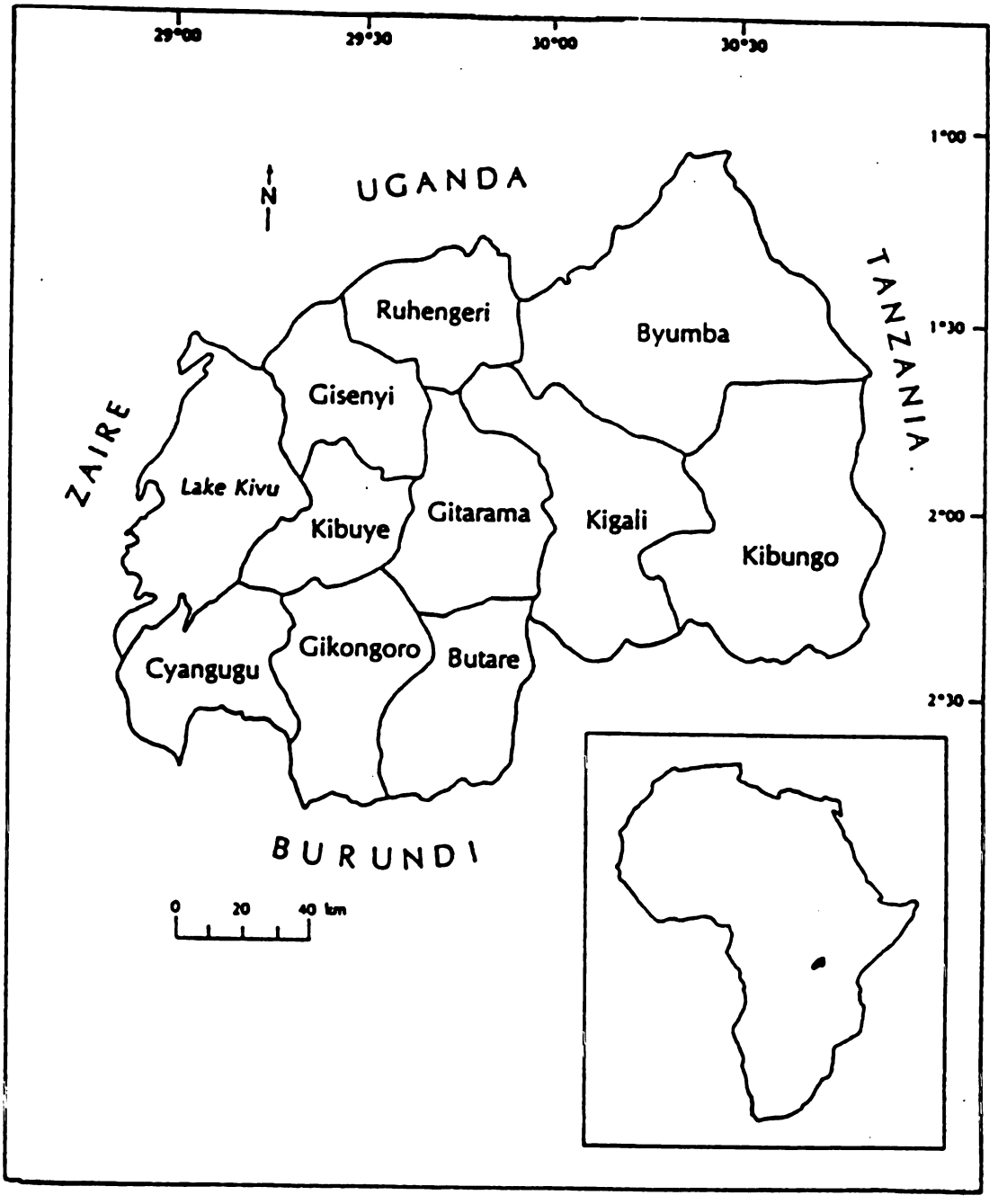

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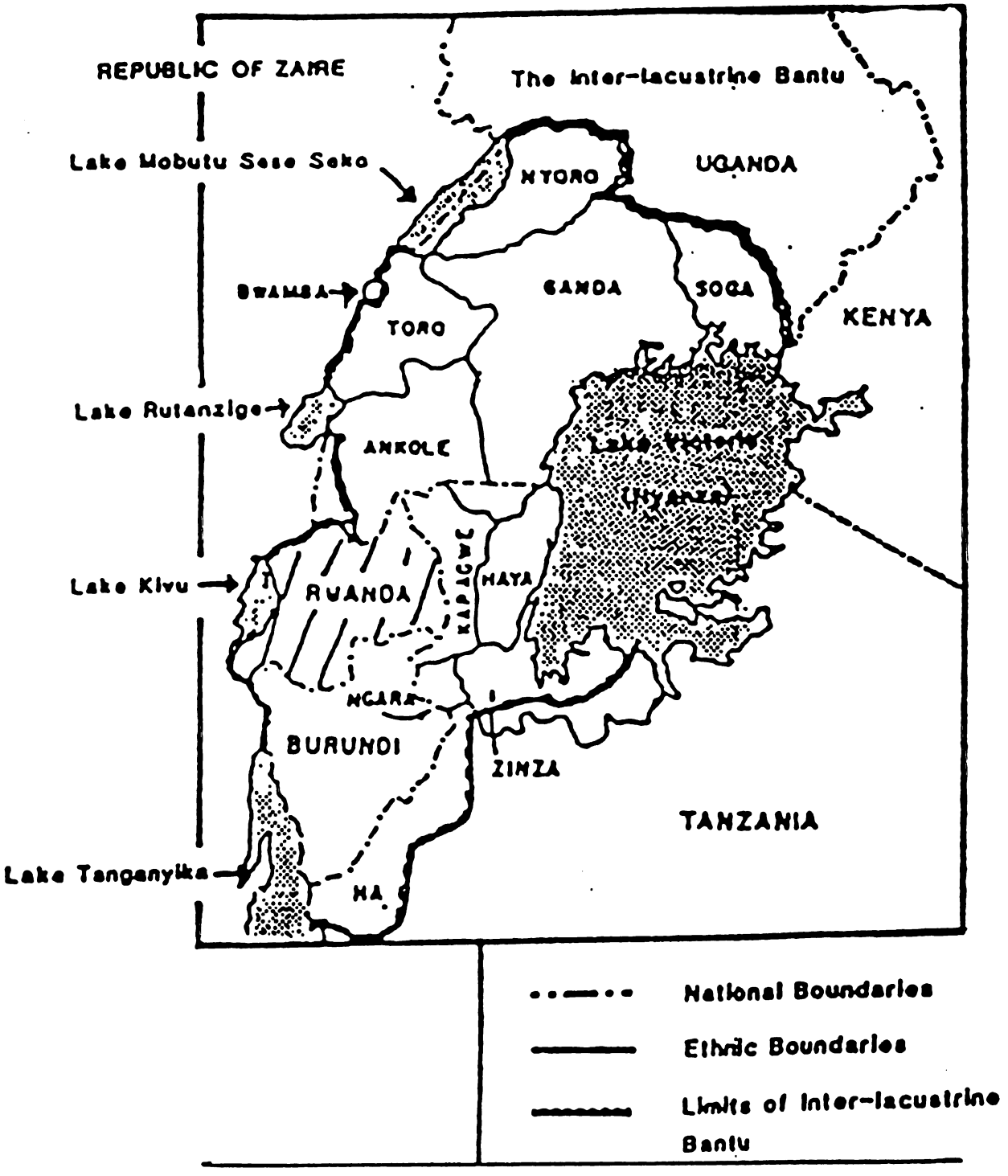

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CHAPTER 1

SOCIAL DIFFERENTIATION IN RWANDA

STATEMENT OF THE PROBLEM

In Rwanda, a densely populated country of small land-holders, about 95 percent of the roughly 1.3 million households[1] are engaged in agriculture (Ministre de l'Agriculture (henceforth MINAGRI), 1985) -- with subsistence agriculture predominating. This agriculture tends to be characterized as small-scale owner operated (Codere, 1973; Nyrop, 1985), but the forces for change are growing -- from both within and outside the country.

Having consideration for how rapidly United States rural sociology has advanced in the short time since the discipline moved beyond characterizing all U. S. farms in this way (Buttel and Newby, 1980; Schwazweller, 1984), and investigated the complications for agricultural structure of industrialisation and market incorporation, the simple aim of this dissertation was at first to step beyond the owner-operator formulation -- to reconceptualise Rwandan agriculture within a similar model, and to investigate the development process there within a "new Sociology of Agriculture" framework (Friedland, 1990).

Population pressure and partible inheritance are placing a downward pressure on farm size and for many producers, it seems unlikely that their small farms will be able, at the low level of technology available, to produce an adequate livelihood into the future. Moreover, the country is linked to the international system of commodity exchange which puts pressure on the government, and through it the farmers, to produce more and more goods for sale. Ever since European intervention

in this country began in the 1880s, both products and labor have been drawn (or forced) into "the market". In response, many aspects of the farmers' lives, and perhaps an increasing proportion of them, have become subject to commercial exchanges between enterprises.

In many other countries subject to these forces -- the densely populated countries of east, south and southeast Asia, for example -- wage employment has become a part of the lives of a significant proportion of the farmers and their children: they find employment with other, more commercial farmers, and in other industries. In yet other countries and regions -- the less-densely peopled countries of Africa and Latin America, in particular -- small farmers have either become incorporated into the system of commodity exchange as petty commodity producers or been marginalized from commercial exchange.[2] Each of these processes has its own pattern of social and economic consequences for the farming population, and its own ensemble of policies appropriate to accommodating the existing structure to it, and/or to alleviating its consequences for the participants.

As a densely-populated country where alternative sources of employment for farmers and their children are severely restricted, Rwanda's position is an African anomaly. How are farmers there responding to these various imperatives towards change and what are the consequences of their individual adjustments for the social structure of Rwandan agriculture? Loveridge (1988) identifies farms which habitually sell, and others which regularly buy, both beans and sorghum -- two staple food crops. How do such "market" exchanges occur -- among which households in what regions -- and how are they financed? One possible source of funds, and another influence of the market, is revealed by the

recent study by MINAGRI (1985) of farm households which shows a high proportion of labor exchange, much of it for money. But what consequences does paid labor have for peasant proprietorship; is there, indeed, (as the literature implies) a homogeneous "class" of peasants? Are they maintaining a small-scale, independent owner-operator agriculture, or, while these market exchanges are taking place, is a "class society", in the Marxian sense, finding its beginnings?

This dissertation treats these questions by examining the current (1988) state of affairs in rural Rwanda as if it were one stage in the process of class differentiation of Rwanda's peasantry.

DEFINITIONS

The study is located within the **differentiation debate** (Solomon, 1977):

> There has been ongoing debate over the past century as to what path (or paths) agricultural development would take under capitalism. To this day, debates center on whether farms based on the employment of wage-labor will come to dominate, or whether the simple commodity form of production will persist (Gilbert and Pfeffer, 1988, p. 25).

"The history of agrarian development in the USA", they continue, "is relevant in this light", and so too, I propose, is that of any country with a substantial agricultural component to its economy -- Rwanda, for example.

In the literature of this debate, the expressions "demographic differentiation" and "structural differentiation" have specific meanings, which I follow consistently throughout. I take data from two surveys of the Rwandan census bureau (SESA) and make a secondary analysis to examine that country's rural social structure in the context of the dynamic coexistence of <u>demographic</u> <u>differentiation</u> among peasant households, and <u>structural</u> <u>differentiation</u> of the peasant farming

sector.

"Demographic differentiation", as that expression derives from Chayanov [1986 (1926), p. 254], is the term used to define property-holding differences among farm families at different stages in their development cycle. In his classic essay on **Peasant Farm Organization,** Chayanov attributes the expression to the Russian [statistical] economists, who believed these property differences to be due "to the effect of demographic factors which follow from the nature of the peasant farm (pp. 244-5),... stressing that the chief cause of differences in farm size is the demographic process of family growth as its age increases ...(p. 254)", and its partition among heirs at the behest of the previous owner. Thus, resource control changes over the lifetime of any particular farmer in response to demographic changes, and any particular manifestation of differentation is temporary.

"Structural differentiation" is the expression (Rahman, 1986; Byres, 1986; Bernstein, 1986) used to refer to the bifurcation of the single category of **peasants** ultimately into the two **great classes** of Marxism, bourgeoisie and proletariat. Mamdani, from whose 1987 study of two rural Ugandan regions this dissertation gains considerable inspiration, puts his definition in this way:

> By social differentiation, I refer to a process that divides the peasantry into groups whose conditions of life are defined by qualitatively different production relations and material conditions. My analytical starting point is the **middle peasant** household. Historically the core of the peasantry, it best exemplifies a feature common to all peasant strata: the organic unity of labour and property in a family of small proprietors working on family land with family tools. With no other regular economic ties than those to the market, the middle peasant family exercises autonomy over its labour process. As the organic connection of family labour and family property is partially ruptured, through either adversity or prosperity, the middle peasantry begins to differentiate (Mamdani, 1987, p.210).

Clearly, change in resource holding may be a feature of the life course of any social actor,[3] but the implied structure of inequality, which is its concommitant -- a class of owners of the means of production related in the role of (potential) employers to a class of those who do not own -- continues to exist beyond the death of every particular individual who plays a series of roles within it. Therefore, we need not start by implying that class position must be inherited between generations, but only that the structure of employer / employee relationships should be reproduced and become more evident over time. Thus, while demographic differentiation produces temporary changes to family structure, which will alter as the family moves through its cycle, structural changes are intergenerational and have a tendency to become permanent.

Farmers throughout the developing world tend to be called "peasants" (Wolf, 1966): this category encompasses tenants and holders of micro-plots in association with **latifundia**, as well as small and middle-sized farm owners (Shanin, 1987). Land redistribution subsequent upon The Rwandan Revolution (1959-61) is commonly reported to have created a category of "peasants"[4] -- but who reportedly prefer to refer to themselves as "cultivators", and who were understood to be uniformly smallholder farmers (MINAGRI, 1985; Gravel, 1968, p.27, fn 19; Reintsma, 1981).[5] Like farmers everywhere, they struggle for control of resources:

- to produce an adequate livelihood,
- to create a benefice to will to heirs who they hope will reproduce the agricultural cycle,
- to meet local social obligations, and
- to satisfy the responsibilities of citizenship (taxpaying) and public participation in nation building (called **Umuganda**6 in Rwanda).

For the generation since independence, however, the resource equality resulting from that initial division has been acted upon by capitalist market forces and by the social imperative to again redistribute the land and its products to the heirs of differentially fertile parents. During this period, Rwanda's population has been expanding rapidly (crude growth rate of 3.7 percent/year)[7] while its agricultural production has almost kept pace with the population increase, primarily by bringing previously unused land into cultivation (Loveridge, 1988, p. 11). What suited the needs of existing households a generation ago must now be re-evaluated, as households pass through their family development cycles, as new households arise, and as farming resources are inherited.

Most households appear intent on passing on not just the resources accumulated over a lifetime, but also the social structure of smallholder farming -- that is, of reproducing a farm family unit. Nevertheless, for some (few) households, farm production and/or paid off-farm employment, in association with private ownership of the land, seems to have resulted in creation of an expanding capital base -- they have become petty commercial farmers. They have the financial resources to be able to employ labor. Whether they do, and thus become "capitalist" farmers, and what the consequences are for their wealth status, will be examined in the body of the thesis.

It seems fair to ask: from the point of view of individual households in rural Rwanda in 1988, what does the Rwandan stratification system look like? Who achieves a comfortable livelihood; who prospers; who pays the price? From the point of view of development theory, this small, densely populated, rural society -- with a unicultural heritage (Newbury, 1988) -- offers much to the understanding of the process of

structural differentiation following on the heels of a redistributive social revolution, and of how differentiation's effects are being mitigated or exacerbated by the family development cycle. Rwanda, in fact, as the most densely populated country in Africa, presents a unique opportunity to elaborate the theory of peasant farm differentiation, under the influence of capitalist incorporation, but this can be done only with a due regard for the specific historical and cultural circumstances of the country itself. This chapter continues now to outline the former, below, and then to treat the specific Rwandan case in more detail.

The theoretical concerns of this dissertation are with the persistence of peasantry and its response to and role in the creation of development; the responses of households to land and labor constraints on production, accumulation and efficient use of resources are its foci. The study investigates three general questions:

1. What factors of Rwandan farm households have a bearing on value of production, earnings of the household, and surplus in excess of family consumption?

2. Can a better explanation of the variation between farm production outcomes be derived from categorizing production units according to a Marxist class position (a structural framework) or according to the phase of Family Development Cycle of the household (a demographic framework)? Perhaps some combination of them will make a fuller explanation.

3. What outcomes for Rwanda's agricultural structural development are suggested by current trends in existing data?

Specific hypotheses are formulated concerning distribution of land, of farm labor, and of calculated "farm incomes", and the interpersonal

relationships associated with household decision-making about maintenance, production, and potential to accumulate surplus. This study uses two agricultural surveys of Rwanda to investigate the current relationship of farm households to the control and accumulation of productive resources. It describes how farm households, families, and individuals -- as they seize whatever development opportunities come available -- create change, while still operating within certain structural constraints.

To place Rwanda's present stage of development in context, and to provide a rationale for this study, I deal below with three issues which would ideally be broached simultaneously -- the existence of Rwanda as a small African country within a system of international interaction and its reconciliation to that situation; the development of land, labor and capital as commodities within the Rwandan state; and the ways in which the place of farmers within Rwandan society, economy and political life has changed with the development of capitalist relations among them. I elaborate these three issues in sequence, here in Chapter 1, presenting an interpretation of both the nation's history and its agricultural development, and an illustration of how census data can be used to further the understanding of changing social structure. In Chapter 2, the Differentiation Debate is resumed with this added perspective on the Rwandan example.

A SOCIAL HISTORY

> This short historical digression is necessary to understand how rural poverty is deeply [embedded] in the structure of society and how in the present social formation not ... basic needs in [the] first instance but the needs of ruling classes determine the control and use of economic surplus (Marijsse, 1982, p. 31).

When the first Europeans (Baker, Burton, Livingstone, Speke,

Stanley) entered the East African Rift Valley from Zanzibar in the 60s of last century, they "discovered" a series of small states, which have come to be called "the Interlacustrine Bantu Kingdoms" (Refer Figure 3). Nyoro appears to have been the oldest and it may have controlled the whole region in the ancient past -- perhaps two to four centuries previously, when it was the Kingdom of Kitara (Dunbar, 1965; Leurquin, 1963, p. 47). At least this was the claim of the court historians, a claim pressed vigorously by the Nyoro royal family which aspired to restoration of this ancient state of affairs. They were opposed by rival "royal families" in various of the regions -- Ganda, Toro, Rwanda -- and less vigorously by the states further to the south. Various pretenders aligned themselves with incoming foreigners of different national origins in hopes of legitimizing their claims with European armaments (Moorehead, 1960; Ingham, 1975). By the time of the partition of central Africa by the Europeans arising from the Congress of Berlin, the Ganda had established themselves in the eyes of the British as the most appropriate leaders for Southern Uganda (Apter, 1961) and the Mwami of Rwanda was recognized as that region's legitimate potentate.

All of the Interlacustrine Bantu Kingdoms have a similar tradition to account for their multi-ethnic origins. This is succinctly presented by Jones and Egli (1984, pp. 4-8):

> Agriculture arrived in the Great Lakes Highlands when the first wave of baNtu arrived. Previous inhabitants, ancestors of today's baTwa pygmies, practiced hunting and gathering, not agriculture and animal husbandry. These baNtu migrants were part of the great baNtu expansion which, as we know from linguistic evidence, started from the Mount Cameroun area in west Africa towards the end of the first millenium B. C. ....
> On the High Plateau, east of the Congo/Nile Divide, the baNtu-speaking immigrants established their agricultural system based on sorghum, millet and legumes, and simple iron tools. That system required no large-scale social organization. Defense requirements were modest in an isolated part of the world where

> there was, then, plenty of arable land; possession of iron tools gave adequate protection against economically more primitive hunter/gatherers to agriculturalists organized at the clan or sub-lineage level. Consequently, early Great Lakes Highlands agriculture determined cultural organization: notably, (a) a "segmented" political system based on small kinship groups and highly decentralized, and (b) a dispersed settlement pattern with almost nuclear families living on their farmland and not in villages....
>
> The advent of slave trading to the Great Lakes Highlands' larger region roughly coincides with the organization of the interlacustrine kingdoms, of which Rwanda and Burundi were two. From the middle of our millenium onwards, Nilotic pastoralists had been migrating south into the Great Lakes Highlands region, presumably establishing largely symbiotic relationships with the more numerous established, baNtu-speaking agriculturalists. There was plenty of land; cattle could be grazed on fallowed farmland (and besides, farmers had probably already cleared parts of the tropical-forested highlands over 1800m, turning it into grasslands). Little by little, the pastoralists adopted the agriculturalists' language and many of their customs, such as banana-beer socializing and communal work. Their mode of production continued to be different, however, and so their culture continued to be different. It was they who organized the custom of feudal relationships based on ownership and custodianship of cattle (**Ubugabire**) which grew into the organizing political principle on which the kingdoms were built. They also turned communal work into a feudal subordinate's duty to his patron in the institution of **ubureetwa** and later feudalized land rights through the institution of **ubuhake**.

Thus, at the advent of European colonies, these cattle-keeping Tutsi (or Hima) were in a position of ascendancy over the Hutu agriculturalist majority, and were using the small group of Twa for specialized courtly, administrative, and caretaker tasks. The Tutsi landowner took the role of patron to his Hutu tenant whose client status required care of gift cattle and their offspring, husbanding of the land and payment of rent, and performance of personal services (Lemarchand, 1970, pp. 36-39; Maquet, 1975, pp. 107-8, 118-19).

This ascendancy of the Tutsi ethnic group was established by a complex process of co-colonization by pastoralists (often as court emissaries) upon land already cultivated by **Chiga** people (Edel, 1969). The particular contribution cattle could make to the agricultural

ecology was harvesting the grass fallows and pasture and concentrating their remnant into dung -- used to create the fertility necessary to establish banana plantations (Friedrich, 1968, p. 188).[9] Apparently, in return for loan of a bovine, a cultivator would agree to care for the beast and its offspring, and probably to pay some agricultural produce as well.

A later stage of this process occurred, it seems, when the potentate of the "central kingdom" -- of Buganda, Rwanda or Haya, etc. -- extended a territorial claim over the colonized areas and its people, and backed the claim with armies of spearmen. However, the territorial claims and the ethnically stratified society which resulted were by no means universally acknowledged as legitimate, as Newbury (1988) demonstrates for Rwanda. Nevertheless, they were accepted and manipulated by the colonialists (Marijsse, 1982, p. 35), and this served to rigidify social divisions and to fertilize the seeds of later discontent. Newbury's recent book (Newbury, 1988) documents the process of incorporation and resistance for the Southwest of Rwanda; another significant exception to the pattern of domination was in the north and northwest -- Ndorwa, Mutara and Mulera (now Ruhengeri and Byumba)[10] -- where the hegemony of the Tutsi was established only in this century and then only at the insistence of German guns.

A whole literature exists about appropriate nomenclature to be applied in different countries for different historical epochs to categories of cultivators and their landholding overlords. I acknowledge this historians' debate but will not to enter into the controversy here. For the purposes of clarity and consistency, I shall refer to the Rwandan Tutsi, Hutu, and Twa as ethnic groups, and to lords and serfs as

classes. Peasant is the more generic name applied in the post-colonial situation to cultivators who control land.

The social system propagated in and by the central kingdom has been described as remarkably similar to European feudalism (Maquet, 1962), with a lordly class -- the repository of history, art, and culture, and possessed of the courtly graces -- monopolizing armed service to the king and controlling the land and cattle, and through them, the agricultural population. Tribute-paying financed the leisure of the rulers, and left the tenant class (serfs) with little more than enough for another cycle of agricultural production.

Five points about the brief history sketched above are of particular interest here. First, of the twelve states outlined on Figure 2 (McLoughlin, 1970, p. 42: see p. xv of this dissertation), five became part of the state of Uganda, five more are now regions of Tanzania and only two, Rwanda and Burundi, gained independence as national governments when the colonialists formally quit Africa.

Second, of those two (Rwanda and Burundi), only Rwanda managed to have a social revolution which overthrew Tutsi domination and established a government by the Hutu majority (Lemarchand, 1970).

Third, the jockeying for power among the ruling classes of the previous Bantu states has contributed to instability, especially within Uganda,[11] and has resulted in great loss of life and destruction within that country (Lemarchand, 1977, pp. 285-304). The political alliances defining the various faction fights and civil wars in Uganda have promoted the pretentions of the dispossessed ruling class of Rwanda as well (U.N. High Commission on Refugees, 1982, p. 8). This persistant desire for reenstatement by the ex-Mwami has created political disquiet

in Rwanda and bolsters the argument for maintaining a standing army in response to a threat of invasion by Tutsi refugees from all of Rwanda's neighbors.

Fourth, the historical accident which brought the Europeans into the central highlands regions at the time they arrived has now been translated, for Rwanda, into a state with many problems defined by its precolonial as well as its colonial history. In particular, the high population density of Rwanda makes it similar to Burundi, southern Uganda, and north-western Tanzania, but unlike the sparsely settled areas of Zaire, just to the west, in an environment poor in resources and in opportunities alternative to agriculture. But for the political boundary, it seems likely Rwandan cultivators would negotiate farming agreements with their Zairian neighbours. These problems may in the future be resolved by local trade developments and border loosening -- a spontaneous approximation to this is reflected in Loveridge (1988, p.59 and p. 62) -- but for the present population density and resource scarcity create real constraints on the development possibilities for this small, poor, country.

Fifth, despite the shared history of the Interlacustrine Highland region, there were considerable parts, especially of the more remote areas, in which people who had not been conquered by the expansionist Interlaucustrine kingdoms still lived at the beginning of the colonization period in "lineage societies", and made calculations about their lives irrespective of the wishes of kings.[12] Newbury (1988) describes the process of dynastic incorporation of the Kinyaga region of Southwest Rwanda only in the 80s of last century and points out that there were thus people living within the early colonial state whose interpretation

of life's possibilities for themselves and their children was not filtered through an ethnic-supremacist glass, and who, in consequence, opposed the alliance between the Belgians and the central Tutsi kingdom. In the mountains along the west of Rwanda, vestiges of similar cultural tradition seem to have survived among the Kiga -- the rough-mannered "mountain men":[13] their language, agriculture and customs were Bantu, and Edel appears to have captured their societies in her study of **The Chiga of Western Uganda** (1969).[14] Mention of them is important here because their vestigial culture appears to be the model for a democratic (Hutu) state as Rwanda breaks the cultural chains of its monarchist past.

The Chiga are typical of a great number of non-western small societies. Property rights -- both individual property rights and rights of access to common property -- once allocated, enter into social circulation. In different families, parents' rights are allocated to different numbers of children, and at different times in their personal life-course individuals might accumulate disproportionate rights to property, and thus to inordinate social power. Again and again, students of such communities discovered that techniques for reallocating rights to property and power were well developed.

The reallocation techniques were apparently intended to ensure "levelling" and the social solidarity of common property (Sahlins, 1972). For example, within the Russian "redistributive commune" (the **obshchina**), partitioning common property (for usufruct) was adjudicated and enacted through a council of elders on the basis of the number of consumers making claims against it. The power of property was thus mitigated within the local community by property redistribution (under

the guidance of lineage powerholders), and the new allocation justified on the basis of household productive capabilities and family need.[15]

The Rwandan kingdom, by contrast, had no such egalitarian processes in place. Social revolution there -- as in all its manifestations -- attempted to establish (or re-establish) rules of social justice which harked back to the concept of local control and responsibility. The violent overthrow of the Tutsi domination (1959-61) not only established the only majority-(Hutu)ruled state from out of the dozen Bantu kingdoms, but also involved dispossession of the ruling ethnic group and apparent redistribution of their property (especially their land) to members of their local communities by local-level governmental instrumentalities. I accept Codere's (1962, p. 63) interpretation that this revolution was the genuine creation of the Rwandan people, not foisted on them by the Belgian administration.[16]

Just how "egalitarian" the Rwandan redistribution was is unclear (Lemarchand, 1982, pp. 12-14), but its levelling effect appears to have been applied unequally across the old administrative regions of the country (Newbury, 1983)[17] and did not totally dispossess the Tutsi. They still number about twelve percent of the population but are no longer separately enumerated. Nonetheless, a recent statement by Rwanda's President declared a national policy that people should not be permitted to forget ethnicity[18] and its relationship to the feudal times. This suggests that the economic and social positions of the Tutsi are unlikely to improve in the near future.[19]

I raise the issue of how egalitarian the post-revolutionary distribution in Rwanda was, because the purpose of popular participation in social revolution would seem to be to redress otherwise insoluble

social ills which usually revolve around misapplication of the power which derives from unequal control (and perhaps ownership) of property. And the harmony of the subsequent society appears, by the same token, to depend on how well this redress of social ills succeeds.

I have insufficient data to demonstrate just how successful Rwanda was in establishing the redistributive goals of its revolution and I will not try to decide the matter here. I intend only to point out that the consequences of the revolution's success were that some property was distributed, that some social levelling occured, and that, once the first changes were made, redistribution was repeated within the post-revolutionary era only in a very limited way -- in the paysannats land settlement schemes (see, e.g., Lemarchand, 1982).

Under the post-revolutionary presidency of Gregoire Kayibanda (1961-73), the interests of the center and southern portions of the country dominated political decision-making, but since Juvenal Habyarimana became president in the 1973 military coup d'etat, the northern provinces have been politically ascendant (Lemarchand, 1986, p. 770). The coup consolidated a nationalist modernizing regime in power; it seems likely that the power of the northern region in politics might reenforce their ideas of the propriety of the "traditional" Kiga form of land tenure (Lemarchand, 1986, p. 102-06 and esp. p. 232).[20] Some observations will be made later concerning the direction and effects of its policies as they relate to progress in the countryside. For the present, suffice it to say, this government has been prepared to accept the constraints of operation as a "small player" within the world capitalist system, and not only to receive its military and development aid from the United States (Anon., 1982a) and the E.E.C. (Anon., 1982b

and 1986a; E.E.C., 1984 and 1985), but also to remain open to financial assistance from the Arab oil bankers and to engineering expertise for transport network construction from the Chinese (Lemarchand, 1987, p. 804). Just as the British "developed" Uganda by creating a trading infrastructure superior to that of all its neighbors (Dorsey, 1983, pp. 99 & 108), so the government of the second Rwandan republic is advancing the development of their country.

Loveridge (1988) analyses the growing market across Rwanda's borders, as well as within the country itself, for sorghum and beans. The immediate point of his finding is that Rwandans currently trade beans and sorghum as international commodities utilizing well-developed trade networks, and they appear to pay for them with their wages for labor, and the proceeds of an international sale of coffee. That is to say that we are dealing in 1988 with a society in which agricultural products and labor are treated as commodities whose prices are set by a combination of international trade and government regulation. For such an intrusion of the market to have occurred in a precapitalist society, according to Wolf (1969, p. 280),

> labor, land, and wealth were turned into commodities, and this ...is only a short-hand formula for the liquidation of encumbering social and cultural institutions.

The next section catalogs the historical circumstances of the emergence of commoditization in Rwanda.

COMMODITIZATION--AN ECONOMIC HISTORY

When the Germans made military contact with Rwanda in 1894, economic interaction was based on recognized exchanges associated with feudal obligations -- the lord contributed land and cattle, and received produce and labor prestations, the serf had to part with all but the

barest necessities retained for maintenance of his family's life, and received "protection" in return. Part of the feudal dues was siphoned "upwards" as taxes to support various strata of officialdom and finally, the royal household.

Although considerable labor was expended -- in the fields and in the army -- to keep this system operating, this labor was not a market commodity but occurred in a context of obligations and shared meaning, adjudicated not by exchange laws but by the rule of force, the final repository of which was the court of the Mwami. At the same time, in the more remote regions, lineage systems controlled land and redistributed it according to need within social definitions of rights, and farm tasks were defined on gender lines within an extended family structure, but here too, labor was not a commodity.

The German colonialists exerted power indirectly through the traditional rulers (Hyden, 1969, p. 94), but their period of domination was too short to allow them to alter seriously "traditional" Rwandan economic understandings. When the Belgians took control, they first attempted to exchange this region for the Cabinya territory at the mouth of the Zaire River -- an area which better suited their colonial expansion plans (Digre, 1987) -- but, failing that, they were determined to have the Rwandans pay for development through taxation (Dorsey, 1983, pp. 123, 222). As was usual in colonial circumstances, they offered the local people the alternatives of forced labor, production of cash crops, and sale of wage labor. Discovery and exploitation of copper in Katanga and development of large scale agriculture in Uganda provided, respectively, mining work to the west and agricultural work in the north; a third alternative, for the better educated, was work as clerks with the

colonial service or with shipping companies at the borders and on Lake Kivu (Newbury, 1988).

Usually, only the ruling Tutsi could gain access to education and jobs, and it was not until after World War II that church schools began to open their doors to young Hutu, and equip them for careers in the church and lower echelons of state service (Lemarchand, 1970, pp. 136ff). Dorsey (1983, pp. 92 - 93) demonstrates that the flows of migrants across what are now international borders were remarkably sensitive to changes in the market value of currencies -- should a migrant attempt to earn Sterling pounds or Belgian francs?

The Arabica coffee plant was introduced to Rwanda in 1921 (Leurquin, 1963, pp. 47, 70) and has grown in importance to become Rwanda's principal export.[21] Some Rwandan farmers were able to achieve comparative prosperity by providing food crops, especially to the administrative and trade centers of Usumbura, Bukavu and Cyangugu (Dorsey, 1983; Newbury, 1988, pp. 159-165). The traders, too, enriched themselves as this market grew, but in East Africa the traders were often of Asian origin (Apter, 1961, pp. 50-52).

At the same time as agricultural produce and labor were becoming commodities (Dorsey, 1983) and access to money became a source of economic power, political power was shared between the colonial administrators and the Tutsi oligarchy (Newbury, 1988). But the disenthronement of the "rightful" Mwami, Musinga, in favor of his more compliant son, Rudahigwa, in 1931 established the supremacy of the Colonialists and the mere "value in use" of their Tutsi puppets.[22] Having had his legitimacy thus undermined, Ndahindurwa (another of Musinga's sons and Rudahigwa's brother as well as his heir) was easily deposed. The

popular uprising which did so was led by educated Hutu, the heirs of nouveau education and lineage leadership (Newbury, 1988, p. 24), and given tacit approval by forward-looking colonial officials.

The revolution itself precipitated resource redistribution and consolidated the ascendancy of the new class of educated officials and teachers. But the country to which they were heir was predominantly peopled by poor peasants whose lot, although alleviated by the revolution and its aftermath, was then charged with the responsibility of paying for the defense of the revolution,[23] a commission which backfired in the military coup of 1973. The peasants are still paying for the development of Rwanda -- providing taxes, and coping with the consequences of ever-greater commoditization of their country's economy. Loveridge's analysis discovers that a certain proportion of farm households produces surplus sorghum and/or beans, and sells them in the national market, but a far larger proportion has net deficits of both crops, and buys locally-grown produce as well as commodities imported from Uganda, Zaire, and Tanzania (and perhaps, Burundi). It is not entirely clear where purchasers get the money to pay for their necessary household supplies. On the face of it, there would seem to be a net <u>outflow</u> of cash from Rwanda, but Loveridge's report suggests that the income spent on purchase of staples derives from sale of cash crops, from remittances, and from paid work, at home and abroad.

Loveridge opens up the question of the relationship between surplus and deficit production: accumulation of wealth by those rural households which consistently market a surplus, and the possible development of class relationships between employers of labor and their employees. Are there social categories which parallel these economic ones?

Marijsse (1982 and 1983) attempts an answer to this question through an analysis of the current state of social resource distribution and its effects on inequality in Rwanda, based on 1981 data. He excludes ninety-five percent of the population (the cultivators), but succeeds in proving that a class analysis (Wright and Perrone, 1977) provides worthwhile insight into the structure of modern Rwandan inequality.

On the basis of individual rather than household data, Marijsse identifies rural-inequality and anti-rural bias (1982, p. 2), and he also points out that commerce pays much better than production. He investigates existing studies in French and notes (p.13) that for an area in the south, Meshi discovered in 1974 that

> ...those families with plots over one hectare can survive, others have to look for work, mostly as day laborers [working for] other more fortunate peasants, or as a wage earner at a communal service, [or] a project, or [for] the central government....

In Byumba, in the north -- "...said to be representative of the country as a whole" -- 35 percent of the peasants had average land size of 2.6 hectares and average family size of 7 dependents (the "rich" peasants); 57 percent had an average farm size of just less than one hectare and 5.3 dependents (the "poor" peasants), and 8 percent of the population were widows with average farm size of two-thirds of a hectare and three dependents.

By contrast with this,

> in the public sector, expatriates earn about 56 times as much as the lowest paid but most numerous groups of day laborers, watchmen and non-qualified personnel in 1976. The effort made by the government to diminish the wage gap had resulted in a decreasing disparity in 1980. The range was then 42 instead of 56 (Marijsse, 1982, p. 21).

This is reflective of the "successful policy pursued by the government

holding down income disparities within the modern sector [which] makes the Rwandan income distribution situation probably one of the less inegalitarian ones in Africa" (Marijsse, 1982, pp. 27-28). Still, this pay structure results in a nine-fold difference in income level between the bottom and the top of the bureaucracy, at the very top of which is the military elite -- the present controllers of government policy and the best remunerated of Rwandans (ibid., p. 37).

In this brief review, I referred to "watershed" times in Rwanda's history. This study can be viewed as another glimpse at that country, at a new point in its history, and since it anticipates the need for further investigation, I consider this to be a benchmark study of Rwandan rural social structure, and hope that it will be followed up in due course.

PLAN OF THE DISSERTATION

Briefly, this dissertation argues that in Rwanda, land, family labor, production, and what are regarded locally as "assets" have been changing their nature as development occurs. Under the influence of farm production changing to include cash cropping in addition to subsistence cropping, and of a subsistence economy coming to have an ever-growing cash component (crop sales, as well as employment in both agriculture and in non-farm industry), the society is moving from having a predominantly homogeneous class structure based on farm family labor to having a bifurcated one -- still based on farming, but with wage labor becoming increasingly important. The technique is to classify every household according to its family development cycle phase, and according to its class. But cross classification of these two scales proves too complex for reasonable interpretation, and less complex classifications

are finally used.

The argument then proceeds to demonstrate inequality of resource holding. One aspect of this inequality is that some households control few or no resources -- they are the landless. But among those households which have access to land, labor supply is often adjusted to make use of land resources. Family size is adjusted by breeding and by addition of kin to households. Thus family labor is an intimate function of resources; but so is hiring of non-family labor, and two important questions follow: Who hires, and into what sorts of jobs?

However, the consequences of hiring might be entrenched in class differences, or hiring might improve agricultural productivity, or both. Finally, I investigate what type of agriculture is most productive, and in the most socially acceptable way.

The layout of this dissertation is as follows: Chapter Two reviews pertinent literature of the differentiation debate and also places the Rwandan situation in a context of development and peasant studies. Hypotheses specific to Rwanda are drawn from this review. Chapter Three discusses problems associated with operationalizing the concepts in the hypotheses. Chapter Four examines the hypotheses in some detail, while Chapter Five reviews the findings, examines their significance for policy in Rwanda, and summarizes major sociological findings of the study.

NOTES

1. Households were defined, for purposes of the study, according to the definition on Chap. 3, p. 20 of this dissertation.

2. Yet another means of their economic absorption has been full- and part-time employment on plantations. The tea industry of Rwanda appears to operate on a government plantation monopoly basis, but no data were collected on it for this study, and it will not be treated further here.

3. The old image -- often used in US perception of agricultural change -- of young farmers mounting an "agricultural ladder" as they raise themselves "above" humble origins and strive to become property-owning farmers in their own right (Kloppenberg and Geisler, 1985) seems like it might apply here. I will raise it again, in more detail in the next chapter.

4. I use the term "peasants" to relate this work to the body of literature known as "Peasant Studies"; no pejorative is intended. I shall generally call the farmers of Rwanda "cultivators".

5. Later sections of this disseration will, of course, take this characterization to task.

6. Laverencic, 1982, pp. 4-7; Marijsse (1982, p. 38) notes that 10 percent of accumulation in the country in the second Five-Year Plan was intended to be raised by this Saturday "public participation". See also, Derrier, 1985. Two similar institutions are called **Ujamaa** in Tanzania, and **Harambee** in Kenya; in Uganda the same principle is embodied in **Bulungi Bwansi**, which literally means "for the good of the community" (Mamdani, 1987, p.200).

7. Anon., 1986c, p. 7.

8. Newbury, 1988, pp. 29-33.

9. This looks like an interesting variant of the **chitimene** (**Citeme**) agricultural system (Long, 1968, pp. 25-26).

10. Newbury, op. cit., p. 27.

11. Anon., 1986b, p. 8.

12. See Schneider, 1979, (his) Map 5.

13. Southall, 1976, p. 276: "...[T]he Bakiga are simply 'highlanders' so defined by the first colonial administrators".

14. See also, Maquet, 1962, pp. 97-100; Reyntjens, 1984.

15. One might even suggest that their perception of property relations could be summed-up under the aphorism: by each according to his (sic) capacity, to each according to his need.

A debate existed in the Eastern European peasant literature at the end of the 19th Century around the theory that lessons could be learned from the **obchschina** concerning property redistribution which might make it unnecessary for there to be a resort to violent revolution to solve **the property question.** According to Shanin (1983), Marx turned his attention to this debate towards the end of his life, and may have been convinced that **the peasant commune** offered an alternative to the violent overthrow of Capitalism.

If "primitive communism" did indeed have a peaceful solution with justice to offer, that solution seems not to recommend itself to "civilized capitalism".

16. "...[T]he leaders drew on the energies derived from the Hutu experience", as Newbury (1988, p. 180) says.

17. According to Newbury (1983, pp.267-68; see also d'Hertefelt, 1965, Sect 4 (2)), repudiation of Tutsi domination -- as demonstrated by voting pattern at independence -- was strongest in two of the three national regions she defined: in the three northern provinces, where the "semifeudal structure" was weakest -- or conversely, the "**bukonde-bagererwa** (lineage) system" of the Kiga still represented the "tradition" -- and in the "centre of the kingdom", where the semifeudal structure was strongest. In these two areas, personal violence to the Tutsi lords was most fierce. It seems likely that dispossession of them also occurred. In the intermediate regions -- one is left with the impression -- reprisals were taken against especially disliked Tutsi individuals, but the overall structure may not have been so totally destroyed.

18. This sentiment appears to have been consistently a feature of majority leadership. See Newbury, 1988, p. 191.

19. I have not kept pace with the country's ethnic situation since the attempted coup of 1990, but I presume the position of the Tutsi is now worse than it was previously.

20. Characterizing the re-institution of Kiga tradition as "modernizing" is not so paradoxical as might first be assumed. I have in mind that the present government of Rwanda is a "nationalist modernizing" regime in the sense that it is not concerned with radical social or political change but rather with "modernization" in the conservative tradition, and that its perceived province stops at its national borders.

I have also a second image in mind, derived from an old paper by Jayaraman (1973) -- from a time toward the end of the Traditionalism -Modernism debate -- in which he argues for Zambia that "traditional" forms can be put to innovative use by "modernizing" Africans.

21. Anon., 1987b, p. 18.

22. Dorsey (op. cit., p. 96) argues that the chiefs had contributed to weakening their oligarchy (and hence the monarchy, too) in that, by sending labor to work for Europeans -- the condition upon which

they kept their chieftainships -- they undermined their own local power. Nevertheless, Newbury (op.cit., p. 53) says of the initial incursion into Rwanda,

> There was...no single Rwandan "response" to the colonial invasion. Some Rwandans resisted, some collaborated, and many manoeuvered to create opportunities from the presence of these foreigners who had clearly come to stay.

I infer that the responses to later stages of capitalist incursion are similar.

23. Lemarchand, 1970, pp. 197-227, and 279-286.

CHAPTER 2

THEORETICAL BACKGROUND AND HYPOTHESES

The first section of this chapter reviews literature pertinent to the differentiation debate, to the importance of land in rural society, and to one conceptualization of demographic differentiation, the family development cycle; the second part of the chapter develops hypotheses from the review of the literature.

PEASANT STUDIES BACKGROUND

According to Shanin (1987, p. 3), peasants are "small [scale] agricultural producers, who, with the help of simple equipment and the labour of their families, produce mostly for their own consumption, direct or indirect, and for the fulfillment of obligations to the holders of political and economic power".[1] But, what happens to these producers when development occurs?

Differentiation Debate

Over the last two centuries, two contending schools of thought -- the "structural differentiationists" and the "peasantists" -- have debated the likely future development of simple technology-family based agricultures and their practitioners, the peasants. Friedmann (1978, pp. 555-556) clarifies the terms of the debate -- the ways in which the peasant form of production is likely to develop -- thus:

> The analysis of the [persistence] and disappearance of different forms of production is facilitated by the concepts of reproduction and transformation.... The specific organization of producers does not necessarily outlive the act of production. **Reproduction** occurs when the act of production not only results in a product,...but also recreates the original structure of social relations so that the act of production can be repeated in the same form. Reproduction is both social and technical.... [I]f any of the technical or social bases of a particular form of production is endangered, either production

> ceases or its form changes.... If a new form of production replaces the one which has been undermined, then transformation occurs....

The structural differentiation school stresses macrostructural social change (social transformation). According to them, agriculture has the same dynamic as the rest of capitalist industry: application of research to technology and of capital to the production process enhances productivity and results in a secular trend towards an ever-greater concentration of capital and workers (Marx, [1867] 1967; Lenin, 1899). Agriculture has many distinctive features -- an extensiveness and contact with nature especially (Newby, 1980) -- but it is essentially of a piece with other industries, and can be expected -- once certain technical problems are overcome (Mann & Dickinson, 1978) -- to develop in much the same way. Development along this path implies a bifurcation of the peasant stratum into two classes -- those who <u>own</u> the means of production and those who <u>work</u> with them (Rahman, 1986, p. 6). Other classes may persist for varying periods (Sorokin et al., 1930; Taylor-Awny, 1987), but they are destined for "the dustbin of History".

This perspective emphasizes that classes are derived from the relationship producers have to their means of production, and from the resultant relationships they form with each other in the context of working with land, labor and capital. Hence, land-owner/land-renter interactions in many historical contexts (Wolf, 1969; Paige, 1975) have forced relationships on participants which have involved landlordship and tenantship in super- and sub-ordination. Similarly, the accumulation of capital for reinvestment is different between those cases where a self-employed producer in agriculture keeps all the returns from labor on the farm, and those situations where the owner of the product

pays wages to workers.

In contrast to the position taken above is what Kitching (1982, esp. pp. 6-18) calls "the populist tradition", those scholars impressed by the apparent persistence of owner-operators as a feature of the agricultural structure of many societies, including the United States. But, if one defines sub-schools of persistence theorists with regard to basic causal mechanisms, this leads to the insight that the persistence school is really two very different positions. One, which believes that small-scale farmers make a vital contribution to the economic life of their society, sees peasant agriculture as having its own dynamic which continues to re-create peasant family farms. The essence of this dynamic lies within the economic forces which link the family farm to the wider state (and world) system, and in the nature of farm families themselves (Chayanov [1926], 1986; Kautsky [1899], 1980 & 1988). The other sub-school of peasantists believes that peasantry continues to exist -- or even comes to exist -- because the changes in the encompassing (capitalist) society create the circumstances -- intended or unintended -- in which simple commodity production will reproduce (see e.g., Mooney, 1982; 1983).

As an example of persistence of the first type, in the rest of her article quoted earlier, Friedmann (1978, p.556 et seq.) argues that

> Enterprises organized through wage labor and those organized through household labor have structurally different kinds of costs....

That is, household labor farming (peasantry) persists because it is internally stable, capable of reproduction, and able to resist external forces for change. In these terms, the balance between the tendency towards wage labor and that toward family labor is, at a particular

time, tipped in favour of the latter.

Peasant farm families, usually, are self-provisioning -- this may involve providing also a surplus dedicated to rent, taxes, interest payments, etc. Within this singular production unit, however, labor demand is creaated and the family responds by producing its own labor units. But time must elapse before helpless children become significant producers, and ultimately, producers of surplus in excess of their own subsistence. Later still, family labor takes the reward of its contribution to household production in the form of inheritance.

From the other (incorporationist) persistence point of view, Wells (1984) argues that peasantry persists because external forces of capital find it to be a useful structure for exploitation, extraction and accumulation. She suggests that this is the appropriate way to interpret recent changes in the California strawberry industry. Strawberry growers experimented in the sixties with large scale production of this crop but were threatened with bankruptcy by the ability of labor to withdraw its efforts at the time when the ripe crop was susceptible to rapid deterioration. These owners of capital, wishing to transfer the cost of uncertainties in yields and markets to the fruit workers, created the illusion of owner-operator self-direction by contracting small parcels of land for crop production so that small-scale growers took responsibility also for harvesting and for crop quality. In the process, a "new class" of small, family farm operators came into existence, replacing a paid labor force, which had itself -- not long since -- replaced a pre-existing stratum of small-scale family operators.

This position is basically also a "capitalist-logic" argument, as is the differentiation school. Both of the peasantist sub-schools

emphasize the centrality of peasant family farming. Chayanov, as one example, clearly gives weight to both aspects of persistence. Basing his theory on 30 years of zemstvo statistics from 19th century Russia, Chayanov (op. cit., pp. 247ff.) acknowledges that farms did not remain constantly at a certain level of prosperity or at a particular stage of development but that, over time, "[s]ome... strengthened their economic position and expanded; others...declined and passed into lower economic classes." He attributes this to

> "two powerful currents. One, in which the young, undivided farms with small sown area mainly participate, is rising, expanding the volume of its farms under pressure of family growth. The other is declining, largely due to the dividing of old, complex families....
> If both currents are mutually balanced..., the numerical relationship of the classes will remain unchanged. If we merely make a wholesale comparison of the totals of...two censuses separated by a long time interval, we get a picture of complete static calm."

According to Friedmann (1978, p. 556) the present stage of development of capitalist forces of production, the specific nature of the owner-operator form of production, makes it superior to "pure capitalist" agricultural enterprise (see also Friedmann, 1980; Mooney, 1982).

But Chayanov also enunciates forces operating in capitalist societies early in this century by which capital (or "the money economy") "took hold of agriculture", making it unnecessary for capitalist agriculture to displace peasants. It was not necessary to create large capitalistically-organized production units based on hired labor; it was necessary only to convert them to petty commodity producers. Capital, then, could use the more subtle extraction of "oppressive credit conditions" (Chayanov, 1986, p. 257) to accumulate capital for the credit system rather than for the producers themselves {Wells' (1984) point, also}. Thus, according to Chayanov's vision "every small

peasant undertaking becomes an organic part of the world economy..." (p. 258) through these trading links.

Greenhalgh (1985, p. 572) comments on Chayanov's attempt to characterize "processes of birth, maturation, and so on [which] give rise to a typical sequence of changes in family composition...a rise and then a fall in number of consumers". To cope with these (cyclical) socio-demographic changes, "he developed a highly simplified model that tied level of family production solely to level of consumption needs". Greenhalgh believes that the family effectively becomes a different economic unit at different stages in this cycle, and she recommends that a more sophisticated model {such as that developed by Fortes (1958)} is more appropriate to capturing the complexity of concurrent generational and economic changes. Emphasis on family cyclical expansion, and re-creation at partition, of peasant households earns this group of thinkers the alternative designation -- the **demographic differentiation** school.

In short, differentiationists expect to see peasants becoming either capitalists or laborers; if this is not happening, it is because what they perceive as the tendency is being blocked (McLaughlin, 1989). Type 1 Persistentists expect to see peasants remaining as such; if change is occurring it is because forces are at work which effect the conditions on which the stability and reproduction of the peasantry are based (Geertz, 1964). Type 2 Persistentists also expect to see peasants remaining as such; if change is occuring it is because peasantry has become no longer profitable for capitalism (in some unreified sense).

Unfortunately, mere observation is not enough. The image of an "agricultural ladder" -- an alternative formulation of the demographic

differentiation proposition -- has been one metaphor used historically to account for cyclical change in resource holding. The agricultural ladder provides a model for what one expects to see in a particular situation, and one can compare observations with that model -- demographic differentiation and the agricultural ladder are ways of explaining the appearance of change when in fact no real change is occurring. The sense in which the ladder might apply here is that among Rwandan sons (and, more recently, daughters) receiving their patrimony, all but "only children" probably will not have made available to them a farm of the size that their parent had at that same moment (Clay, 1992), from parental estate partition. Thus, from being involved in the production of a family which might have been independently owner-operating, the new farmer will have slipped "down" a rung or two on the agricultural ladder. This can be interpreted in demographic terms: it is possible to assume that an enterprising young (wo)man might begin -- and, over an industrious lifetime, succeed in -- climbing the ladder again, ultimately reaching, even surpassing, the position held by the land-holder of the previous generation.

Structural differentiation is at issue only if some farmers move from employee (or owner-operator) status to being employers, and then transfer claims to property in land intergenerationally such that, once it is established, each new generation inherits the employer-employee relationship.[2] Only longitudinal data will allow this question to be solved (Cox, 1984; Kritsman, 1984).

The two major views -- that peasants will develop either into capitalist farmers or proletarians, or that they will enter commodity production and then reproduce themselves as simple commodity producers

-- continue into the "modern era". Indeed, the period after World War II saw the application of these two European models to "third world" peasantries (Griffin and Kahn, 1978). The models reflected off each other and sometimes borrowed selected assumptions from each other, but kept their essential distinctiveness (VanderGeest, 1988). Much recent literature in the sociology of agricultural production in Africa has demonstrated Chayanov's insightfulness (e.g., Hunt, 1979), especially in circumstances where a land "frontier" is available to absorb overflow population; in other places, bifurcation does seem to occur (Currie and Ray, 1985).

In some cases, they have proven equally satisfactory as a framework for explanation of certain trends in agriculture. For example, the development of part-time farmers within developed countries and Newly Industrializing Countries recently has seemed to the bifurcationist view to be a mere vestige of the proletarianizing peasants staging a last-ditch refusal to acknowledge the inevitable; to the persistence perspective, these part-time farmers represent a permanent supporting "beam" within the agricultural structure.

In a second case, the migration of offspring of peasants swelling the cities of the third world has been variously interpreted. They have, for the peasantists, become the "subaltern classes" (Shanin, 1987, p. 472), working in industrial enclaves and in the "urban informal sector" (Bromley, 1978) while making remittances to their families of origin. The money they send back might be used for financing rural development (Cain, 1983, p. 694; Byerlee, 1974), or it might merely help to support the home family in subsistence (Stark and Lucas, 1988). To scholars of the bifurcationist school, migration offers proof of the correctness of

the theory of structural differentiation as the path to capitalist development; to the peasantists, it seems to represent (at least in part) a transporting of the petty bourgeois from the rural to the urban ("informal economy") environment, often with little loss of the "culture of peasantry" (McGee, 1973; Roberts, 1978).

As a third example, the "repeasantization" of certain areas -- especially of erstwhile agricultural estates (Sorokin et al., 1930; Craig, 1946; Taylor-Awny, 1987, pp. 166-173), where redistribution of land created small-holders from people who were once the tillers (but in the role of agricultural workers) -- seems to the peasantist view both to justify their belief in the resilience of the peasantry as a social actor, and to give the lie to their intellectual opponents' dismal predictions of peasantry's imminent demise. The alternative perspective argues that too short a time frame has been applied to special conditions, and "the fullness of time" will see structural transformation exerting itself.

In the literature on developed agricultures, the debate has been all but decided (in my opinion) in favor of the bifurcationist view: once agriculture has overcome the technical constraints of seasonality, and the rate of turnover of each cycle of production (Mann and Dickinson, 1978), capitalist forms of production (involving managers and workers) can capture the process.[3] Technological advances in crop and livestock production (Constance, 1988) as well as in the manufacture of agricultural substitutes (Goodman, 1987) seem to be rapidly re-engulfing the eddies (enclaves) created by the flow of capitalist development, within which simple commodity producers once had some leverage to control their own production decisions. Controlled environments and the chemical

protection of short-life-cycle species (Heffernan, 1972) as well as biotechnology and "varietal engineering" (Buttel, 1986; Kloppenburg and Kenney, 1984) provide empirical justification for this position.

By contrast, it could be argued that the more "developed" capitalism becomes, the more likely there are still to persist spaces -- among the corporations, the "boards", and the "parastatals" -- in which simple commodity production can exist, perhaps even flourish. Thus, as Bernstein (1988, p. 264) argues, it becomes relevant to ask how much persistence/partition and differentiation are occuring in any particular instance under the influence of a wider world system, and how does one attribute differentiation to family/cyclical and intergenerational/ structural causes (see also Greenhalgh, 1985). For any contemporary society -- almost invariably affected by capitalist market forces - the net balance of these forces will be a matter for empirical determination; individual situations need to be examined for their historical specificity. And there may be room, within the interstices, even for small nations of petty commodity producers, as Rwanda has been characterized as being, to develop (and flourish).

In the World System view (Wallerstein, 1974; Chirot, 1986), Less Developed Countries will be allocated places within an international division of labor appropriate to their potential subsidiary contribution to the accumulation process -- they are expected to be contributors to, rather than accumulators of, the benefits of capitalist incorporation. If this is the case, Less Developed Countries will not necessarily be subject to the same development potentialities as were the Western European countries in the Nineteenth Century (Amin, 1976). In particular, the labor-absorptive potential of industry is not usually

present and thus the "pull from" the land will not be as great as in the past (Tadaro, 1969; Harris and Tadaro, 1970).[4]

Land

Land (in its broadest sense) has always been the means by which Nature and Labor have cooperated together in the production of socially useful goods. It follows, then, that any sociology of agriculture must, also, focus on land. And this makes it necessary to give a theoretical appreciation of its centrality to both the production and distribution systems in rural society. For Rwanda, we must examine, too, the reality of its ownership for the farmers.

Gilbert (1983, pp. 6-11) lists the physical characteristics of land that hold sociological import as

> 1) As part of nature, land is not created by human labor. It is a "free gift." As such, land is non-reproducible, relatively limited, and fixed in supply....
>
> 2) Land is spatially immobile, both physically extended and locationally situated. It cannot be moved about at will; hence the distinction between real and personal (movable) property.
>
> 3) Land is durable. Indeed, certain physical dimensions of it are relatively permanent and indestructible (e.g., extension and location).
>
> 4) Land is not homogeneous but rather quite variable in quality, particularly with regard to fertility and situation.
>
> 5) Land is necessary for life. People and things must occupy certain spaces and locations. Land is not a single resource but instead constitutes a finite resource base that sustains human and non-human activities....

Finally, he settles on a definition that he derives from Barlowe (1952). Land is "the sum total of the natural and man-made resources over which possession of the earth's surface gives control".

Rwanda's population density (i.e., its person:land ratio) is the highest of any country in Africa, and competition between humans and

cattle for land resources is also reputed to be high (MINAGRI, op. cit., 1(1): p. 53; Anon., 1987a). In 1987, the human population was 6.5 millions, with a 3.7 percent crude population growth rate (Anon., ibid.). This is almost 250 people per sq. km. (or 2.5 people per ha.), and in terms of arable square kilometers, population density is 400 (Anon., 1986b, p. 7). This might be compared with 700 people per sq. km. in some parts of China (Kitching, 1982, p. 103); 1000 per sq. km. in Java, Indonesia; and 32 in the United States.

Newby (1980, p. 37) notes, in his review of "Landholding and the Social Structure", that in farming areas

> property rather than occupation...is the defining principle of the stratification system...and rather than division of labour per se, it is the organization of property relations which shapes the nature of the rural class structure (see also Stinchcombe, 1961).

Moreover, because land is (relatively) fixed in quantity, it constitutes a natural monopoly, and, since it is not -- like an ideal factor of capitalist production would be -- infinitely mobile, it is both quantitatively and geographically inflexible. Thus, in poor agrarian societies, landholding becomes a singular category of ownership of the means of production -- so that, access to and control over land is a crucial source of wealth: labour needs access to land to be productive and can be manipulated in terms of that necessary access. The structure of landholding is therefore intimately related to the structure of power in such societies (Newby, 1980, p. 36; Barraclough, 1969, p. 22). This is in fact merely a restatement of the classical definition of "class"; the ability to use land to command the labor of the farmer, the farm family, or other people is its defining characteristic (Byres, 1986; see also, Marijsse, 1983, p. 212 et seq.).

Within the history of peasant agriculture, three forces have operated to maintain equality of resource distribution: local redistributive customs, family partition of parental estates, and social revolution. All three of these forces have an impact on the current situation in Rwanda. In Chapter 1, I drew minimal attention to a particular example of social revolution, that which established Rwanda's First Republic. The popular tradition believes that it was associated with the dispossession of the landlord caste and distribution of their property to the "masses", although there is no clear record of just how much property distribution occurred at that time. The other two forces both focus on the role of the community and of extended and nuclear families in affecting resource distribution. In general, when we treat peasant societies, we are dealing with situations where the relationship of people to production is mediated by the family as a unit of social organization which extends its influence through time.

Family

To isolate and conceptualize this time factor, many anthropologists have used a biological metaphor: "The domestic group goes through a cycle of development analogous to the growth cycle of a living organism" (Fortes, 1958, p. 2). The "biological determinants" of this social process are

> the life-span of the individual [... and] the physical replacement of each generation by the next in the succession of death and birth.... From the anthropological point of view, the important thing is that the growth and development of the individual is embodied in the social system...(Ibid.).

In small cultivator (peasant) societies individuals are born into farm families, live under their protection at least until they become capable of independent production, marry according to established

cultural patterns, and produce offspring to replace themselves. In this sense, "the family" is an eternal institution involved in cyclical process, and

> While a certain amount of substitutability undoubtedly exists within the family labor pool, responsibility for specific crops, operations, off-farm production and unpaid household maintenance tasks is usually allocated among different members according to their sex, age, abilities and experience, and status within the household (McKee, 1986, p. 192).

Under most circumstances, the economic interaction within agriculture between land, technology, and labor, when organized by the family, produces a surplus in excess of its subsistence needs (i.e., of reproduction) -- albeit often within "a short distance of the subsistence minimum" (Kitching, 1982, p. 8). This surplus can be consumed in a variety of ways -- increasing consumption above bare subsistence, expanding family size, increasing leisure, accumulating savings in reserve against a subsequent need, reinvesting in a more productive subsequent cycle of agricultural production, investing in activities outside agriculture, or expropriation by the state.

Accumulation of surplus and public investment by the body politic can potentially raise living standards for all citizens, but states often squander accumulated wealth in a variey of schemes for national aggrandisement, or they enrich only select categories of their populations (Giddens, 1985). By contrast with both these collectivist possibilities, if families are to accumulate their productive surplus and become individually wealthy, they must resist the encroachment of the state, and also -- like states -- resist the forces of disaccumulation. Most cultures specify appropriate inheritance norms (even laws) which are a dynamic balance between the need to keep an accumulated capital (an estate) intact as against each family member's

hope to inherit some resources with which to make a living.

European ruling classes practiced primogeniture to maintain the productive capacity of accumulated capital,[5] whereas the more egalitarian inclinations of agricultural producers throughout the world usually insisted on some form of partible inheritance such that the accumulation of one generation was divided among the next.[6] Byres (in Rahman, 1986) summarizes this argument for farm families which do manage to accumulate: either some segments of the peasant social stratum accumulate productive resources over time and thus become a class of owners of income-earning property while the rest of society becomes propertyless (structural differentiation), or the products of lifelong accumulation by peasant producers are redistributed between generations (demographic differentiation).

The "family" is the social unit of biological reproduction, which can have this development cycle and its implied continuity, while "household" is the place where this unit resides.[7] Yet, within western society, the equivalence of these two terms is often assumed; whereas, in African societies, the situation tends to be more complex (Guyer, 1986). But a full description of the family requires it to be related, too, to other features of the society in which it is embedded -- in particular, to the ownership and/or control of productive resources (especially land), and to other social institutions and the linkages between micro- and macro-structures.

Figure 3 (below) presents two aspects of family -- family development cycle (with provision made for polygamy), and wealth accumulation over the lifetime of the head of the family. Central to Figure 3 is the birth of ego, who matures within the family's household. The left-hand

side of the figure highlights those events which change the numbers of family members, and the gains and losses of wealth associated with exchange of women between households. The child grown to adulthood quits the parental home to marry -- if this is a woman, her family of origin receives a payment (brideprice) as she leaves the household; if it is a man, the family relinquishes resources in exchange for his wife.

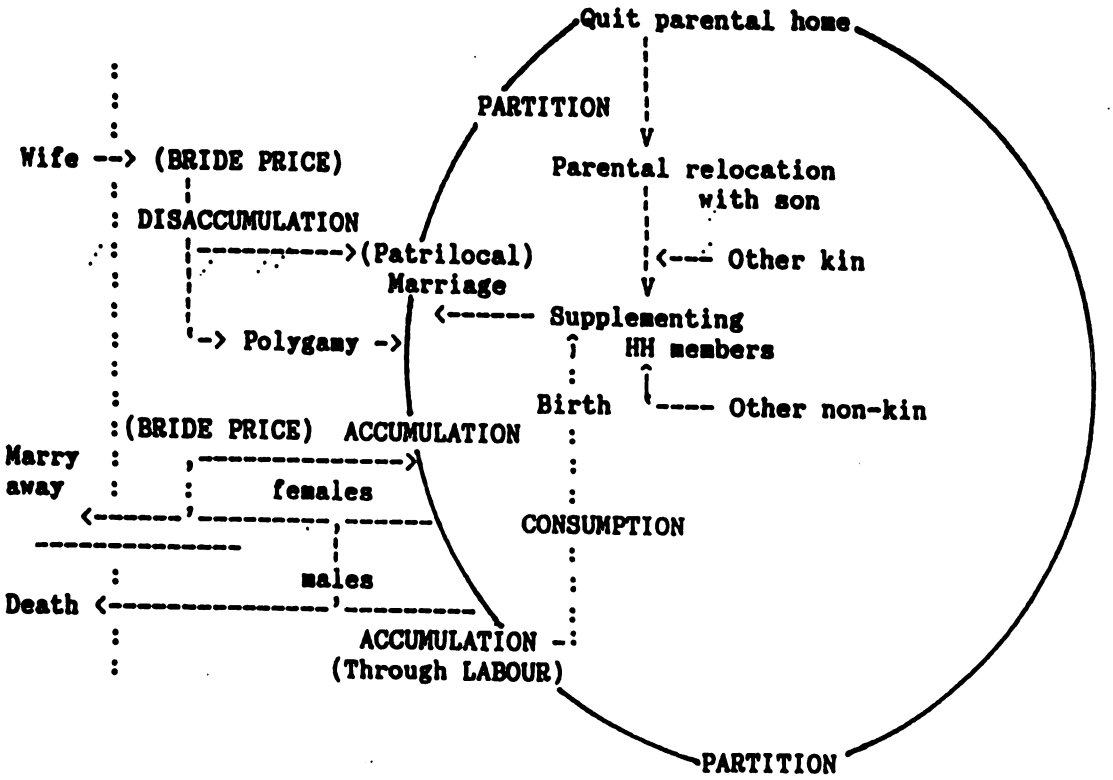

Figure 3 Family Development Cycle and Wealth Accumulation

The right-hand side of the figure underscores the cyclical nature (generation after generation) of this process. Within this circle are depicted subsidiary routes by which the family gains members -- a parent, another relative, or some other person (a non-relative) -- real and surrogate kin who become attached to the household. All these new family members add their labor to the production potential of the unit -- children learn to produce as they mature, older members entering the household make whatever contribution their skills and remaining capabilities permit. But, as well as adding to household production, these individuals also make consumption claims against the family's resources, and the family becomes richer or poorer inasmuch as it can manipulate the production of its members to exceed their consumption.

The concept of family development cycle is useful because it re-enforces the repetitive, or ongoing, nature of family farming, but this usefulness is also its shortcoming -- its cyclical nature is not easy to deal with statistically. This problem is usually overcome by recording its numerical criteria: time since the family began (marriage), the changing proportions of adults and their children, or by a compounding of these, called "phases of family development". These "operationalizations" will be treated in more detail in the next chapter.

INITIAL HYPOTHESES

The processes I am concerned with occur at the family/household level. Households vary in their property holding and their ability to produce and to accumulate wealth. This variation is related to producers' land holding, education, phase in family development cycle, etc., and to their production of subsistence and cash crops, as well as to chance events, such as untimely death, and to their satisfaction with

forever remaining simple commodity producers. The Rwandan situation is theorized as a mixture of accumulation of resources within households, which are redistributed whenever a member of a farm family leaves to establish his/her own household -- the left-hand side (subsidiary pattern) of the Family Development Cycle figure -- and a long-term trend towards accumulation by a small class and proletarianization of a larger class.

Farm families/households have a variety of strategies available to them as they attempt to match (a) labor and land available to production and accumulation with (b) consumption needs of the household. Farmers lacking resources to employ themselves and their children may find employment off-farm. Marxist theory proposes that their wages will be less than the value of their work to their employer -- this is the basis of surplus value (capital) accumulation. Neo-classical economists employ different terms and point out some of the qualifications on this pure exploitation, but describe essentially the same accumulation process.

We understand from the previous discussion that both social and demographic differentiation are not unidimensional characteristics that households achieve or acquire; they are more accurately conceived of as interactive and multidimensional processes that evolve over time. Classes derive from the control of land by the household and its power to control its own labor and that of employees; the family development cycle is the formalization of the change, through time, of number of adults and their production and reproduction, so that children under the care of their protective adults gradually come to replace the previous generation. Hence, while both processes involve putting land and labor

into production, the former involves landlord / tenant and employer / employee relationships; the latter has its emphasis in (patriarchal) familial relationships.

Over the lifetimes of the interviewees in this research, great changes have occurred in Rwanda. Two trends in particular are important in the long term -- the movement from subsistence to commoditization of produce, and the tendency toward commoditization of labor and land. The former represents the passage from "peasant" to "simple commodity producer"; the labor and land issues represent a second stage in the process of capitalist transformation. Within these dynamics, households lose their essential similarity: some develop the capacity to improve their general well-being and life chances, while others are forced into the opposite position.

Persistence of the peasant household form of production (or at least of simple commodity producer households) is implied by demographic differentiation. It is possible to imagine a society (or at least a part of a society) where farmers reproduce in their mature years, their families are kept small, and their children come to succeed their parents just as the latter cease to be active participants in the farming process. Such was reported to be the case in the Irish Republic in the 1930s (Arensberg, 1935). That there would be no cyclical variation in either workforce or output and that peasant households persisted over generations would be the most noticeable features of this agricultural structure. But, as distinct from a static persistence, as the above implies, Chayanov (1986, p. 54 and p. 60) points out that in any particular country, we observe considerable variation in peasant family size, and we can also observe (and come to expect) that each family will be in

a different phase of development, depending on how long it has existed and how successful its biological reproduction has been. Appreciation of this fluctuation within persistence, as families-running-labor-farms, induces us to anticipate that demographic factors will have marked effects on the economic activity of smallholder agriculture.

By contrast, the use by the resource owners of the labor of those with few or no resources may serve to accentuate inequality. Farm people entering the paid-labor force, or renting land in and/or out, may be entering into the process of social differentiation, but only if structured privilege and deprivation of various sorts (rather than sufficiency) develop and are inherited between generations.

Thus, change may be occurring, but it is necessary to determine whether what appears to be structural differentiation is in fact that, or whether the changes in wealth and structure of farm families can be explained entirely in terms of concomitant variation during the family development cycle. What we would hope to be able to

> clarify is [to what] extent [is] the surplus of one peasant household...being expropriated by another as an initial precondition for the beginnings of the accumulation of capital and [is] such expropriation...promoting a class differentiation by being consistently in one direction or [does] expropriation between households [tend] to be balanced out in the long run, thus supporting the reproduction of petty commodity production rather than expanded reproduction (Cox, 1983, p. 224).

The most desirable aim would be to compare the class position of parents at a certain age with that of their children when they reach the same age (phase in family development cycle, etc.). The data, as will be elaborated later, do not permit such refinement, and the challenge is to approximate it from the hints that the data contain. The best that can be hoped for in the present investigation -- comparing heresay evidence of the past with only one detailed study of the present -- is that the

complexity of current labor relationships in agriculture will be revealed and the rise of wage laborers so emphasized that a need for a future investigation of the progress of existing employer and employee farmers will be indicated.

If peasants are subject to the redistributive demands of inheritance when the family development cycle reaches its "fullness" (i.e., at the end of expansion / beginning of contraction), they cannot stay long enough in the same position on "the social ladder" to consolidate a new class position; if, by contrast, certain farmers are evolving to become a class of property owners, their intergenerational transfers will assist in raising the class positions of successive generations, and vice versa. In "the French system" (Weber, 1946), families with one son (to inherit) and one daughter (to exchange in marriage) merely recreate the family farm structure; smaller families are forced to consolidate, the larger to partition. But, if the forces at work are not entirely demographic, the accumulation of resources may allow certain families to become members of a permanent "renter" or "employer" class, and thus accentuate accumulation.

Clearly, in a society practicing hoe agriculture (i.e., low-level technology), overall production will be an outcome, inter alia, of judicious managerial combination of farm area, workforce size and composition, and how hard that workforce applies itself, as well as the farm's intensity of production (number of cycles of production from a given area during a designated period), climate, seasonal conditions, and availability of other farm inputs. Most of these factors of production can be regarded as extrinsic to most survey enumeration. The two important factors -- the simplest to measure and the most manipulable --

are farm area and family labor (Cain, 1978, pp. 427-428). That is,

Production = f(farm area, workforce size; management, climate, farm inputs).

Accumulation will occur only after maintenance cost of all family members has been met.

An investigation of landholding history would be necessary to explain why some families currently control more land than others. So far as extant land control is concerned, however, small family on a large land area at the stage immediately preceding partition is expected to add to structural differentiation. By contrast, others may merely absorb more kin and partition their accumulation when the parents stop farming. Small family size is expected to assist accumulation, in particular, because any "deficit" -- in the sense of "production outcome" -- in number of family workers can easily be compensated for by employing non-family labor.

It might be argued, by contrast, that large numbers of children have the potential to contribute to family production and to increase its wealth (i.e., accumulation). In a situation of flexible land availability, this could occur through their attracting more land (e.g., renting it in) and producing surplus value from it in excess of its rent or by farming more intensively on an existing holding. Clearly, in the latter case, there will be technological limits on the ultimate productivity of their labor - associated with hoe agriculture's potential, and the availability of "high yielding" inputs to dryland agriculture. Alternatively, mature offspring of the family might enter the paid-labor force and remit contributions to the family's accumulation. In the latter case, the land market is not an issue, but it is important that

an appropriate labor market exists. The problem with the position of the large family as an alternative to the small accumulative one is that each family member, as a contributor to family collective property, then has a legitimate claim against its wealth. It is an open question as to whether or not this accumulated wealth will have generated a surplus above the sum of the contributions of family members, when it is shared out.

Demographic and social differentiation together: Hypothesis 1[8]

Traditional Marxist analysis of the class structure underpins the differentiation perspective. Wright and Perrone (1977, p. 33) point out that in this type of analysis, three criteria underlie social relations of production:

1/ ownership of the means of production;

2/ purchase of the labor power of others; and

3/ selling one's own labor power.

"Class", as used in their discussion, is defined in this classical way. As their landholdings increase, households can use power based on land to gain greater control over labor resources, as well. Where a land endowment is sufficiently large, the household can employ fully its own adult members. On the one hand, given land resources surplus to what the household can farm on its own at the present level of technology, and given social structures which permit the exchange of labor, the household can control further labor by hiring from outside. On the other hand, those households whose landholdings are insufficient for their own utilization at the current level of technology are obliged either to rent-in land to provide a job for themselves or to sell their labor, to make ends meet.[9] In the former case, these tenant-farmers

keep control of their labor process but give up a part of its product as rent (Wright and Perrone, 1977, p. 34); farmer-worker households have the least control over their own labor, and none at all over the labor of others.

Considerations of differences in resource endowment from the preceding and of the two major means of adjusting to it -- family labor and market labor -- lead to the major formal hypothesis:

H 1: In Rwandan society, more of the variation in returns to farming will be accounted for by those factors which determine demographic differentiation than by those which determine structural differentiation

Rwanda's agriculture underwent a revolutionary change during decolonization (1959-61) -- from being a feudal society under the overlordship of a landholding caste, to a smallholding structure. Moreover, non-agricultural industry is poorly developed. While the cities -- especially Kigali -- are growing rapidly, and functionaries proliferate and educated workers are at a premium in public service, employment opportunities outside agriculture are still limited.

Thus, Rwanda's short time (since that revolution) to re-establish gross social inequalities, and its apparent uniformity of farm structure (ENA, 1984) prompt me to believe that those differences in wealth which do exist are due to demographic factors. That is, the majority of farming occurs within the context of the farm family ("peasant" or "simple commodity producer" households). By contrast, the existence of rural-to-urban migration, a belief in "the March of History", and the evidence of other "developing" societies suggest a secular trend has begun which involves a small proportion of once-landed people relinquishing their land and becoming rural or urban employees and an even smaller proportion becoming capitalists. Because this tendency toward

permanent differentiation of the society into classes doesn't yet involve a majority of rural producers, Hypothesis 1 is cast in favor of demographic differentiation.

Hypothesis 1 represents a definition and test of the conceptual model presented in Figure 4.

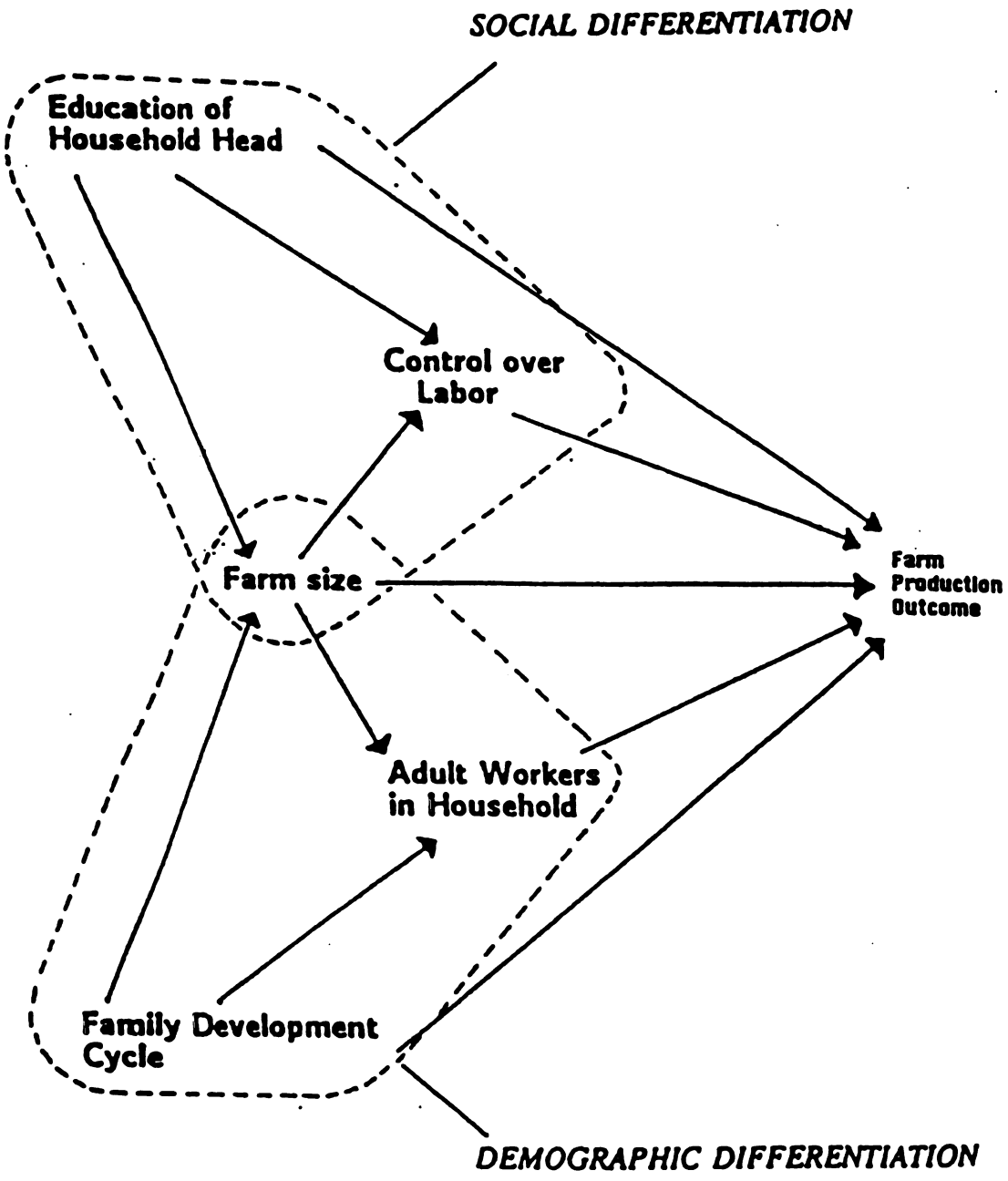

Figure 4 Conceptual Model: Independence & Interaction of Differentiation Processes

Income and production surplus occur whether a household hires the labor of non-family members to bolster its production (a pathway through Part A of Figure 4) or does all its farming in its own right (Part B). The relationship between farm size and control over hired labor forms the axis around which the process of social differentiation revolves. However, the model includes human capital values, which both reflect the class position of the current head's parents and the mental, financial and technological endowments they were able to provide their offspring for her/his entry into the "modern world". One of the items of human capital value, educational attainment, is a characteristic which, throughout the world, reinforces social class divisions and tends to be maintained within family lines across generations. Together, the variables in Part A of Figure 4 work to overcome "petite bourgeois" uniformities in peasant society and promote the emergence of social class groupings with differential power positions and capabilities for generating wealth.

Figure 4 identifies a second grouping of interrelated variables which comprise the process of demographic differentiation. The family development cycle is the driving force behind this process. In the expansion period, couples also increase their landholdings, partly through inheritance -- as their parents age, disperse their property and ultimately die -- but also through purchase and leasing agreements and by "arrangements" within lineages. These are the years of growth and accumulation of wealth. A household with many young adult offspring and adequate land resources can position its members to become upwardly mobile; even those with poor material resource endowments might, with the help of large numbers of children, experience a time of prosperity.

By contrast, where land resources and non-farm employment opportunities are scarce, these potential advantages of demographic differentiation may never materialize. Parents who give birth to many children are, in effect, gambling that fifteen or twenty years later, economic conditions will be such that the household will flourish on the strength of its many working-age members; they do this in the context of many other households betting the same "long odds".

However, a second consideration in regard to family members is that they also consume the products of the household -- devouring its farm produce and absorbing its savings. Consumption, too, varies over the lifetime of individuals and during the cycle of the family's development. Demands for food increase steadily up to adulthood, but other consumption needs (clothing, housing, and schooling costs, for example) make larger demands at irregular intervals. The mathematical relationship between family members as workers and as consumers (the worker to consumer ratio) is thus another aspect of family which varies along with its development cycle, and can be expected to have an effect on measures of returns to farming.

The processes of social and demographic differentiation intersect through their shared dependence on the farm size variable. Households with large land holdings are in a position to create and accumulate wealth through the use of hired agricultural labor. By the same token, they are able to support a larger household labor force and convert this labor supply into surplus production. As children marry and establish themselves on their own, the household loses both labor and land, and, if it has not managed to secure its social standing through the accumulation of wealth (land and livestock) and control over outside labor,

it must, in the end, retreat to a more modest social position and level of living.

Each of these "pathways" to differences in "returns to farming" (income and production surplus) can be charted as a causal flow and the contribution of that path to returns can be quantified. Each will be examined in detail and its coefficients calculated.

I take Greenhalgh's (1985) study of social and demographic differentiation in Taiwan during the period 1950-1980 as the point of departure. Greenhalgh shows that while both demographic and social differentiation occurred over this time period, they varied in **potency** -- about twice as much variation in income and mobility was accounted for by the family development cycle as compared to social class differences. Though Greenhalgh demonstrates such an association between family development cycle and social class, her longitudinal analysis is unable to establish causal antecedence to either form of differentiation. Rather,

> it is obvious that causality runs not in one direction or the other but in **both** directions. Thus the proper question is not **which** factor determines the other but **how much** effect each factor has on the other and **at what points in time** different causal processes operate (Greenhalgh, 1985, p. 582).

Unfortunately, the data I shall describe in the next chapter do not permit the time-interval comparison which Greenhalgh has used in her attempt to "partial out" **potency** and **timing** of the two differentiation effects, but the basic position of this dissertation is that the interaction of these two pathways provides a more complete appreciation of returns to farming than could either side of the model considered alone.

The conceptualization presented here differs little from that endorsed by Greenhalgh and others, but earlier in the above-quoted

article, she remarks in relation to "the social differentiation hypothesis" that it "cannot be applied uncritically but must be carefully specified and modified to fit the circumstances of each society (Greenhalgh, 1985, p. 582). This dissertation is more in the spirit of a test of theory in another situation rather than a major revision of theory, but still, although she mentions them (above), Greenhalgh's analysis tends to under-emphasized the interactive and dynamic aspects of social and demographic differentiation.

Relationships between land and labor: Hypothesis 2

Farmers attempt to balance their land and labor resources

Regulation of reproduction may occur, but this study examines only its outcome -- extant family (and household) members. At an average local level of farm technology, a certain number of workers will be able to use a given area of farm land. Hypotheses 2a and 2b (below) invite a demonstration that the tendencies of number of workers dedicated to agriculture, and of farm size, are in the same direction. If the family has more land than its members can use, it has "surplus land"; if too much labor is available, the family has "surplus labor".

Farmers with surplus land can either rent it out (for cash or kind), or farm it with their own labor and/or the labor of others. In the cases where all land is retained and farmed, accumulation is more likely to occur among operators of large farms or those who can attract larger land holdings, especially if they have small families and can bring in paid laborers -- or even kin who will want no redistributive "portion" -- to do their farm work. The household with surplus labor may attempt to purchase or rent land, if there is a land market, or to gain access to lineage property via kinship or friendship networks, or

to make claims on whatever public land is still available. Various kinds of "leverage" are used in most societies to assist such access -- patronage, friend-of-a-friend networks, and "reputation" as a good tenant/renter/user. Most of these avenues have not been investigated in these surveys but respondents do recount their sources of land supply. The three ways to balance surplus labor with land are i) to add to land-holding, ii) to take labor off the household's land, or iii) to increase the intensity of production.

Reducing Household Labor

The concept of **underemployment** may explain some peasant activities, but it is expressed in the data only obliquely through wage work, retirement and young people staying longer at school. But each category of resource holders might be expected to do the same sorts of things; the point at issue is at once their motivations for doing so and the outcomes of their actions.

H 2 a): Potential underemployment on the home farm, combined with the need for cash, will be relieved partly by I/ wage work, II/ early retirement, and III/ late entry into the labor force while market-acceptability is improved; these will vary with the level of household economic wellbeing as indicated by a measure of household production

I/ The poor are more likely to look for wage work than the rich, however the jobs obtained by the poor are likely to be lower skilled than the jobs obtained by the rich.

II/ i) The rich will take the benefit of riches and retire early,
ii) the poor, by contrast, can be expected to extend their working lives as long as they can continue to work.

III/ Age at which children will be released into paid employment will vary with family's wealth. If the family is
i) resource rich and can educate children to well-paying jobs, they will leave home late,
ii) resource poor and needs to relieve pressure on the land, they will start work younger.

At least some of the comfortably rich may allocate part of their resources to the leisure of the present generation rather than redistributing it to the next generation. However, the poor will have no alternative but to work for sustenance and in Rwanda, agriculture is most likely to absorb them, and into unskilled laboring. Rich producers will turn some of their resources toward placing their members in the best-paying and most lucrative and/or prestigeous positions in the labor market; cash remittances they then make will assist purchase of capital goods, and possibly land and farm labor. By contrast, producers with limited access to resources bring their children into the production process as soon as possible, and this often implies unskilled work at lower pay and in positions where they are exploited, not those where they can accumulate.

We might anticipate one or two caveats on this general rule, however. For instance, some of the smaller bourgeoisie may be more committed to accumulation than to leisure; qualifying characteristics might be that the rich who have only sufficient income to support the household provided it does not split, or those who have no rising generation (or additional household members) to continue to produce even a minimal subsistence, will remain working to keep their household intact. Alternatively, if a family is -- by death or accident -- handicapped in its normal struggle within the farming system, it may, despite resource endowment, be forced to take measures more usually recognized as the strategies of poorer households, for example, "gifting" out some of the unproductive household members to take pressure off the productive capacity of those left, or taking in piece- or craft- work to provide occupation for invalid members unable to enter the able-bodied

workforce.

Adding to land-holding

The outcome of Hypothesis 1 decides whether operated area increases along with family size, and with family development cycle phase up to the point where partition and/or waning of the powers of the household head begin to occur, as the demographic perspective expects, or whether, by contrast -- as the structural differentiation perspective anticipates -- resource accumulations will vary between families of the same size (and grow greater with time). Although the data record those farmers who rent-in land, they offer no way of discriminating land parcels in terms of which ones are owned, rented, etc. There are thus no quantitative data to decide a hypothesis about adding to land-holding and so I have not propounded one. Nevertheless, in the next chapter I do examine, minimally, the statistics of land availability -- for rent (by cash and kind), and for free.

Intensification: Hypothesis 2 b)

Rising population density will generate pressure on the land and to this all farmers will respond by changes in stock-raising and cropping patterns or intensity. Commonly measured variables which might throw light on the issue are:

stalling cattle and feeding them by hand-harvesting forage,
replacement of cattle at pasture by goats,
changes in crops and in areas where they are grown (pattern),
changes in density and/or frequency of cropping (intensity),
comparison within zones of the season length of crops,
net caloric yields of crops,
higher fertilizer use and expenditure on farm equipment, and
higher yields of crops or offtake percentages of stock.

The data from the ENA and the NFS hint at some of the understandings to be gained from examining these issues in greater depth, but the only one able to be calculated (none of them were measured directly) is

net caloric yield of crops.[10] These intimations may be followed up on another occasion -- when appropriate data can be collected -- but for present purposes only one set of questions provide real insight into intensification. Many households have recently altered the proportions of pasture, fallow and woodlands in their holdings; it seems likely that they will have done this in response to pressure for changing production to be derived from their limited landholdings.

H 2b: Small farms with large workforces will intensify: as number of adult equivalents per unit farm area increases, so does the likelihood that farms will have reduced their pasture, fallow and woodland areas.

NOTES

1. At some intermediate stage in this process, Shanin's specifications of simple equipment and family labor break down, and a category equivalent perhaps to modern western European peasants {and called "simple commodity producers" (Friedmann, 1980) or "farmers" (Streeter, 1977; cf. Figes, 1987, p.121)} forces a redefinition of our subject of discussion. See also Mamdani's (1987) definition of structural differentiation, below.

2. A considerable problem with invoking the **agricultural ladder** analogy is that the image is not itself clear in the distinction whether the "progress" our young farmer might make is: constantly increasing farm size, a shift in tenure status from land renter-in, to owner to renter-out of land, or a changing relationship which the farmer holds to labor applied to the farm land. In brief, the "ladder myth" (Kloppenberg and Geisler, 1985) involves a conflation of farm size, its tenure, and the class of the land operator.

3. This argument might, in theory, be extrapolated to imply that certain (tropical) regions and certain (short season) crops ought to be the most productive for capitalist agriculture. Goodman (refer text below) contradicts this view by pointing out that industrial production is making climate irrelevant to food production -- as in fact it has done already to artificial fibre production; raw materials and industrial capacity may become the determinants of food production capacity.
   In contrast to Goodman, one might argue that so long as agriculture remains a <u>primary</u> production, it will occur where European-originating crops can be grown on a broadacre basis, that is, small grains on the temperate plains which are currently the net grain surplus areas of the world.

4. See de Janvry et al. (1988) for another perspective on this issue.

5. George Bernard Shaw archly characterized the general pattern as: first son for the estate, second son for the church , and third for the army. For instance, Fielding's **Tom Jones, A Foundling** -- but yet a <u>middle class</u> foundling -- was cast out upon the world of the 1750s with but 500 pounds and the indifferent blessing of his adoptive father.

6. Thus the son to inherit the farm and the daughter to exchange for a wife for the son was considered the ideal family size - and inheritance distribution -- by **the Irish Countryman** mentioned in the text below.

7. But overlying this are cultural understandings that imply much more than mere place of residence (claim against the family estate, and refuge in time of trouble, for example).

8. This hypothesis is the basis of Clay and McAllister (1991).

9. They would also, of course, attempt to alter the intensity of

production of their block of land but heretofore the argument about land and labor has held level of technology constant and the argument will continue with that assumption until Hypothesis 2b.

10. Production from each farm was carefully measured by SESA, and, as will be outlined in the next chapter, imputed caloric values for the amount of each type of crop produced are summed -- providing a net caloric yield - for the total area of the farm. Nevertheless, although this provides an intensity of production measure, there seems no way to create a change in intensity -- an intensification -- measure from these data.

CHAPTER 3

METHODOLOGY AND OPERATIONALIZATIONS

METHODOLOGY

Choice of Subjects

The data used in this study derive from two field surveys performed by Rwanda's Agricultural Surveys and Statistics Service (at first SESA, but now DSA) operating in conjunction with the USAID mission from the US Bureau of the Census, for which Daniel C. Clay was field officer. He made this data available for secondary analysis in this study.

In the National Agricultural Survey (ENA), 2081 households were selected in 1984, according to precise statistical sampling procedures, to be a multi-stage stratified sample of all twelve agro-ecological zones in Rwanda. The purpose of this initial study was to document the organization of agricultural production within Rwanda, and highlight social problems meriting further study. Household heads were questioned in Kinyarwanda concerning the yields they obtained from twelve major crops and four species of livestock over two growing seasons; the production and sales of a selection of their minor crops; and their four-season participation in the workforce. Size, slope and various agronomic characteristics of fields were also recorded.

As an outcome of the finding from the ENA that a high proportion of farmers derived income from work away from their home farms, DSA's 1988 Non-Farm Strategies Survey (NFS) investigates Rwandan "survival strategies" within farming in detail. In this survey, also, households were selected to be a multi-stage stratified national sample of all twelve agro-ecological zones. Survey questionnaires were administered over a three-month period beginning in July, 1988, to a sample of farm

households, including family members living "away". An experienced team of DSA field staff supervisors was engaged to carry out the interviews.

The NFS questionnaires were designed to obtain information from various members of the households, including husbands, wives, and adult children with topics addressing:

- Demographic characteristics of all household members and migrant children;
- Non-farm and off-farm employment of all household members;
- Permanent and temporary migration patterns of selected household members;
- Fertility/family size behaviors, plans and preferences of all adult household members;
- Economic support networks between the household and members of the extended family living elsewhere;
- Sources of household income;
- Physical characteristics of the farm and residence;
- Hired farm labor; and
- Plans, aspirations and opinions of parents and adult children regarding non-farm training and employment and the future for young people in farming.

In all, the interviews averaged 1 1/2 hours to administer and generally required multiple visits. Adult children were the most difficult of all individuals to locate, but interviewers succeeded in contacting 87 percent. These households have been enumerated by DSA since 1986, and in that time a small number of households from the initial sample moved away or were otherwise dropped. As a consequence, the total number of households on which data are available was reduced from the original 1078, to the current sample size of 1019.

A Critique of the Data

Having consideration for the precision with which the sample used here was drawn and the care with which the questionnaires were administered, we have, I believe, every reason to be confident of the reliability and generalizability of the objective data examined in this dissertation. But, as stated previously, this is a secondary analysis and the data have had to be manipulated to meet my demands, and, in consequence, have some limitations for the task at hand. This being so, it is possible (and necessary) to critique their suitability, and to question the generalizability of my likely findings as this relates to my data source. My brief remarks are directed specifically to two topics,

- relationships of people and groups within the Rwandan samples; and
- more qualifications of representativeness.

Relationships

In general, a random sample lends itself to estimation of averages and distributions for the aggregate sampled, to generalizations about the occurrence of objective phenomena, and, from the point of view of sociology, to describing categories defined in terms of the distributions of social goods and characteristics (Crummett, 1987). But in the final analysis, a random sample enumerates isolated social entities whose relationships to each other can at best only be inferred. This is evident in this study in that the very definition of individuals and their related households is clouded by the occurrence of residential propinquity of kin, the separate residence of most polygamous spouses, and movement of children between households.

Representativeness

Lemarchand (1982) notes that definition by some third party of "the problem" needing investigation probably has a significance outside the parameters of the study itself, which will make for complication of data collection and interpretation, especially for enacting any suggestions arising directly from the research findings. In his study for the World Bank of a land settlement scheme in Byumba in northern Rwanda, he draws discussion away from the representativeness of survey results, as such, and toward the special knowledge which might add relevance to survey findings: he points out that economic security of farmers in that Prefecture depends not so much on personal attributes of application, tenacity and innovativeness, as it does on social, economic and political connections - ethnicity, lineage, networks, leverage and "lines of power" (Strathern, 1984) to those who "make things happen".

Were a new researcher unaware of these contextual complications and the influence they can have -- on the life-chances of individuals and families, as much as on the generalizability of study findings -- he points out, research results can be a poor shadow of what they might otherwise have been, and untold harm might be done. The historical sections in the previous Chapter create a context from the recent history of the kingdom and then the Republic of Rwanda.

With the qualifications mentioned above in mind, however, the dissertation proceeds to a secondary data analysis, for which the principal source of data is the NFS Survey. Some information -- capital goods (tools, etc) on different sized farms -- derives from the ENA.

DEFINITION OF TERMS

Data useful to testing the hypotheses are categorized in five major sections:

Farming Outcomes,

Family / Demographic Variables,

Farm Area,

Class Variables, and

"Human Capital" Variables.

Farming Outcomes

The households of this study, at least in part, grow their own sustenance[1] but they were not asked to put a value on it in the surveys. Thus, the ultimate outcome variable is not a self-report, nor a collected statistic, but rather it is the sum of purchases and potential sales at imputed values. The three measures of it are called Income, Labor Earnings and Production Surplus.

Income: This is the sum of farm crop and stock production valued at national average prices, plus the imputed returns from labor sold off-farm into agricultural and some other tasks[2] and it permits households to be ranked on the basis of relative size of income, during the year of the survey. The unit of measurement is Rwandan Francs (FRw), but income as computed by this technique bears no nesessary relationship to what any household might regard as its real cash income.

Labor Earnings: This is computed value of household production ("income") minus the value of all labor purchased, and again it is designated in FRw.

Both of the above measures are complicated by the fact that they are gross production valuations, but they make no allowance for the need

to take producers and their techniques and costs of production into account. The ENA contains information about the types of farming implements owned by interviewed household members, but no information exists concerning how they are combined into a production technology.

Nevertheless, we can assume that each person has to obtain a basic subsistance from the household's product (and other sources) to permit both the individuals and the household to continue to function -- at a basic survival-in-poverty level. Rao (1981, p. 338) suggests that a definition of poverty should be based on proportion of all available income spent on food. He reasons that

> "...a poverty study purely based on a calories cut-off may not convey the same depth of understanding as a study which looks at both income (and/or expenditure) and calories...."

This value would be a "best approximation" to surplus value and has the added potential (above labor earnings) to indicate the existence of a surplus, in excess of maintenance, which a household might turn to capital accumulation. To approximate this, I have created an additional category:

Production Surplus: Caloric value of household output is reduced by an allowance of 2100 Kcals/day for subsistence for each adult equivalent in the household (Garvey, 1983). The resultant output figure is then assigned a money value according to the same criteria which apply to other components of labor earnings.[3]

There are problems associated with use of a figure[4] derived in this way -- in particular:

> "(a) food has...a high priority for an extremely poor individual [but not, in the increment, for richer households...], and
> (b) some minimum non-food expenditure is inevitable for even the extremely poor people" (Rao, 1981).

The nutrition constant specified to create Production Surplus is a

close-to-minimum recommended caloric intake per adult, but it does not presuppose how households will dispose of the surplus. Presumably, they will spend it initially in upgrading their diets and then on improving their level of living, but if they spend only the output allowance on diet at least they will be adequately fed. In the case of non-food expenditure, one can argue that all households need a basic minimum. It will perhaps be included in some of the unenumerated expenditures mentioned below, but, if it is not, perhaps its non-enumeration will skew the generalizability of the results no more than will not knowing the value of these other items.

Four Caveats:

Associated with these measures are four caveats which deserve mention. First, there is no way of knowing how the calculated value relates to real money income. Comparison of these results with those of budget studies, for example, shows no consistent pattern[5] and the values computed here ought not to be expected to relate to cash available to farming households. Second, there is no measure of likely additional sources of non-agricultural income nor, third, is there a measure of costs associated with earning income. The former include remittances from household members who are usually resident, external sources of earned or unearned income, and rents received; the latter include building and clothing costs, child care and school fees, and rents paid. The former could be expected to increase available cash, and the latter would undoubtedly reduce it.

Fourth, the number of variables available to enter into the model is limited, and there is a danger in constructing outcome variables that each time an element of specificity is added to the outcome variable it

will absorb another "independent" variable, its auto-correlation to items which are the inputs of the model will be increased, and a proportion of variability associated with it will be lost. Labor is the most striking example, but its value is as farm labor -- valued at a standard rate, or as non-farm labor -- valued at various proportions of farm labor. In consequence, income contains its component of the reward for paid labor, and any time it is compared with a measure of family size, for example, labor enters both sides of the equation.

The distributions of the three outcome characteristics are presented in Table 1 and indicate a wide variation among households. The legislated minimum wage for an agricultural day-laborer in Rwanda is FRw 100 per day, and an average household has 2.8 workers -- a potential earning capacity (for 250 days per year)[6] of about FRw 70,000. The average farm household is thus generating about the same value of income as a farm laboring family working full-time. By contrast, the average production surplus is only about one forth of the potential yearly salary of a working household, and 418 households (41 percent) fail to provide for their own maintenance.

Clearly, some explanation of this apparent impossibility is necessary. It must be acknowledged that for Rwanda overall, the levels of living are low, and yet some households are extremely poor. In these circumstances, too, it is unlikely that diets are adequate, and presumably many households' members do not consume the 2100 Kcals. per day allocated to maintenance (per adult equivalent) in these calculations. Finally, the transfers between households mentioned above as remittances (Clay and Vander Haar, 1993) may prevent shortfalls from dealing a deathblow to household reproduction.

Table 1 Farming Outcome Variables.

	Household Income (FRw)	Labor Earnings (FRw)	Production Surplus (FRw)
Minimum	2,257	-9,262	-173,414
Median	72,198	69,659	7,955
Mean	85,708	82,057	17,024
Maximum	530,961	518,961	473,070

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Riches and Poverty

To a certain extent, a study of this kind might be content to examine the variation of a continuous measure (like income) in response to another (e.g., farm-land area), or it might categorize the outcome variables. Hypothesis 2 calls for some capacity to define "rich" and "poor" households. Defining these terms in such a way that they become significant social categories all depends, according to Castro et al. (1981, p. 424), on choosing a principle of categorization which has meaning in terms of the social situation from which the data are generated. They note that land holding is the most common criterion for creating categories of riches and poverty:

> Ownership or control of land is the most important indicator of wealth and level of living in most Third World communities....
>
> Land is today subject to individual ownership in most areas of Africa, which, together with an expanded market for cash crops, has made size of holding the principal determinant of farm income....
>
> [M]ost researchers dealing with local-level economic inequality have focused on distribution of land as the major determinant of inequality (Ibid., p.402).

Possession of land has additional benefits not associated with wealth creation through farming, as such -- prestige, guarantee against borrowing, and old age security, to name a few. However, Castro et al. (1981) also elaborate a range of indicators and correlates of real or potential farm household incomes commonly used in the literature to meet this problem. These will be discussed in more detail later.

I found it beneficial to use the output value measures as criterion variables of riches and poverty and not to presuppose the importance of land (Ibid., pp. 405-408) -- thus keeping the latter as a potential validation of the wealth measures. The method of classification is empirical.

Agricultural workers receive FRw 100/day (FRw 25,000 for a working year) and presumably a single worker is expected to feed, clothe and house him/herself on this amount, and possibly have something left over to finance courting and the expansion of household size. An average farm household contains 2.8 adults, who might become wage earners, and thus the potential annual earnings of an average farm family working for agricultural wages, rather than farming would be FRw 70,000. By a logic similar to that of the "half-share method" (Wilkinson, 1989, p. 11), one might argue that the farm worker who didn't earn half the remuneration of a farm wage earner (i.e., less than FRw 12,500) would be in poor economic straits.

Data for the first two "outcome variables" were plotted, and the mean of each of the three, adjusted by disregarding outlier values, was calculated. I was impressed with how closely the adjusted mean of labor earnings approximated the potential earnings of an average farm family working for agricultural wages (FRw 70,000). For the average-size farm family (allowing for outliers) the maximum deficit in value of surplus production is about equal to this amount, also. This adjusted mean underlined the usefullness of wage-earning potential as a parameter for categorizing income, labor earnings and production surplus. This basic unit was applied in the following way.

The outcome variables were divided by the number of worker equivalents in the household, and the resultant figures were categorized. A cut-off point on all of income, labor earnings and production surplus is created at FRw 12,500 per year. Between the lowest value and FRw 12,500 for the first two outcome variables, the household is **very poor**, from this point up to one farm wage above zero it is still **poor** but above

that, it is assumed to pass into a modicum of prosperity.

A number of other catgeorizations were tried -- using either individual farm wage or allocating income to average family earning unit. The distributions generated by these other methods[7] were not judged to be as satisfactory as the one presented in Table 2 which shows what proportions of the sample fall into each of the categories for the three variables. By contrast with the categories for the income and labor earnings variables, just over 40 percent of farm households are not accumulating -- they make negative production surplus. Here, the scale revolves around zero, with two negative "half-share" categories "0 to -- 12,500" and "more than FRw 12,500" deficits and three above -- as Table 2 demonstrates.

Table 2 Categorization of Farming Outcome Variables.

Categories of Income	Household Income	Labor Earnings	Production Surplus	
(Percentages who earn or accumulate various proportions of a "Farm Worker's Earnings").				
Up to 35,000 FRw	23.4	22.9	8.9	Less than -12,500 FRw
35,001 to 70,000 Frw	37.3	37.9	31.5	-12,500 to Zero FRw
70,001 to 105,000 FRw	21.8	22.2	31.9	0.0 to 12,500 FRw
105,001 to 140,000 FRw	9.2	8.9	17.1	12,501 to 25,000 FRw
More than 140,000 FRw	8.3	8.1	10.6	More than 25,000 FRw
Total	100.0	100.0	100.0	
N	(1019)	(1019)	(1019)	

Since land area was not explicitly an input into the wealth criterion variable, it serves below as a useful validation measure. As would reasonably be assumed, and as will be shown in later sections, amount of land farmed has a direct influence on income (although the influencee is less direct for labor earnings), but for the moment, the link is sufficiently ill-defined to allow this analysis to proceed. Table 3 shows the wealth categories and the ways in which they break down on a number of independent criteria -- criteria which have been used in other studies to create measures of wealth (Castro et al., ibid., pp. 406-408; Loveridge, 1988): farm and household size, education of household head, sales/purchases of foodstuffs, and ownership of income-producing property. At this point, distributions of these items are introduced as validations of the wealth categories; later in this chapter family development cycle phases, and land-renting, labor-hiring, and stratification categories are tabulated in terms of the same variables and I will not mean to infer then that they are again validations. My purpose in repeating them in Tables 8, 10, 12 and 15 is to ground the computed signifiers of household and production economic capacities in the objective characteristics of household and farm.

Table 3 Validation of Outcome Variables.

Categories of:	Area Farmed (sq.mtrs)	No. of Persons		HH-head Educ. Level	Net Sales of		Ave.No. Coffee Trees
		Childr.	Adults		Beans (Kg.)	Sorghum (Kg.)	
A) Income							
Up to 35,000 FRw	6,737	2.1	2.0	1.4	-40.6	-28.4	49.9
35,001 to 70,000 Frw	10,303	2.7	2.6	1.6	-46.8	-31.6	85.0
70,001 to 105,000 FRw	13,489	2.8	3.1	1.6	-45.5	-59.0	103.7
105,001 to 140,000 FRw	18,405	3.4	3.3	1.9	18.9	11.3	148.3
More than 140,000 FRw	23,479	3.6	3.8	2.1	10.2	-43.4	207.6
Eta	0.43	0.24	0.41	0.23	0.22	0.08	0.25
F. Sig.	0.00	0.00	0.01	0.00	0.00	0.14	0.00
B) Labor Earnings							
Up to 35,000 FRw	6,855	2.1	2.0	1.4	-40.1	-29.2	50.9
35,001 to 70,000 Frw	10,482	2.7	2.6	1.6	-46.9	-33.1	84.2
70,001 to 105,000 FRw	13,796	2.9	3.1	1.6	-40.4	-51.3	112.3
105,001 to 140,000 FRw	16,289	3.3	3.2	1.8	5.3	-4.6	108.6
More than 140,000 FRw	24,143	3.7	3.9	2.1	14.3	-34.4	231.9
Eta	0.42	0.24	0.41	0.21	0.19	0.05	0.27
F. Sig.	0.00	0.00	0.01	0.00	0.00	0.55	0.00
C) Production Surplus							
Less than -12,500 FRw	10,701	4.3	3.3	1.7	-69.8	-28.7	108.7
-12,500 to Zero FRw	9,619	3.1	2.7	1.5	-47.1	-28.9	85.7
0.0 to 12,500 FRw	10,057	2.2	2.5	1.5	-43.1	-38.2	64.7
12,501 to 25,000 FRw	14,701	2.2	2.8	1.6	-23.8	-49.9	121.5
More than 25,000 FRw	21,671	2.8	3.1	1.9	43.2	-13.5	177.0
Eta	0.34	0.33	0.18	0.15	0.28	0.05	0.20
F. Sig.	0.00	0.00	0.01	0.00	0.00	0.71	0.00
Total	12,007	2.7	2.7	1.6	-34.3	-33.8	97.0
N	(1019)	(1019)	(1019)	(1019)	(1016)	(1016)	(1013)

Farm size shows a pattern of moderately consistent increase with income and labor earnings, and (after the low income anomaly) increases for the remaining four wealth categories of production surplus. The pattern of level of average education for household-heads is the same as for farm size, and the correlation between them is 0.13 (sig. at 0.01).

Numbers of persons in each household increases with increasing wealth for the first two criterion variables -- income, and labor earnings -- but for production surplus, the poorest category is almost three persons larger than the smallest category (3). Household size is a compounding of children and adults, and the pattern of increase in household size is consistent for both adults and children for the former two criteria, but for production surplus large families in both richest and poorest categories suggests underlying factors which invite later investigation.

The correlation coefficient (r) between computed value of farm output (income) and labor earnings is .99 (sig. at 0.01). For that reason, and because their relationship with the criteria variables are very similar, "labor earnings" is not used further to test the hypotheses in this dissertation.

Table 3 also contains information about the sales and purchases of dry beans and sorghum, and the ownership of coffee trees. Negative values in the columns indicate purchases of dry grains, and high income farms are the only ones where beans are sold off-farm. Bean purchases decrease as a household's income rises only for production surplus categories. Only households with high income are selling beans; sorghum patterns are the only non-significant comparisons in the table. These sample values are reflected in a national pattern of small sales but

large volumes of purchases. This is balanced, as Loveridge shows, by considerable importation of grains from Rwanda's neighbors.

As can also be seen from Table 3, ownership of coffee trees -- and presumptive sale of coffee -- parallels the trend for area farmed for the first two outcome criteria, slightly less so in relation to wealth measured by production surplus. Coffee tree numbers and bean purchases vary in roughly the same pattern, too, which suggests that farmers meet some of their need for cash through agricultural commodity sales, but farm area seems to place a brake on number of coffee trees planted. There is a strong suggestion here that farmers are using coffee sales to finance bean (and perhaps) sorghum purchases, especially among the poorer households.

The wealth variables take no account of costs to households of bean, sorghum or coffee purchases (nor of income from sales), but these wealth exchanges are another factor to be considered when changes in relative wealth among households are discussed.

By way of overall reflection on the wealth criteria presented in Tables 2 and 3, it seems that land-holding has a strong influence on wealth in the first two outcome criteria up to a point but that higher education level of household heads has had a powerful effect for higher wealth categories, even though the differences in education are small.

Housing quality offers a different look at wealth. Dorsey (1983) points out that the "traditional" style of Rwandan housing was built with gress walls, thatched, and on a round plan. But, by 1933 some rich Rwandans "already lived in houses constructed of baked bricks and covered with tiles" (Dorsey, op. cit., p. 219). Thus, when the NFS survey enumerated quality of current housing, houses were recorded as

round (old style) or rectangular (new style); roofs were constructed of straw, tiles or sheet metal; and walls were of straw, pise (rammed earth), mud brick, or cement-render (over pise or mud brick) -- only four houses were made from fired brick. Interpreting Dorsey (see also, Castro et al., op.cit., pp. 411-412), I infer that people today prefer houses built on a rectangular floor plan and made from more lasting materials, and would construct their houses in that way if their resources permitted.

In further validation of the wealth criteria, the data in Table 4 show that the older-style, less-permanent housing is occupied predominantly by low-income families, and the more "modern" style housing by richer families. This change is especially noticeable in the houses with a roof made of sheet metal and/or having cement-rendered walls. The only exception to Dorsey's generalization is that the few (20) houses with grass walls shelter households with unusually high production surplus; this may be attributable to small sub-sample size -- the small number of such houses still in existence.

Table 4 Further Validation of Outcome Variables.

Building Construction Form & Materials	Income	Production Surplus	Proportion of Sample (%)
	(Value of housing)		
Shape			
Circular	59,037	3,451	19.1
Rectangular	92,010	20,231	80.9
Eta	0.21	0.13	
F. Sig.	0.00	0.00	
N	(1019)	(1019)	100.0
Roof			
Grass	60,007	3,694	23.1
Tiles	84,557	17,201	36.5
Sheet Metal	101,832	24,798	40.4
Eta	0.25	0.16	
F. Sig.	0.00	0.00	
N	(1014)	(1014)	100.0
Walls			
Straw	69,308	13,106	2.0
Pise	78,107	13,337	77.6
Mudbrick	92,083	13,333	14.3
Earth (with Cement render)	167,191	72,767	6.1
Eta	0.36	0.29	
F. Sig.	0.00	0.00	
N	(1012)	(1012)	100.0
Total	85,708	17,024	

However, this is, in a sense, perhaps too easy a solution. Further analysis shows that "old-style" housing -- especially in relation to shape and roofing -- is predominantly occupied by two family types: the as-yet-childless families (who may not yet have made their permanent home, nor even moved from temporary housing in some old shelter within the parental compound); and families in their last life-cycle phase. The widowed aged are likely to have had older homes, and their standards are unlikely now to be much influenced by "modern" ideas about design.

The NFS survey contains income data, but no information about farm equipment and expenditure on capital items; by contrast, no income data are available from the ENA, but it does contain information about ownership of "capital goods" by farm households. Still on the subject of the relationship between wealth and its social manifestations (the validation issue), the following section uses the fact that a relationship between farm size and income has been established above. Table 5 contains the common indicator, farm area, as a surrogate for household prosperity, and distributes the possession of farm implements among farm size categories. The first 22 items are implements of production, processing, and storage on farms; items 23 and 24 (radios and bicycles) represent significant expenditures on "consumer durables". For most items, the amount claimed by the household increases steadily as size of land-holding increases, apparently evidence of the need for farm capitalization. The average number of active adults per household (not shown in the table) increases steadily from 1.8 on the category of farms smaller than a quarter of a hectare, to 3.1 on farms larger than 3 hectares -- (the pattern here is exactly the same as in Table 3.3). Although consumer durables are in short supply, larger (richer) land-

holders claim to own larger numbers of them.[8]

Table 5 Distribution of Household Capital Items by Farm Size Categories. (2081 Cases)

Average Numbers of	Farm Area in 6 Categories (Ha). <0.25	0.25 to 0.5	0.5 to 1.0	1.0 to 2.0	2.0 to 3.0	>3.0	Eta	F.Sig	Total	N	%
Hoes (Ifuni)	1.8	2.0	2.9	3.3	3.4	3.8	.23	0.00	2.9	(2081)	100
Hoes (Isuka)	1.8	1.9	2.3	2.6	3.0	3.1	.32	0.00	2.4	(2081)	100
Bush-knives	1.1	1.1	1.2	1.3	1.4	1.5	.22	0.00	1.3	(1732)	83
Brush-hooks	1.1	1.1	1.1	1.2	1.2	1.2	.14	0.03	1.1	(637)	31
Hatchets	1.1	1.0	1.1	1.1	1.1	1.2	.13	0.00	1.1	(1195)	57
Grain screens	1.4	1.4	1.6	1.8	1.9	2.0	.18	0.00	1.7	(1860)	89
Vats	1.4	1.2	1.2	1.4	1.5	1.3	.12	0.01	1.3	(1087)	52
Jugs	3.7	3.3	3.9	4.7	4.5	4.8	.16	0.00	4.0	(1939)	93
Shovels or Spades	1.4	1.2	1.0	1.2	1.1	1.4	.22	0.01	1.2	(343)	17
Mortar & pestles	1.3	1.4	1.3	1.5	1.6	1.6	.17	0.00	1.4	(1343)	65
Grain drying screens	25.2	22.6	25.9	24.8	28.3	23.9	.10	0.02	25.1	(1369)	66
Wheelbarrows	3.1	2.0	5.2	2.0	1.8	1.1	.65	0.00	2.7	(39)	2
Gourds	3.2	3.3	4.3	4.9	5.7	6.7	.29	0.00	4.5	(1979)	95
Buckets or jerrycans	1.4	1.5	1.7	1.7	1.9	2.0	.14	0.00	1.7	(1148)	45
Baskets (Longes pan)	1.5	1.4	1.7	1.9	2.1	2.4	.24	0.00	1.8	(1387)	67
Baskets (Pans ronds)	2.9	3.0	3.5	3.7	3.7	4.3	.17	0.00	3.5	(1903)	91
Composters	1.2	1.2	1.3	1.4	1.3	1.5	.14	0.00	1.3	(1602)	77
Secateurs	1.1	1.1	1.1	1.1	1.4	1.1	.18	0.13	1.1	(268)	13
Pruning Saws	1.2	1.3	1.1	1.2	1.2	1.2	.13	0.40	1.2	(320)	15
Butter-churns	1.2	1.6	1.6	1.5	1.6	1.7	.07	0.77	1.5	(559)	27
Basins	1.1	1.1	1.2	1.2	1.2	1.2	.08	0.54	1.2	(707)	34
Granarics	1.5	1.4	1.3	1.5	1.6	1.8	.16	0.12	1.5	(367)	18
Radios	1.1	1.0	1.0	1.0	1.1	1.1	.09	0.54	1.0	(531)	26
Bicycles	1.0	1.1	1.0	1.0	1.0	1.0	.22	0.29	1.0	(131)	6

The items which deviate significantly from any consistent pattern are specialist farm tools -- related to tree (perhaps coffee) cultivation, and livestock (perhaps cattle) keeping.

UNIT OF ENUMERATION

Relationship between Farm, Household, and Family

For the NFS survey, 1019 households were enumerated by interview. The sampling procedure for both data bases assumed that a "household" is an unproblematic entity (Barlett, 1980): those individuals living in one place (a "homestead"), although not necessarily under one roof, and deriving at least part of their subsistence from the farm plot. [The Kinyarwanda word for this domiciliary unit is **rugo**.]

Farm

The general layout of farms as productive units conforms to the ecological patterns elaborated a century ago by von Thunen (Nwafor, 1979, pp. 59-60). As Newbury (1988, p.220) describes it:

> A homestead...consists of one or several huts and is often enclosed by a reed fence. Normally each homestead is surrounded by a banana grove, and beyond the bananas are located the homestead's plots of beans, maize, squashes, sweet potatoes and, in some areas, peanuts, peas, or sorghum. Manioc is also grown, and some fruits and vegetables. Besides the fields close to the home, other fields are often cultivated in the swamps. Many farms have plots of coffee, and in some areas tea.... Cultivated plots are worked by the entire family; both men and women participate together in the major agricultural activities of cultivation and harvesting, and during the rainy season much of their time is spent in their fields. Otherwise the care of fields and home are the domain of women, while care of livestock (cattle, goats, sheep) and the maintenance of lineage ties fall to men.

Household

As usually conceived in the literature of the west, a household has historically been considered to be the domicile of a nuclear family[9] (Guyer, 1986). Survey results are recorded with a man as head of each

household (if one is present) and then his wife and children (if he has them). Persons additional to the nuclear family contribute one complication to this conceptualization; polygamy adds yet another. Although the implicit (male-headed) assumption of the original survey -- embedded in the data collection technique -- will be accepted in what follows, Appendix B briefly makes a problem of the sampling unit, the household, and operationalizes it in terms of the occupants, and their relationships to each other--but the issue is somewhat tangential to the general flow of this dissertation.

Family

The question as to who is and is not a "family member" contains complications which will be minimally treated below, and have been examined in more detail in Appendix C.

The culture prescribes that immediately after marriage, young couples will set up their own household and begin to live alone, on a portion of the parental lands provided by the groom's father, often close to the groom's parents. Specific production and labor allocation decisions devolve to this new family as soon as it becomes a household, and a certain amount of tool inheritance accompanies land partition and establishment of a new household. Historical records (e.g., Pottier, 1986) refer to farmers going into debt "for want of a tool" -- especially in times of famine. Data to pursue the issue of level of technology of individual farms are available in the ENA, but they also are tangential to the main dissertation argument. Here I will describe households as family domiciles, and classify their resident families by "carving up" the cycle of family reproduction presented in Figure 3 of Chapter 2.

The Family Development Cycle is the upshot of a complex combination of variables (Chayanov, 1986, p. 60), just some of which are

Years since marriage,
Reproductive intentions & realized fertility,
Number of working age adults in household,
Number of children, and their spacing,
Combination of children with adults,
Consumers and producers,
Able-bodied & handicapped household members, and
Relationships between generations.

As Fortes (1958) goes to great pains to point out, in order to make this biological image socially relevant, we have to relate specific social events to the reproductive cycle of individuals. The cycle itself (since "cycle" is the part of its nature that is most relevant) is as a whole unsuitable to treatment in linear models, although some of the aspects of its complexity listed above are conducive to regression analysis. [This issue will be raised again in the hypothesis testing.]

Moreover, any attempt to classify families of farm households runs into the cultural variation associated with a complex society. Some commentators (e.g., Freed and Freed, 1983) believe that to attempt to fit farm households into categories only compounds the confusion. In regard to family structure, Greenhalgh (1985, p. 575; see also, Baster, 1972, p. 2) points out that

> Income varies over the family cycle because of quantitative changes in consumers (**needs**) and workers (**resources**) to meet these needs. Less obvious but equally important are qualitative changes in the **organizational capabilities**, and thus economic **strategies**, of the family as it moves from simple (nuclear) to complex (stem and joint) stages of the cycle. For example, in the area of **labor**, the larger working force of complex families increases their ability to diversify the family economy and disperse workers to new economic niches. With two or more adult males, complex families can more easily obtain **credit**, for creditors have greater assurance that their loans will be repaid. Large families can achieve scale economies in **consumption** and enforce policies of low consumption, thus increasing the share of the profits for reinvestment in the family enterprise. With several adult women, a few can

> perform all the household tasks and release the others to work in income generating activities.

Investigation of some of these qualitative changes would indeed give added depth to this analysis, and they are alluded to in Appendix C, but I do not intend to pursue these questions further here.

For now, I will follow the established pattern in the literature which sees merit in using the cycle metaphor, of which Hohn (1987, p. 66) is the most recent and rigorous proponent. Hohn creates six phases of the family development cycle; I have added phase 0 to them in Table 6

Table 6 Family Development Cycle Phases.

Phases of Family Development Cycle	Events Characterizing Respective Phases	
	Beginning	End
0 Unwed	Leave parental home	Marriage
I Formation	Marriage	Birth of first child
II Extension	Birth of first child	Birth of last child
III Complete Extension	Birth of last child	First child leaves home of parents
IV Contraction	First child leaves home of parents	Last child leaves home of parents
V Completed contraction	Last child has left home of parents	First spouse dies
VI Dissolution	First spouse dies	Death of survivor (extinction)

Derived from Hohn, 1987, p.66.

Systematic Simplification

In order to classify all households into the indicated variant of the family development cycle, I have made some approximations to give reality to the arbitrary cut-off points between categories. The next sections will explain the principles by which the break-points between phases were established.

If a husband and wife are living together, or if a woman currently lives without a partner, the family development model requires us to be able to impute time[10] at which each woman had her "last child" -- the specific social event which demonstrates an essentially private phenomenon, onset of menopause -- the beginning of Phase III.

Within the NFS data, the 86-year-old widow who came to live with her 33-year-old son also brought her 20-year-old daughter with her. We must believe then that she was 66 years-old when she gave birth to her last child, and thus was the oldest mother in the sample; two others gave birth at 61 and 62. There seems, too, to be little reason to doubt her age estimate -- her birth was so close to the arrival of the Germans in Rwanda in 1894 (Newbury, 1988, pp. 53-57) that her personal chronology must surely have been related to that "period of anarchy and destruction".

However, these women were abnormal in the lateness of onset of menarche. To approximate the usual practice (Nan Johnson, pers. com.), I searched for an age between 40 and 50, when most women had ceased to give birth. Setting imputed menopause at age 40 would leave 229 women still having given birth at age 40 or older -- some of them several times. With the onset of menopause set at age 45, one hundred women still gave birth at an older age -- but in this case, each woman had had

only one child. Beyond age 50, only 27 women had given birth. So, for purposes of this study, women are regarded as still able to produce their "last child" if they are younger than 45; if they are older, their fecundity is presumed to have terminated.[11]

If a person is designated by the survey as living in free union, his/her data are treated as if they derived from a married person. If a couple (or widow) indicated that they (or she) have never had children, the family is classified having consideration for the age of the woman and the present integrity of the couple. In brief, young couples with no children became Phase I, old couples (woman older than 45) became Phase V, and older women -- widows, divorced and separated -- either living alone or caring for children not their own, became Phase VI.

Some children leave home without marrying (or even -- what is becoming more common[12] -- entering "free union"). In addition, because some of the older children reach maturity before their mother reaches menopause, some children leave home before their mother's last child is born. In both these cases, I gave the mother's biology precedence over children's mobility, and the family remains in Phase II until the woman reaches 45 years.[13]

As noted earlier in this chapter, other complications to this idealized conceptualization can arise:

Subnuclear Families: Those families which contain fewer than the nuclear minima (two spouses with one child) are what Cain calls subnuclear -- single people, or single people with children, perhaps also with an extra adult (or more). But as Hohn (1987, p.72) says,

> One parent families are always neglected [in theorizing the family development cycle]...[a]ll three types...: those resulting from divorce, those resulting from death of one or the other spouse and those that never have been knitted into a

marriage group (the unmarried mother and father with children). In those cases where one spouse has died "out of time" (i.e., before Phase VI is reached), I have treated the household as if a fertile widow (for example) was still capable of extending her family, and classified this sub-nuclear family as if it contained a two-spouse arrangement.

Supplemented Nuclear Families: When parents (in the NFS, the widowed mothers) come to live with their adult children, they establish what would be a stem family (Greenhalgh, 1985; Le Play, 1877-79; Schwarzweller et al., 1971) but that it resides in the dwelling of the family of procreation rather than the family of origin. Since the point here is to fit all households into the Table 6 categorization, I say that the household shelters a "supplemented nuclear family" (Cain, 1978, p. 422), and treat it as if it had merely added an extra (unspecified) person.

Gift Child Supplemented and Deprived Families: In Rwanda, as in most African societies, familial rights in children are transferable -- children can pass between families and be raised to adulthood in households where none of the adults present is their consanguinal "parent". There seem to be three aspects to this phenomenon: children without the sheltering network of their own family are placed (as a matter of simple human concern) with adults who will raise them to independence (fostering); children accompany a parent (or perhaps both parents) into a home of refuge when the circumstances of the parent don't permit full independence; and children are presumed to be old enough to work, at least for part of their livelihood, and are sent to (and received into) households where the resources exist to permit them to make an economic contribution. These variations will be discussed further in Chapter 4.

So far as the family development cycle is concerned, children who are not the offspring of the household head are counted as if they were; conversely, a family which has relinquished a child is treated as if it is the smaller family it appears.

Polygamous Families: Polygyny is acceptable and appears to be very common in Rwanda. Of the NFS sample, 18.4 percent of household heads claimed to be polygamously married; these represent just over one-third of all female-headed households, but less than one in seven of the male-headed households. Males will take a second (and subsequent) wife if the primary marriage proves childless or as a means toward enhanced social status and capital accumulation. In either case, a willing husband must accumulate sufficient wealth to pay a second bride price. Each wife is usually established in her own house and her productive (and reproductive) labor adds to her husband's wealth. Thus, in theory, depending on how long the man's wife or wives take to accumulate additional capital, the possibility exists that he might use the bride-wealth acquired at the marriage (out) of his oldest daughter -- supplemented by savings, as necessary -- to acquire a new wife and start a new branch of his "family" at the time when the children of his first marriage start to leave their home. Clearly, polygamy could complicate calculations about income of a kinship group, and I will discuss my investigation of the peculiar family anomaly it represents in more detail at the end of this chapter. But from the point of view of classification in the family development cycle, that consideration has been made secondary, and households with a polygamously married male head are classified as if that man was the head only of the household in which he lives. Those with a polygamously married female head are

treated as if the woman were the de facto head and pre- or post-menopausal according to her age. The two most complicating examples are those with multiple spouses present in the male headed households. In these cases the extra wives are treated as merely additional adults whose labour adds to the productivity of the respondent household.

A detailed application of these principles to many individual families is contained in Appendix C.

As well as the categories of kin dealt with in the Appendix, there are a few household residents who fall entirely outside kinship classifications. Eighteen people were reported as unrelated to the head of the household in which they reside. They live in eighteen separate households, and can be classified as follows.

Minors	2 Children
	1 Student
Working Age	5 Cowherds
	4 Farmers
	2 Laborers
	1 Farmhand
	1 Family Helper
	1 Housewife
	1 "Other"

Each of the households in which they live is treated, for family development cycle classification purposes, as if their presence were irrelevant, except for one case -- a senior, unrelated male is considered to be the de facto husband of an unattached female head of household, since she placed him next to herself in her enumeration of the household's occupants. I classify the household as if it contained a couple and their offspring.

In order to categorize families by their family development cycle phase, I started to look at the 1019 households assuming that each is intended to be the domicile of a nuclear family: the Household Head is

male and lives with one spouse and their children. Seven hundred and fifty-nine households (74.5 percent), indeed, emerge from the data as being of this type. Only three adults, out of 690 over 44 years old, declared that they had never been married,[14] and one of these was a 46 year old mother of two teenagers (who the "Subnuclear" criterion puts in Phase IV). Marriage is clearly a norm, but variations on the nuclear family arrangement occur -- 260 households (25.5% of cases) are not exclusively "nuclear" families. A somewhat more difficult task than discovering nuclear families is to allocate those remaining to the phases of family development cycle. Nevertheless, as a first approximation, I rigidly applied the criteria and principles outlined above, and finally, the 1019 households are classified as shown in Table 7.

Table 7 Phases of Family Development Cycle.

Family Development Cycle Phase		Household	Percent
0	Unmarried Individs.	3	0.3
I	Couple, no child(ren)	18	1.8
II	Extension	557	54.7
III	Complete Extension	51	5.0
IV	Contraction	265	26.0
V	Complete Contraction	52	5.1
VI	Dissolution	73	7.1
	Total	(1019)	100.0

In the analyses, the three households headed by unmarried adults constitute a category too small to permit useful generalization, and are omitted. As Demographic Differentiation theory predicts, families show a constant increase in farm-size and income up to their complete extension (see Table 8). That is, there is an increase in the number of household members up to the point where women reach menopause, the end of Complete Extension, and there mean family size totals 6.5. Any of the family categories beyond that maximum shows signs of the parents having begun to disperse their estate to their children. Nevertheless, the growth of the family estate as the number of members increases apparently reflects both the partition of a previous generation's estate, and some fluidity in matching land to household personnel available to work it -- with some households seeming either to accumulate or to "farm out" members until the point is reached where resources can provide a livelihood for them. This is reflected in the table by "dissolving" households still containing children, even after some children of the family have left home, and by as-yet childless households containing "gift" children.

Table 8 Farm and Family Characteristics by Family Development Phase.

Categories	No. (& %)	Area Farmed (Ha)	No. of Persons		Ave. FarmInc. (FRw)	Net Sales of		Ave.No. Coffee Trees
			Childr.	Adults		Beans (Kgs)	Sorghum (Kgs)	
Couple, no children	18 (1.8)	0.88	0.2	1.8	58,953	0.5	-56.1	33.0
Extension	557 (54.8)	1.08	3.6	2.4	84,863	-38.3	-22.5	96.9
Complete Extension	51 (5.0)	1.63	2.6	3.9	102,614	-25.0	-70.0	130.5
Contraction	265 (26.1)	1.53	2.0	3.8	98,802	-39.0	-61.8	113.5
Complete Contraction	52 (5.1)	1.13	0.9	2.2	75,728	-17.0	-7.0	86.5
Dissolution	73 (7.2)	0.80	0.8	1.8	47,879	-12.6	-7.0	38.4
Eta		0.22	0.56	0.56	0.21	0.09	0.09	0.12
F. Sig.		0.00	0.00	0.01	0.00	0.14	0.11	0.01
Total	1019 (100.0)	1.20	2.7	2.7	85,812	-34.2	-33.9	97.1

Still, the frequency of these aberrations (the 25.5% of non-nuclear households) is great enough to bring into question the nuclear family as the basis of a family development cycle classification (Freed and Freed, 1983). It is, however, a basic element of the "demographic" model and I have dealt with it at some length here (and more in Appendix C) both to give a flavor for the complexity of domestic kinship arrangements in Rwanda, and to elaborate the specifications I have used to make it a useful tool.

Farm Area

Farm area is measured precisely in square meters, but it is land area operated -- no matter how intensively, and only after an unenumerated allowance has been made for land rented-in and/or -out. Variation is extreme: the smallest size of holding in the NFS sample is 0.06 of a hectare, the largest is 14.21 Ha. -- 237 times larger.

The "**paysannat**" land settlement schemes established in erstwhile "waste" areas -- especially in the south and east -- by both post-independence governments are centers of "community development" for farmers who have migrated from other areas. They are devoted almost entirely to cropping; they generally exclude livestock. **Paysannat** expansion is reputed to have brought in the last of the unused lands. Tea plantations, under government control, occupy considerable land area and account for a small but significant part (about 16 percent) of export income (Little and Horowitz, 1988, p. 271). With these exceptions, in Rwanda even the "large" landholdings are small-scale. When the National Agriculture Survey (ENA) was carried out in 1984, 93 percent of Rwanda's households were classified as engaged in "peasant" agriculture, and the largest holding was only 11 hectares; in the 1988

NFS, the largest holding recorded was 14.2 hectares.

Zones

Within the ENA, the 12 regions of Delepierre's (1974) study are designated "agro-ecological zones". Clay and Dejaeger (1987) create five "zones" which, on brief analysis of ENA data, relate well to regions of crop concentrations. The NFS data are classified by these five zones (cf. Jones and Egli, 1984. p. 98), which are used in this dissertation as surrogates[15] of climatic-elevation (ecological) factors. They seem too to be suggestive of farming system variation. Table 9 provides comparisons across zones of average farm sizes, but it also draws attention to the within-zone variability in operated-farm-area across the sample.

Table 9 Variation in Farm Size (Operated Area) by Zone.

Zone	Farm Size (Hectares) Minimum	Mean	Maximum	No. of Farms (%)
North West	0.06	0.77	6.10	154 (15.1)
South West	0.11	1.29	14.20	158 (15.5)
North Central	1.40	1.08	8.20	234 (23.0)
South Central	0.10	1.02	4.30	211 (20.7)
East	0.12	1.65	9.00	262 (25.7)
- - - - - - - - -				
Eta		0.27		
F. Sig.		0.00		
National	0.06	1.20	14.20	1019 (100.0)

Class Variables

In an agrarian society, both the amount of land a household controls and the degree to which it has control over its own labor resources and over the labor of other households are two distinct yet equally vital dimensions of the process of social differentiation.

Land

Whether land is rented-out or -in is recorded as only Yes/No responses in the questionnaire, and this prevents calculation how much land the farmer owns, how much is let at-rent or rented-in, and how much rent is received or paid. Nevertheless, four categories of relationship to land can be created. The resource characteristics of households which rent-out land, households which use only their own land, and households which rent-in land are examined in Table 10. The fourth catgeory, households which both rent-out and rent-in land, are dealt with individually later; at present, I am treating them as if their "net response" puts them into one of these three categories.[16] The general tendency demonstrated in the table is for the renting-out households to have the highest responses and the renting-in to have the lowest -- renters-out have the highest income, for example, and this despite rental receipts being unenumerated.

Table 10 Characteristics of Land Renting Categories of Farm Households.

Categories	No.of Cases (%)	Area Farmed (Ha)	No. of Persons		Ave. FarmInc. (FRw)	Net Sales of Ave.No.		
			Childr.	Adults		Beans (Kgs)	Sorghum (Kgs)	Coffee Trees
Rents-out Land	129 (12.7)	1.70	2.6	2.8	95,521	-6.0	15.0	107.7
Uses only own Land	484 (47.5)	1.29	2.6	2.8	87,710	-33.7	-36.6	94.8
Rents-in Land	406 (39.8)	0.93	2.9	2.7	80,214	-44.1	-46.0	96.1
Eta		0.23	0.07	0.05	0.08	0.11	0.09	0.02
F. Sig.		0.00	0.11	0.25	0.03	0.00	0.02	0.75
N		(1019)	(1019)	(1019)	(1019)	(1016)	(1016)	(1013)
Total	(100.0)	1.20	2.7	2.7	85,708	-34.3	-33.8	97.0

It is noteworthy however, that -- although all households are roughly the same size (total residents) -- the operated area of renters-out is almost twice that of renters-in, despite lack of enumeration of land area rented-out. In other words, the renters-in, despite their best efforts in farm-size enhancement, still farm the lowest average area -- one-fifth less than the national average.

That this is insufficient, in general, to generate a livelihood is demonstrated by the net purchases by renters-in of both beans and sorghum. Nevertheless, the high average number of coffee trees tended by them (even though their farms are appreciably smaller than the owner-operators') attests to a high intensity of land use on their small farms, and demonstrates that their purchasing power when they enter the grain market is bolstered by their sale of coffee.

The sample data indicate that land additional to their own holdings is available to certain types of potential cultivators -- free, or in exchange for rent (in cash, or other values). The exhaustive combination of ways by which land enters the market and becomes available to farmers, and their sources of labor to work it, will be laid out in Table 15 -- Appendix D provides a more detailed investigation of land and labor, in terms of sources and suppliers, and makes the components of Table 15 clearer. Just over one-in-twenty of the people who rent-in land say that they do so because they want to produce a surplus; in terms of analysis of the development of capitalist farming, this response is especially suggestive, and we will return to it in Chapter 4.

Labor

Job Holding

Farm individuals, families and households are differentially integrated into commodity markets; the markets in question here represent various sources of remuneration for expenditure of labor power. Most regions have made at least a small contribution from their (especially male) population to the urban paid work force, so that the mature population remaining in rural areas is slightly disproportionately female (53.2 percent in the NFS).

We might expect a few large coffee/tea/pyrethrum growers to employ farm workers for wages but most agricultural workers seem to be finding their jobs seasonally on the farms of smaller-scale producers. Laverencic (1982, p. 6) estimates that the nation did not have the employment potential (in that year) even to approach the supply of workers available for hire:

> It is expected that only an estimated 120,000 permanent wage-earning jobs can be created in the course of the present decade, but the number of the heads of household seeking employment is, in the same period, due to expand by 400,000. The informal sector and Umuganda will therefore be a way to make the people usefully occupied who would otherwise be idle. The problem is closely connected with that of the exodus from rural areas and increasing overpopulation in urban centres, although these at present account for less than 5 per cent of the total population.

The 1984 data indicate that large numbers of people do take paid work, especially in agriculture; so impressive was this indication that the survey of 1988 is titled the "Nonfarm Strategies Survey" -- referring to the fact that the paid work may be on-farm but is not carried out on the respondent's own property.

To make a watertight argument that proletarianization is occuring, it ought to be shown that there is a class of agricultural workers, and

that they are also a class of landless workers. However, self-designated wage employees in the NFS appear to be seldom entirely landless workers.[17] A considerable body of literature exists which argues that current trends in proletarianization have not exhibited the complete break with landholding that had seemed to be the "classical" pattern of workforce creation (Bernstein, 1977, p. 63, Note 13; de Janvry et al., 1988), and in response to these findings, it has been acknowledged recently that surplus extraction can be greater (i.e., wages lower) from those workers who are provisioned even by a mini-landholding, and whose sustenance thus does not have to become entirely the responsibility of the employer.

If we take the perspective that involvement in the market economy is the norm for rural households, then five alternatives might be considered. The first (a) is households which

> subsist by traditional horticulture and stock raising, and meet their cash demands from [personal cash] reserves, remittances and pensions of various sorts.

The other four alternatives align with categories proposed by Fisk (1975) for Papua-New Guinea:

> b) subsistence with supplementary cash production,
> (i) produce some extra staple foods for sale (e.g., as beer), or
> (ii) add a small unit of non-staple food or fiber (e.g., a grove of coffee trees) to the food garden, or
> (iii) leave the family on the subsistence garden and work for a time for wages,
>
> c) cash orientation with supplementary subsistence,
>
> d) complete specialization for the market (i.e., simple commodity production), and
>
> e) capitalist (rentor and/or employer) farmers.

In 1979, the populations of categories b (ii, iii), c, and d were 48 percent of all farms (The Courier A-C-P/EC, 1982, p. 38) -- category e

was assumed not to exist at that time. The NFS data are not entirely suited to classifying farm households in this particular way: farmers indicate a range of farm and non-farm strategies for surviving in a modern economy, utilizing family (and extra-family) labor resources, and meeting cash needs, but the extent of involvement in the market is not quantified, and motivation for engaging in certain activities was not elicited. Nevertheless, by close examination of responses to questions about crop and stock production and sales, and involvement in the labor market as both sellers and buyers, it can be calculated[18] that a modern distribution of households by job-holding (see Table 11) has about 87 percent of all farms in categories b (ii, iii), c, d, and e. This represents almost a 40 percent increase compared with the 1979 estimate, and is also a change in the direction anticipated by the logic of argument of this dissertation, but the current data are so inexact -- particularly in relation to estimating numbers in category b (i) -- that I do not feel confident in attaching great significance to this apparent change. Nevertheless, further research might elucidate this interesting development of the local economy.

Table 11 Job-holding among Heads of Households.

Category		Per cent of all Households
a	Subsistence	0.6
b (i)	Subsistence + some sales	12.0
b (ii)	Subsistence + cash crops	17.2
b (iii)	Subsistence + wage work	14.8
c	Cash Sales + subsistence	44.7
d	All production for market	3.4
e	Capitalist production	7.3
	Total	100.0 (1019)

Labor Demand and Supply

The 1988 data record how many days of agricultural labor are hired, and how many days in a variety of occupations are sold off-farm. Some farms both bought and sold farm labor during the interview period, but generally speaking, households which hired labor did not also sell their labor, and vice versa. Control over labor varies in our sample from the household which sold 188 days of agricultural labor over a three-month period, to the household which hired 418 days over the same period (considered to be equivalent to six full-time workers). This information has been used to compute net agricultural labor purchased -- the difference between hiring and selling. Remunerations are not recorded for any of these activities -- but the standard (legal) wage for a day of agricultural work in Rwanda is FRw 100. Non-agricultural tasks were valued at imputed Rwandan prices[19] as multiples of a standard agricultural day. This has been used both to compute the value of labor and to calculate the equivalent of all earnings from labor sold off-farm in standard agricultural labor-days.

Table 12 presents a comparison with the land renting categories of Table 10, and on all the economic parameters indicated in it, the households which hire labor consistently have higher values than those for the family labor enterprises and, to an even greater extent, for the households which sell their labor into agriculture. The two exceptions to this trend are sorghum sales, which have shown no consistent trend thus far, and labor-self-sufficient households are smaller in their total number of residents than either of the other two types (Combined family size has eta coefficient of .11 which has a .01 F significance).

Table 12 Characteristics of Labor Hiring Categories of Farm Households.

Categories	No.of Cases (%)	Area Farmed (Ha)	No. of Persons Childr.	No. of Persons Adults	Ave. FarmInc. (FRw)	Net Sales of Beans (Kgs)	Net Sales of Sorghum (Kgs)	Ave.No. Coffee Trees
Hires Ag Labor	381 (37.4)	1.43	3.0	2.7	109,651	-16.9	-29.6	122.4
Uses only FamilyLabor	428 (42.1)	1.15	2.4	2.7	73,490	-36.3	-38.3	91.9
Sells Labor to Ag	209 (20.5)	0.87	2.9	2.8	67,110	-61.8	-32.3	60.8
Eta		0.19	0.13	0.02	0.30	0.16	0.02	0.13
F. Sig.		0.00	0.11	0.88	0.03	0.00	0.85	0.01
N =		(1019)	(1019)	(1019)	(1019)	(1016)	(1016)	(1013)
Total	(100.0)	1.20	2.7	2.7	85,708	-34.3	-33.8	97.0

Worker numbers are captured by two interval variables and two continuous variables. The number of workers in each household is the operationalization of family labor. Since data were not gathered explicitly in terms of adult labor equivalents, households where workers occur thus have a whole number of people contributing to the workforce; I took people's evaluation of their own (and others') status as "workers" at face value when the variable, **Number of Workers**, was created.

This enumeration, however, includes 168 children between the ages of 8 and 14; 35 more children claim to have "work" as their secondary activity. Further, 175 adults aged 65 and over (up to 88 years) have primary jobs, and 12 more have "secondary" jobs. Empirical rigor such as that employed by Cain in his Bangladeshi data[20] -- where each child who drew a full-adult wage is attributed full worker status -- is seldom possible. It is simplified in a classification like that of Meach (as referenced by Loveridge, p. 166), where only individuals between 15 and 64 are called "Active" workers -- the very young and old are omitted. This is the technique followed by Clay, Kampayana and Kayitsiga (1989) on the current data set. The category called **Active Adults** in Table 13 follows this procedure too, and omits all workers not between the ages of 15 and 64.

Nevertheless, there is some obligation to give credibility to the work contribution of outliers; and for hypothesis 2, I argue that it is important for survival of <u>some</u> households that as many of their members as possible should be working. DSA used a graduated scale to classify individuals as **consumption** units based on World Health Organization criteria (MINAGRI, 1985, Appendix B, p. 145) and their logic is applied

here to **production** equivalents as well. Here an individual, classified by age and sex, was allocated a proportion of a consumption unit. The scale of consumption proportions was complicated, but it is simplified as follows:

7 to 14 years	=	.95 of a consumption unit,
15 to 34 years	=	1.00 of a consumption unit,
34 to 44 years	=	.95 of a consumption unit,
45 to 54 years	=	.90 of a consumption unit,
55 to 64 years	=	.80 of a consumption unit,
65 and older	=	.70 of a consumption unit.

If respondents (15 to 64) were "workers" in response to the survey, they were assumed to be the same proportion of a worker as they are designated to be proportions of a consumer when **worker equivalents** were calculated, and so too for the working people beyond these age limits.

Some households supplement family labor with paid employees, a few old women work their farms entirely with paid workers, and other households sell their labor off-farm. In a quarter (of a year--about 91 days), I surmise there will be 13 Sundays which -- in the Catholic country which Rwanda has become -- will be treated as non-work days, and there will perhaps be one public holiday per month. Thus, household members might be expected to work about 75 days in a quarter. If we assume that a full-time agricultural employee also works 75 days per quarter, we can calculate the proportion of a full-time working family member represented by the agricultural worker(s) a farm employs. This figure added to the member-of-family workers (adult worker equivalents) creates the **adjusted adult worker equivalents.**

The correlations between all designated family workers, active adults, adult worker equivalents and adjusted adult worker equivalents are contained in Table 13. On the face of it, there does not appear to be a good reason to expect the first three of these variables to be very

different, but there may be occasions when one will prove superior.

Table 13 Correlation Coefficients Between Measures of Worker Numbers.

	Active Adults	Worker Equivalents	Adjusted Worker Equivalents
(Self-designated) Total No. of Workers	.8303 **	.7589 **	.7389 **
Active Adults		.8076 **	.7839 **
Worker Equivalents			.9821 **

Total 1019

1-tailed Significance ** = p < .001

Obtaining Labor

Table 14 shows the proportions of households which gain and provide access to farmland through gift and rental, as well as the ways in which they obtain the labor to work that land -- the dotted S-shaped line through the table is intended to separate an area of high concentration of households (to the right and below) from the rest. The largest category in the table is the owner-operators (12.1 percent) who do not enter into either the market for land or for labor. The next largest category (9.0 percent) contains farmers who rent-in at least a proportion of their farm-land and work it within the family. The two companion categories to these -- the owner operators (8.8 percent), and the pure renters-in (6.6 percent) who also hire farm workers -- are the next most common. The last of these categories is also (from my point of view) the most interesting because farmers here hire farmhands to work rented land -- the sine qua non of "entrepreneurial" activity.

Table 14 Land and Labor Resource Combination.

Land Taken In

(Percent of Households)

		Rent & GetFree	Rent only	Free only	No extra	Row Total	Labor
Land	Rent out	0.1	0.1	-	0.2	0.4	Hire & Sell
		-	0.1	0.1	0.2	0.4	Sell only
	& Give Free	0.1	0.1	0.4	1.8	2.4	Hire only
		-	0.1	0.2	0.3	0.6	No transactn.
Made	Rent out Only	-	0.1	-	0.4	0.5	Hire & Sell
		-	0.8	0.2	1.2	2.2	Sell only
		-	0.7	0.4	2.7	3.7	Hire only
		-	0.8	0.8	2.8	4.4	No transactn.
Available to Market		0.1	0.1	0.1	-	0.3	Hire & Sell
	Give Free Only	0.3	0.2	0.5	0.5	1.5	Sell only
		1.7	1.5	1.7	4.0	9.0	Hire only
		0.5	1.8	0.8	3.6	6.7	No transactn.
		0.3	1.1	0.4	0.6	2.4	Hire & Sell
	No Land Given	2.2	5.7	2.2	3.0	13.0	Sell only
		2.8	6.6	3.6	8.8	21.8	Hire only
		4.2	9.0	5.3	12.1	30.6	No transactn.
Column Total		12.2	28.6	16.6	42.5	100.0	

Total 1016

- represents no land transactions.

Households in the categories of the upper three-forths of the table are the owners of surplus land. Those on the right-hand side (column four) release some of it into the market but do not receive any additional land from that market, and just over half of them also hire labor. By contrast, households in the left three columns of the table receive at least some of their farmland from other households.

By summing lines three, seven and eleven of the column of "farmers who receive no extra land from the market", it can be seen that one-household-in-twelve can be placed in the general "landlord-employer" classification; another one-in-15 are "landlords" only (lines four, eight and twelve). Slightly more than one-in-five households employ their own family's labor on land that they get from the market (row sixteen of columns one, two and three); another one-in-ten still need to sell family labor, although they take in extra land, as well (row fourteen).

About one-household-in-three is involved in the "free land" market, while a few households (but still nearly one in six) engage in the apparently complex arrangements of the upper left-hand portion of the table, where various parcels of land come into, and out of, the market and labor is sold-off and bought-in in what seems at first to be a haphazard pattern of multiple transactions. I pursue this aspect of the table in a limited way in the next section, but for the present it illustrates the potential complexity underlying subsequent generalizations made about farmers and their relationships to land and labor, and can perhaps best be understood by reference to Wright's exposition of "contradictory class locations".[21]

Creating a Class Hierarchy

Classes are, as noted above, only categorizations of relationships established on the basis of control of resources. In creating the categorizations, I am not concerned with resource distributions, as such, but with the social relationships of landlord/tenant and employer/employee.[22] I choose to allocate status to the classes created on the basis of the following logic, rather than on material well-being.

Those households which command sufficient resources both to put surplus land onto the market and to employ workers on their remaining estates are generally recognized in the literature as in the "highest" class position; those who must work for wages and rent-in land are "lowest", with the independent owner-operators in the middle. The position of most other categories in such a hierarchy is an issue of debate, and would surely be subject, in almost every country, to conflicting images even within one class (Bulmer, 1975). Landlords reap the returns to labor of individuals who are using their resources without any of the "costs" of labor supervision, and are thus more advantaged than someone who employs labor only on his/her own land. I use **advantaged** here in a specific sense: landlords are presumed not to have to spend energy (or an extra wage) in supervision, but can devote their own energies and talents to whatever other activity is their specialization. By contrast, landlords with "entreprise" might receive greater return from land rent by organizing its exploitation more efficiently; however, this could involve the opportunity cost of spending time planning land use, and possibly also supervising it.

Of the three classes which have land surplus to their personal needs -- (1) the rentor, (2) the rentor of land and the hirer of labor,

and (3) the hirer of labor -- I consider the social desirability of gaining one's income from each of these to be ranked in that order, with an inverse order for their opposites. As an example of the "bottom end" of this hierarchy, the renter of land who "works off" not only has lost some of the "surplus value" of her/his labor to rent, but (s)he has also had to leave home and take orders from a boss. (S)he is at the bottom of any class hierarchy.

Here the anomalous cases are the 30 households which both rent-out and rent-in some land. By the nature of the data collected, it is not known whether more land is rented-in or -out, but the renters (-in and -out) stated their principal reason for each of their actions. Some of the reasons given for renting-in could generally be classified as "obtaining land of higher quality than that rented out". In these 15 cases, I have assumed that they would neither rent-in nor -out if their current quantity of land met their quality needs as well, and they were allocated to the nearby class of non-renters of the same employer(/ee) status as themselves. The remaining 15 cases presented more difficulties.

The three who claim their intent was production of a surplus are classified as rentors, and each moves to the high numbered category (see Table 15) of the same employer/ee status. The remaining dozen claimed to have insufficient land for their own needs. Four of them still rent-out land for "friendship's" sake; one, a widow of sixty with her separated daughter and her infant son, at home, actually rents-out the land in exchange for <u>work</u>. I believe their clear orientation is to <u>rent-in</u>. The same is true, too, of the person who rents-out some land (for cash) because of "a shortage of labor", and the seven who "need the

money" they get for renting some of their land. All of these are classified in the first four categories -- according to their hiring and working practices. A more detailed investigation would no doubt show these farmers to be the same as the other 15 of this category -- that the land rented-out is inappropriate to their needs (far, infertile, etc.) whereas that rented-in better meets those current needs.

The final distribution of households to classes is contained in Table 15, representing a class hierarchy -- from low (1), through high (12). The table shows, as a general rule, that rentors who don't employ labor operate a smaller area than do rentors who also employ labor on their retained plots. This seems entirely reasonable -- the employers presumably having some characteristics (resource or intention) conducive to their being employers, but they would need (cet. par.) to keep back extra land to provide the means of production to their workers. Table 15 shows breakdowns by the same variables as were presented previously in Tables 8, 10 and 12.

Table 15 Farm and Family Characteristics of Categories of Farm Households.

Categories			N of Cases		Area Farmed	No. of Persons		Ave. Farminc.	Net Sales of		Ave.No. Coffee Trees
Hire in	Work off	Rent land in & out	(#)		(Ha)	Childr.	Adults	(FRw)	Beans (Kgs)	Sorghum (Kgs)	
	Work	Land Rented-in	(1)	114 11.2	0.83	3.0	2.6	64,650	-63.9	-50.1	68.7
Hire	Work	Land Rented-in	(2)	33 3.2	0.93	3.2	3.0	90,184	-96.0	-57.6	131.5
		Land Rented-in	(3)	135 13.3	0.94	2.7	2.7	71,933	-33.0	-64.5	105.8
Hire		Land Rented-in	(4)	124 12.2	1.03	2.9	2.6	100,793	-23.7	-18.8	101.2
	Work	Own Land only	(5)	95 9.3	0.92	2.7	3.0	80,463	-50.6	-19.3	77.2
Hire	Work	Own Land only	(6)	35 3.4	1.43	3.4	3.1	133,446	-79.7	-130.5	58.1
		Own Land only	(7)	192 18.9	1.25	2.4	2.7	70,056	-35.4	-21.1	85.3
Hire		Own Land only	(8)	162 15.9	1.59	2.8	2.6	103,130	-11.7	-45.1	124.3
	Work	Land Rented-out	(9)	24 2.4	1.65	2.1	3.0	71,355	-41.9	-8.4	33.6
Hire	Work	Land Rented-out	(10)	22 2.2	1.90	3.8	4.1	163,488	-8.6	-20.1	96.6
		Land Rented-out	(11)	42 4.1	1.40	1.9	2.3	63,437	-17.9	7.4	69.6
Hire		Land Rented-out	(12)	40 3.9	1.93	3.0	2.6	106,303	30.2	57.2	198.0
Eta					0.28	0.19	0.21	0.34	0.23	0.14	0.17
F. Sig.					0.00	0.00	0.00	0.00	0.00	0.04	0.00
N					(1019)	(1019)	(1019)	(1019)	(1016)	(1016)	(1013)
Total				(100.0)	1.20	2.7	2.7	85,708	-34.3	-33.8	97.0

The most notable feature of the table is the concentration (with a few exceptions) of high values in categories which hire workers. When employer ("Hire") categories are juxtaposed with the similar category immediately above, the largest income increment to hiring occurs on renting-out farms from which members work-off and which hire workers (Class 10), when compared with the similar category which doesn't hire workers (Class 9). The small size of this employer class may have adversely affected the reliability of its data, but, on the face of it, it has more than twice the value of output of its companion class -- indicating the considerable gain to be made, especially in circumstances of excess land, by hiring agricultural workers. Greater confidence in this result stems from all the pairs of comparisons -- 2 with 1, 4 with 3, etc. Category 10 also has by far the largest household size {one and a half full adults more than the comparable non-landlord class (Class 6), its nearest rival}, and number of children in the household.

Having one or more household members working off-farm seems to confer a benefit to those classes which are owner-operators or landlords (5 and above) but results in a drop in income for classes which rent-in. By contrast with that class-disadvantaged position, the only class able, on average, to sell a surplus of beans is the highest class (12), and they also sell sorghum (being joined here only by Class 11). In other words, all but these classes buy both beans and sorghum. There is thus a necessity to account for classes making unusually high (and low) purchases, and to relate these purchases to a source of cash.

The classes which both hire labor and sell it off-farm (2, 6 and 10) have the three largest average household sizes -- having the highest numbers of both children and adults. Classes 2 and 6 purchase large

quantities of beans; if bean and sorghum purchases are added, class 6 has the greatest purchase total, followed by classes 2 and 1. This serves to underline the poor economic position of class 1 farmers, who also have lowest overall farm income (and an unquantified imposition for land rent), and relatively few coffee trees which might supply additional cash income.

Class 2 members have highest average purchases of beans (especially), but above average farm income -- although this too is subject to reduction by rent payment. Over against that, they have the second highest average number of coffee trees which possibly provide some cash to finance large staple purchases. By contrast, class 6 members purchase large quantities of beans and nearly twice as much sorghum as any other class, but their coffee tree ownership is quite low. It seems that their high (second highest) average income could be subject to reduction by the need to pay for these staple purchases, without much relief from coffee sales.

The highest class also has the highest average planting of coffee trees, demonstrating that all the potential avenues to prosperity seem to have opened up to them. Some of their compatriot classes (Class 10, for example) have not expanded to nearly the same extent into coffee production and, apart from class 8 (owner-operators who <u>hire</u> labor), the significant coterie of coffee producers is the renting-in classes (with the exception of Class 1 -- who could conceivably have a labor shortage with regard to potential cash cropping). Their <u>need</u> for coffee as a source of <u>cash</u> was pointed out in discussion of Table 15 above; the 32 renters-in who work off themselves while hiring farm workers (Class 2) will be treated in more detail in Chapter 4. The class (9) absolutely

lowest in possession of coffee trees appears to have solved their demand for cash by turning to off-farm work.

INCOME AND SURPLUS PRODUCTION EFFICIENCIES

Income and production surplus area efficiencies are calculated by dividing values of on-farm production and surplus production from farm products only (excluding labor returns which are not part of per-farm land output) by the area of farm available to the household producing (respectively) income per square meter and production surplus per square meter; for the worker efficiencies, adult equivalent workers in the household is the divisor.

"HUMAN CAPITAL" VARIABLES

Gender, age, and education levels of both spouses in the household (where relevant) are recorded, as is marital status and education level of all household members. Polygamous marriages (or unions) also potentially add components to the earning capacity of households, as well as complexity to family development cycle and will now be discussed in detail.

In Rwanda, where the division of labor on farms occurs by gender specialization (Ubonabenshi, 1977), men may take more than one wife (one respondent in the NFS sample claimed to have three), but women take only one husband. In 18.4 percent of households, the head declared him/ herself to be polygamously married (Table 16).

Table 16 Gender and Marital Status of Head of Household.

	Male (Proportions)	Female	Total
Polygamous	13.3	33.6	18.1
Monogamous	86.4	66.1	81.6
Unmarried	0.3	0.3	0.3
N =	(776)	(243)	(1019)
Total	100.0	100.0	100.0

Chi Sq. = 51.151; sig. at 0.00

This represents one in three female headed households and one in eight male headed households. Except in two cases out of 188, each polygamous wife has her own household -- some live with husbands, some live without -- probably on the parental lands of her husband. It is not clear who makes specific decisions in those polygamous households where the husband is not present. In this cultural context, it is still, presumably, his household and his family, and located on land provided by his parents, but, by the nature of the sample, if he is not present, his characteristics and contribution to family production and decision-making are not recorded; neither is the overall accumulation potential of a polygamously married man recorded.[23] Thus, a complication is introduced here concerned with the power householders (usually heads of households) have to command resources.

According to the random sampling techniques by which the NFS respondents were drawn, although many farmers within a commune might designate themselves as polygamously married, there can be no way of knowing whether polygamous males enumerated by the survey would lay connubial claims to polygamous women "household heads" also enumerated, or vice versa. Knowing that two or more response units are only one productive unit would add some complexity to the family development cycle model. The central feature of Figure 3 is the cycle of marital growth, maturation and decay. It includes, but doesn't elaborate, the <u>possibility</u> of additional wives of an interviewed household head. How one might classify that "family" where the first wife's two children are considering marriage but the second wife is not yet pregnant with her first child, for example, was not canvassed when the cycle model was introduced, nor in its partition into phases. The sampling procedure

avoids these complications by definition.

For the differentiation model, polygamy poses a more theoretical problem; the deciding theoretical factor is the inability to place a boundary around polygamous units to delineate their decision-making and their accumulation -- polygamy might be construed as one means by which a marrying man might capitalize his farm -- and it becomes an issue as to whether or not to include these households in the overall sample. This section debates the implications of a decision on this issue.

Household is defined as the domicile of a family headed by a man with his wife (and children) in residence; 7.4 percent of the cases which were not like this were households where a polygamous wife lives, perhaps with her children (and possibly others), and is visited by her husband from time to time. Her recorded answers are considered to represent the life and production activities of this individual household. In these cases, there is no way of knowing, either, whether the husband's labor and decision-making contribution has been, or can be, disregarded. We surmise that women are so much in charge of the household production process that it was fair to consider that a polygamous wife made production and expenditure decisions as if she were the only decision maker. Any other surmise would have repercussions on the composition of the sample -- especially as relates to proportion of female headed households, and farm size.

There were 1,019 household heads in the original sample, and as Table 17 shows, 188 of these were polygamous. Therefore, a sample reduced to eliminate the complication of polygamy would contain 831 household heads, and the table shows how they would be divided by marital status and gender of the household head. There is a possibility

that were we to remove polygamous households other categories might be inadvertently removed in the process.

Table 17 Marital Status of Monogamous Household Heads.

	Male (Proportions)	Female	Total
Unmarried	0.3	0.5	0.4
Free Union *	4.4	0.5	3.6
Married	92.0	7.4	75.6
Divorced /Separated	1.2	10.1	2.9
Widowed	2.1	81.5	17.5
N	(671)	(160)	(831)
Total	100.0	100.0	100.0

Chi Sq. = 632.7; sig. at 0.00

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* This seems to be entered into only occasionally by an already-married man (2 only), but women who enter "free union" are the de facto "second wives" of polygamously married men.

My Rwandan colleague, Kampayana, recounts that the perceived concomitant of polygamy in his country is large land holding by the husband; but it is in the nature of the data -- which records area farmed, not owned -- that size of land ownership cannot be determined by this sample. Four pieces of evidence which could be constructed from the data gave ambiguous indications about the relationships between polygamy and wealth.[24]

The polygamous households are left in the sample here because to exclude them would be to upset the sample's statistical representativeness, they are believed by the field workers to be representative of households in other respects, and empirically their production outcomes appear to be only slightly different from other households. The problem of unrepresentativeness has been minimized by the weighting factors which compute the sample data up to national level.

NOTES

1. Shanin (pers. com.) claims that Chayanov made use of Le Play's studies of French working-class households and advanced the latter's methodology to allow for this very feature of Russian peasant farm households.

2. Computed Value of Household Output (Income)
= Value of Agricultural Production (FRw)

```
+     20,000  *  No. of cattle sold this year
+      1,500  *  "   "  goats    "         "
+      1,500  *  "   "  sheep    "         "
+      8,000  *  "   "  pigs     "         "
+12 * (  300  *  "   "  poultry sold              this month)
+12 * (   30  *  "   "  bottles of banana beer sold    ")
+12 * (   10  *  "   "  bottles of sorghum beer sold   ")
+ 4 * (  200  *  Days of artisanal labor sold from Household this qtr.)
+ 4 * (  200  *  Days of business labor sold from Household      " )
+ 4 * (  500  *  Days of "functionary" labor sold from Household " )
+ 4 * (  100  *  Days of agricultural labor sold from Household  " )
+ 4 * (  100  *  Days of unskilled labor sold from Household     " )
+ 4 * (  100  *  Days of other salaried labor sold from Hhold    " )
+ 4 * (  100  *  Days of "other" labor sold from Household      " ).
```

Estimates of National average valuation of goods and labor were provided by DSA.
The report of the 1984 ENA (MINAGRI, 1984, pp. 32, 41, 50 and 59) indicates only slight changes over the four seasons of Rwanda's agricultural production: I feel justified in multiplying the labor purchases and sales for the surveyed quarter by four to obtain annual figures.

3. Labor Earnings = Income (Computed Value of Household Output) - (4 * 100 * Number of days of agricultural labor bought this qtr).

When DSA computed the franc value of crop production, they summed the productions of various crops valued at national market prices. Thus, it is possible to compute a conversion factor for each household, whereby overall Kilocalories of production were coverted to franc values. This conversion factor (FRw value / Kilocalorie of total production, and different for each household) was used to create the cost of maintenance of the household by the equation --

Cost of maintenance of the household =
Consuming adult equivalents in the household * conversion factor * 2,100 Kcalories per adult consumer per day * 365 Days.

4. There is understandable controversy about what is the "correct" figure for adult personal consumption, even within one country. For Rwanda, Loveridge (p. 156) quotes Leurquin (1963), who uses 2,300 Kcals/day; Minot & Niyibizi (1988, p. 157) use 2,444. Each of these criteria could create new constants to insert into the equations; the complexity rapidly becomes imponderable.

For purposes of comparison, I believe consistent use of the one figure will create comparable results, the pattern of which will not be altered much if the calculations are remade with a different standard consumption figure. I experimented with 2000, 2100, and 2200 Kcals., but decided to use Garvey's figure -- 2100.

Of course, insofar as the individual household decision-makers are concerned, expenditure on household consumption or, alternatively, decision on which foods to consume and which -- if possible -- to sell will be made on a basis of differential food prices and household consumption desires. Little of such decision-making will be informed, I surmise, by information about real nutritional value of such foods. Moreover, as Castro et al. (pp. 414-416) point out, wealth of household heads affects their expenditure on diet, which reflects on their nutrition and health.

For an approximation to what <u>real</u> costs of feeding households are, Minot and Niyibizi provide much more useful data than this study.

5. Data in Appendix A make a comparison between the MINIPLAN Budget Study data (Minot et al., 1988) and those from the NFS Survey. It is notable, and certainly says something about computed income, that the maximum NFS figure is in excess of FRw 500,000 -- 2.5 times the maximum value of the MINIPLAN study. But upgrading the limit of all the categories by a factor of 2.5 does not improve the comparability of results. Moreover, there is no agreement, overall, between MINIPLAN and NFS on average family size or farm size.

   This procedure can be compared to Greenhalgh (p. 573). She also says, at last, of her data: the income figures should be treated as estimates rather than as "real" income.

6. Clay proposes this figure and has applied it in (e.g.) Clay, Kampayana and Kayitsiga, 1989.

7. Three other techniques -- all based on the half-share method -- were experimented with: a) number of workers, not worker equivalents, were used; b) worker numbers and c) worker equivalents were categorized according to average farm family wage incomes.

8. It could be argued that the greater number of workers in households where the farm size gradually increases require the additional outlay to equip workers with their "tools of trade". However, I believe the reverse argument -- that richer households can afford to have more intensive capitalization; my belief is based on the evidence that many workers in poor households often do not have what appears to be the minimum necessary equipment for working the land they control (one hand-tool per worker, for example).

   Mamdani (1987, pp.199-200) presents similar data for Uganda and concludes that many households are too poorly equipped to be able to utilise their own labor effectively.

9. For analytical purposes. Household, as "Home!" clearly represents more than this to most people: repository of my past, refuge in time of trouble, etc.

10. By putting the matter in this way, I imply not that the menache is a specific event but only that the conceptual break between fertility and its termination needs to be specified as a particular time. Indeed, untold complications about children being born to older women can presumably be accounted for by this very unpredictability of termination of menstruation.

11. The decision is admittedly totally arbitrary. Without imputing any responsibility to her for the final decision, I am grateful to Dr. Nan Johnson for discussion on this issue which enables me to be as confident about drawing this boundary as I would be about any other.

12. At least it overwhelmingly occurs among young people: Overall, 196 respondents to our sample live in "free union", but 58 household heads declared themselves to be so united -- 29 of each sex. Thus, it is three times as prevalent among women household heads as among men; this is the inverse of their proportions as household heads, where men outnumber women three to one. This proportion holds true for the 196 respondents, too. It is concentrated in its geographical occurence, especially in Kigali Prefecture (where 50% of free-unions occur) and it is almost totally confined to young people (just less than ninety percent). Twenty-eight of the twenty-nine women household heads united in this way designate themselves, at the same time, as polygamous wives, but only two men who are in free union claim they are polygamously married.
One-in-four of the men in free union have completed primary education or beyond; only one-in eight women have, but this seems more a reflection of low education level among women than education's effect on the choice of conjugal pattern, per se.

13. In contrasting India with the US, Collver (1963, pp. 86-87) notes that, in the less developed society,

> ...[T]he cycle is a continuous flow, with little to mark off the transition from one [phase] to another. Each stage of life ...overlaps the previous one to some extent....
> Two [phases]...overlap about the twentieth year of the family cycle, when the older children begin to marry and before the mother has completed her own childbearing.

The issue seems not to bear on the argument of his paper, however, and he does not develop it further.
Hohn (p.66) presents the table in the way I have done, but her intention is to use statistical data to create population categories rather than individual data to classify households, as is done here, and her subsequent formulation enters into probabilities rather than defining characteristics.
The only other formulation I found is of Greenhalgh (p.575), who is content to end her "expansion" phase when maturation of the first child (defined as attainment of age 15) is reached.
In the Rwandan distribution, Phase II is noticeably the biggest category. Different decision on how to end this phase would clearly have altered this distribution. However, in the end what matters seems to be the "super phase", family growth or expansion, and this

continues from the first child's birth to when this first child leaves home.

To remove the cyclical component in the family development cycle model, the dissertation turns to a linear formulations (using the variables from p. 85) in Chapter 4.

14. The expression here has "marriage" as a shorthand for **heterosexual connubial arrangement**. Nevertheless, an analysis of the marital status response **union libre** -- outlined in footnote 12 -- reveals it to be predominantly an institution entered into by the young, and apparently those living near urban centers, Kigali especially.

15. Characteristics which show variability by region also break down systematically on the basis of rainfall and elevation.

16. For those households which do both, I examined their responses to the questions about motivations for land transactions in and out, and made a judgement about which land transaction seemed to me to merit precedence.

Any household which rents out **all** its land would not appear in the NFS sample. In the process, the owner would, incidentally, become a **nonoperator landlord**, or nonfarming landholder, as I designate it a couple of pages hence.

17. Refer Appendix D and the section on landlessness in Chapter 5.

18. To arrive at the estimates in the table, I applied the following criteria:

Households which live on remittances are **subsistence households**.

A household has a **market component** in its activity

- If it goes to market to sell surplus food crops more often than twice a month,
- If it has coffee trees, but fewer than 100, or if it has banana beer sales of less than 50 bottles per quarter or sorghum beer sales of less than 80 bottles per quarter, or
- If the household sells 20 or more days of work off the farm.

A household produces **full-time for the market** if it has more than 100 coffee trees, sells 50 or more bottles of banana beer or 80 or more bottles of sorghum beer in a quarter;

If a household rents-in land to grow cash crops, it operates a **capitalist farm**, as it is too if it employs at least the equivalent of one half-time worker (= 35 days work hired per quarter).

Farms which derive all their income from rent are assumed to be **capitalist farms** -- but it seems that the four households who do this are headed by widows who have no other source of income.

All other households are assumed to exist by **cash cropping and subsistence**.

Clearly -- with plenty of potential for overlap and inclusion in more than one category -- this categorization is far from foolproof.

19. Refer to Footnote 2.

20. In Bangladesh, Cain (1977) examined wage records to discover the age at which workers began to be paid full adult wages; the Rwanda

data does not contain this kind of information.

21. See, for example, Wright et. al., 1982, p. 710.

22. Moreover, I'm not trying to imply that the categorization below is more than one man's image of what Rwanda's 1988 system might be, based on my reading of an international literature of class, and of the country's history.

23. It might be possible to impute values for the production of average polygamous female-headed households (refer Table 17), but allocating the average is not especially suitable to a study of this type. Variations on this theme are discussed in the following.

24. First, close analysis of the ages of household heads, their wives and their children reveals that twenty-two male household heads in the sample have children as old as, or older than, their current wife; they have remarried. They have a tendency to be clustered toward the larger property sizes. What applies for widowers or divorced men possibly holds good too for men seeking polygamous union.

A second piece of evidence revolves around the question whether the rich by another criterion -- those from businesses or in government service -- are disproportionately represented among males who are polygamously married. Table 18 catalogs the small numbers of respondents who fall into these categories. Proportions of polygamous males are not significantly higher than proportions of males in the total population.

Table 18 High Income Polygamous Males.

Household Heads:	All Males (Numbers)	Polygamous
In government service	9	2
In business	13	2
In "other salaried" positions	5	0
Total (Percent)	27 (3.5)	4 (3.8)

But these indications seem to be at variance with two other pieces of evidence. Comparison of concentration of proportions of polygamous marriages in different prefectures creates four regions: West (Gisenyi and Kibuye), with almost one in three marriages being polygamous; North-east and east (Byumba, Kibungo, Kigali and Ruhengeri), with one in five; South-west (Cyangugu and Gikongoro), with one in seven; and the Center (Butare and Gitarama), with one in fourteen. This distribution does not relate well to common perceptions of mean regional farm size or wealth of potential husbands, and no immediate explanation for it is forthcoming. There is an echo in this material, however, of Newbury's material (1983)

about voting patterns in the first post-revolutionary election in Rwanda and how they relate to old colonial dominance; resort to influences of Tutsi and Kiga cultures may be helpful in deciphering this complexity.

Six categories of household decision-makers are defined in Table 19 which shows that there is some production deficit associated with polygamous-wife-headed households as compared with those headed by polygamous husbands. Nevertheless, while polygamous male-headed household outperforms its monogamous counterpart, this is not true for female-headed households; the productive contribution of the second and subsequent wives may account for the high value of category (1,1). The performance enhancement provided by the presence of a spouse (especially a wife) is, however, the most striking aspect of the table -- compare row 3 with row 2, for males as against females. It seems well worthy of further study in this data base, but to pursue it would take us far from the aims of this dissertation, and it will not be discussed here.

Table 19 Income of Households By Gender of Head.[25]

	Male Head (N in each category)	Female Head (N in each category)	Difference (Col1 - Col2)
Polygamous	101,202 (103)	64,243 (81)	36,959
Monogamous	92,434 (648)	71,098 (13)	21,336
Unattached	68,121 (25)	61,606 (149)	6,515
Total	92,802 (776)	62,986 (243)	29,816 (1019)

---

25. There are a number of anomalies in this table that cause it to be irreconcilable with a compounding of Tables 18 and 19. In this table, residence and household headship are given precedence over marital status. Thus, "married" and "free union" are grouped; the widower who is polygamous lives alone and passes to the unattached-head-of-household category; six polygamously married women are widowed and two are deserted. There are, then, in the weighted analysis, 81 "real" polygamous women who are in charge of their households, and 149 women who are not currently attached.

DATE DUE	DATE DUE	DATE DUE

CHAPTER 4

RESULTS

In this chapter, I shall examine the hypotheses elaborated in Chapter 2 and operationalized in Chapter 3. In the process, first, I shall attempt to deepen the appreciation of claims on resources so that the present (1988) resource-holding pattern is brought into sharper focus through a presentation of variation in wealth indicators as resources parameters alter. Then, I will test Hypothesis 1 using the model outlined at the end of Chapter 2; this two part model puts the elements of social differentiation in one part, and those of demographic differentiation in the other (with some overlap). Family and paid-labor structures will then be examined to discover their influence on farming efficiency as a test of Hypothesis 2.

VARIATION AMONG HOUSEHOLDS

Considerable differences exist among households in terms of the "income" they generate and the amount that remains after personnel maintenance is deducted (i.e., "production surplus").

Family Resource Availability

The resources which farming families control are, in general, the combination of their labor -- number of workers in the household and (net) labor they hire in -- and their farm land area. Tables 20 and 21 look at the way these three parameters vary (without control) with changes in family development cycle categories, and the zone in which production occurs. Both trends tend to be curvilinear.

Table 20 demonstrates that families increase their labor availability -- measured both by active members of the farm household, and by worker equivalents -- up to complete extension of the household and they

have their largest farm size during this phase, too. Their net purchase of agricultural labor continues to decrease beyond this stage -- from a fairly high almost eight-and-a-half days per quarter for the average childless couple -- until contraction. By the time the family reaches complete contraction, however, demand for labor shows itself in large purchases where the household head is active enough -- and still has sufficient of a land base -- to hire and supervise labor, but perhaps not enough to be involved in production him/herself. That is, households hire relatively large amounts of labor only at the extreme ends of the intact family, clearly where family labor is in short supply. By contrast with that, households in the final (dissolution) phase again hire relatively small amounts. This suggests that the remaining spouse, who has considerably reduced land left, nevertheless needs to employ some wage laborers to support declining personal committment to farm work. Families have reduced their farm area as children have dispersed - the average farm size in the dissolution phase is slightly less than half what it grew to at complete extension.

Table 20 Workforce and Farm Size by Family Development Cycle Phase.

Family Development Cycle Phase	Active Adults	Worker Eqts.	Net Ag. Days Hired	Farm Size (Ha)	N of Cases
Couple, no children	1.63	1.81	8.45	0.88	18
Extension	2.33	3.75	1.51	1.08	557
Complete Extension	3.69	5.29	0.84	1.63	51
Contraction	3.47	4.74	0.92	1.53	265
Complete Contraction	1.19	2.37	21.86	1.13	52
Dissolution	1.04	2.12	2.47	0.80	73
Total	2.53	3.86	2.56	1.20	1016
Eta	0.56	0.46	0.14	0.22	
F. Sig.	< .001	< .001	< .01	< .001	

Table 21a shows considerable variation across farming districts, in terms of workforce, hired labor and farm size -- especially when the east is compared with the other zones (as is made clearer by Table 21b). Household heads in the east average half a year younger than those in the rest of the country. They tend, too, to have slightly higher numbers of children (2.99 compared with 2.64), and almost one-fourth of a person -- half a worker equivalent -- more per household. The average farm in the North Central region is two-thirds the area of that in the East, and that in the North West is only half, but by contrast, overall, farm-families in the East hire thirty-seven times as much labor as those in the rest of the country. This overall figure varies between regions. The South Center (the next closest) hires less than one-fourth of the East's labor purchases, but the North Center hires only one-thirtieth as much, the South West only one fifteenth, and the North West -- the area of small farms and high intensity -- is a net seller of labor.

Table 21a Workforce and Farm Size by Zone. (5 Zones)

Zone	Active Adults	Worker Eqts.	Net Ag. Days Hired	Farm Size (Ha)	N of Cases
North West	2.49	3.90	-2.99	0.77	153
South West	2.40	3.67	0.78	1.29	158
North Central	2.49	3.72	0.33	1.08	234
South Central	2.52	3.71	2.04	1.02	211
East	2.71	4.20	9.33	1.65	262
Total	2.54	3.86	2.57	1.20	1018
Eta	0.08	0.12	0.13	0.27	
F. Sig.	0.17	0.01	0.01	< .001	

Table 21b Family Characteristics and Farm Size by Region. (2 Regions)

Region	Age of H'hold Head	Child No.	Active Adults	Worker Eqts.	Net Ag. Days Hired	Farm Size	N of Cases
West & Central	47.4	2.64	2.48	3.74	0.23	1.05	757
East	46.9	2.99	2.71	4.20	9.33	1.65	262
Total	47.3	2.73	2.54	3.86	2.57	1.20	1019
Eta	0.01	0.08	0.70	0.11	0.12	0.24	
F. Sig.	0.65	0.01	0.02	< .001	< .001	< .001	

Family Production Outcomes

Table 22a shows the yield response to active workers in the household, defined as number of persons of ages 15 through 64. In general, the more adult workers, the greater is the income of a household (eta = 0.38), but production surplus fluctuates quite widely (eta = 0.10). Nevertheless, even households with no "active" adults manage a certain level of production -- people outside the 15-64 year age range making the productive contribution. On average, these households (of which there are 32) still manage to produce an income of almost 40,000 FRw, whereas each additional active worker creates only a consistent 20,000 FRw increment of income for the household -- except for the third household member, who adds only about 6,500 FRw. The pattern is substantially replicated when whole numbers of worker equivalents are considered -- this takes people who fall outside the 15 to 64 age range into account, in terms of their equivalence to an active adult worker. In the case of worker equivalents, the second also adds almost 20,000 FRw to the income of the first, but the next worker equivalent adds less than one-twelfth of that increment. This pattern is substantially repeated for the next two worker equivalents -- almost 13,000 FRw rise for the fourth and fifth worker equivalents, but only 1,700 FRw increase for the sixth.

Table 22a Farm Income and Production Surplus by Number of Workers.

Number of Workers	ACTIVE WORKERS: Farm Income (FRw)	ACTIVE WORKERS: Prod. Surp. (FRw)	ACTIVE WORKERS: N of Cases	WORKER EQUIVALENTS: Farm Income (FRw)	WORKER EQUIVALENTS: Prod. Surp. (FRw)	WORKER EQUIVALENTS: N of Cases
0	39,128	16,183	32			
1	61,801	19,419	151	40,201	26,233	28
2	79,200	16,989	454	56,729	26,845	77
3	85,620	7,948	138	58,122	20,642	102
4	105,223	20,729	143	70,843	20,525	143
5	121,654	14,235	70	82,189	20,804	197
6				83,977	10,783	171
6 & more	177,735	37,021	30			
7 & more				117,126	11,828	300
Total	85,708	17,024	1018	85,708	17,024	1018
Eta	0.38	0.10		0.37	0.11	
Sig.	< .001	0.08		< .001	.13	

Table 22b Proportions of Workers at Various Phases of F. D. Cycle.

Whole No. Adults	Family Development Cycle Phase: Couple, No Children	Extens -ion	Complete Extens -ion	Contract -ion	Complete Contract -ion	Dissol -ution	Total
0	0.0	0.0	0.0	0.7	14.2	31.5	3.2
1	37.4	9.3	7.8	10.8	55.7	42.0	14.8
2	62.6	66.2	18.0	13.0	26.9	21.5	44.6
3	0.0	11.5	13.7	23.8	3.2	3.8	13.6
4	0.0	8.5	33.5	28.9	0.0	0.0	13.9
5	0.0	3.8	15.0	15.7	0.0	0.0	6.9
6 & more	0.0	0.7	12.1	7.1	0.0	0.0	3.0
Total	1.8	54.8	5.0	26.1	5.1	7.2	100.0
N	(18)	(557)	(51)	(265)	(52)	(73)	(1019)

If we consider the ratios of production surplus to farm income (which can be calculated from Table 22a), it appears that a household which has three adult workers (or worker equivalents) present is experiencing some maximum of maintenance need. If we assume that some, at least, of these third adults are children who have just moved into adulthood and who are followed closely by siblings, the latter may still be placing a high maintenance drain on the household. Closer examination of households (see Table 22b) shows that a high proportion of households with two active workers are couples with no family or in the (early) extension phase of their family development cycle (62.6 and 66.2 percent, compared with 44.6 percent overall), whereas those with three active adults are over-represented in the contraction phase (23.8 percent, compared with 13.6 percent overall). In all cases, active workers produce more income than the same number of worker equivalents, perhaps because of a misallocation of proportions of equivalence to young and old workers, but more likely because of more persistent application by active adult workers.

Be that as it may, there is ample justification for seeking an explanation of farm income and surplus production differences by recourse to the resource endowments of farms and their ability to command land and labor -- from their own families or from the hired-labor market. There are some values that lie well outside acceptable limits of the scatterplots of income and production surplus. Later, they will be examined as deviant cases. The analysis goes on now to examine the hypotheses.

A MODEL of SOCIAL and DEMOGRAPHIC DIFFERENTIATION: HYPOTHESIS 1

One implication of Greenhalgh's analysis is that demographic and social differentiation may exert a joint, interactive effect on inequality which is important above and beyond their independent effects. It has been argued previously that these two forms of differentiation, when seen as interactive processes jointly effect economic inequality, as measured by returns to farming, through their mutual involvement in landholding. In this section, I shall draw together the principal relationships discussed in Chapter 3 and so far in Chapter 4 and elaborate the model (Figure 2) outlined at the end of Chapter 2 in which their individual influences on returns to farming are combined. This model will be tested and the implications of its relationships discussed.

H 1: In Rwandan society, more of the variation in returns to farming will be accounted for by those factors which determine demographic differentiation than by those which determine structural differentiation

Control over labor, or the household's ability to manage its own labor as well as the labor of other households, is a crucial dimension of social differentiation, and is here defined as the number of days of agricultural labor that household members worked off-the-farm minus the number of days of agricultural labor hired by the household. The family development cycle is the driving force behind the demographic differentiation process, but, as mentioned previously (Chapter 3, p. 88), its cyclical nature makes it unamenable to treatment in linear models.

In a parallel analysis (Clay and McAllister, 1991), Dan Clay and I sidestepped this non-linearity by using a variant of family development cycle collapsed to capture the notion of "household expansion". The phases were regrouped into five categories, with the lowest value rep-

resenting one-person households commonly found at the two extremes of the cycle (not yet married, widowed, etc.) and the highest value representing households in the phase of maximum expansion (birth of last child to departure of the first). The results of doing this are presented in detail in that paper, but in short they are that within the household income variable, slightly more variance is accounted for by recourse to the structural differentiation part of our model (Part A) than by the demographic differentiation part (Part B), which contains this "household expansion" variable.

I plan not to use "household expansion" in examination of the model in this dissertation. Upon reflection, it seems to me that combining phases 1 with 6, and 2 with 5 adds essentially different phases to achieve the end result of measuring a variable intended to combine adults and children as both producers and consumers. The curve is made straight, but at the last it seems to conflate units of different nature (i.e., people of all ages) engaged in different activities (production and consumption). But once it is rejected then the problem becomes: how should family development cycle be represented?

Table 23 displays the correlation coefficients between each of the four measures of workers (active workers, total workers, adult worker equivalents, and adjusted adult worker equivalents -- as was shown in Table 12), the central variable on the demographic side of the model, and farm income. The appropriate measure to indicate farm labor used in household production within the model is that one which has the highest correlation to income -- number of worker equivalents. [Adjusted worker equivalents contains elements from both parts of the model and is included in Table 23 merely for completeness.]

Table 23 Correlation Coefficients between Income and Household Workforce.

Total Workforce as Measured by	Farm Income
Active Workers	0.37 **
Total Workers	0.33 **
Worker Equivalents	0.43 **
Adjusted Worker Equivalents	0.50 **

N of cases 1019

1-tailed Significance ** = p < .001

The investigation examines first some key bivariate relationships that make up the processes of social and demographic differentiation. Tables 24, 25, and 26 look, in turn, at the distributions of major intermediate and dependent variables by three exogenous variables. Beginning with Table 24, we confirm that farmers with higher levels of education operate larger farms (eta = 0.11). In fact, the trend continues beyond the table with the small proportion of household heads with higher than primary education commanding yet larger farms. There is a suggestion here that since higher education permits householders to secure comparatively high paying jobs off the farm they can then cheaply hire people to work a larger farm area for them. This is reflected in column two of Table 24, where the net number of days of agricultural labor hired increases with the level of education of the household head. Similarly, the higher incomes and production surpluses generated by better educated farmers seems, thus, to be a compounding of their increment for education with their greater farm size and use of larger quantities of hired labor.

Table 24 Farm, Workforce & Earnings by Education of Household Head.

Level of Education	Farm Size (Ha)	Net Ag. Days Hired	Farm Income (FRw)	Prodn. Surplus (FRw)	N of Cases
No schooling	1.11	-0.39	75,192	13,039	569
Some primary	1.27	1.02	92,811	18,401	315
Primary or higher	1.47	19.82	115,797	31,694	130
Total	1.20	2.64	85,876	17,099	1015
Eta	.11	.20	.22	.12	
F. Sig.	<.01	<.001	<.001	=.001	

Number of household worker equivalents (column 2), as recorded in Table 25, increases as family expands up to its maximum at Complete Extension, but after that workforce numbers decline. This table shows that farm size also increases in parallel with Family Development Cycle (eta = 0.22). Thus, there appears to be some flexibility in the land market in Rwanda, permitting some form of equilibration between land and labor. Income, too, rises as family expands, presumably reflecting the productive contribution of each new household member (and the additional land area s/he causes to be brought into operation); but, after dropping sharply with addition of children to the two-adult household, production surplus increases for each new cycle stage up to the point where one spouse dies. Interesting though the pattern of this table is, we are unable to confirm whether family size (as measured by Family Development Cycle phase) exerts an influence on income generation independent of (not mediated by) its obvious effects on farm size and the availability of household labor.

Table 25 Farm, Workforce & Earnings by Family Development Cycle Phase.

Family Development Cycle Phase	Farm Size (Ha)	No. of Household Worker Eqts	Farm Income (FRw)	Prodn. Surplus (FRw)	N of Cases
Couple, no child(ren)	0.88	1.81	58,953	25,592	18
Extension	1.08	3.75	84,863	12,467	557
Complete Extension	1.63	5.29	102,614	21,549	51
Contraction	1.53	4.74	98,802	23,129	265
Complete Contraction	1.13	2.37	75,728	31,071	52
Dissolution	0.80	2.12	47,879	15,044	73
Total	1.20	3.86	85,812	17,078	1019
Eta	.22	.46	.21	.11	
F Sig.	<.001	<.0013	<.001	<.05	

Table 26 demonstrates different perspectives on the trends recorded in the previous two tables. Household heads hire much more paid labor as the size of their farms increase (eta = 0.23) {a farm size of about one hectare, with about 2.5 household workers, seems to represent an average level at which family labor supply is adequate}, and with increasing size they have more family labor available to them also (eta = 0.38). Naturally, the mean household income also rises along with farm size, reflecting the compounded impact of the work of family members augmented by paid employees. The crucial unanswered question raised by these data asks to what degree the strong correlation between farm size and income (eta = 0.47) can be apportioned to other variables comprising the processes of social and demographic differentiation.

Table 26 Farm, Workforce & Earnings by Farm Size.

Farm Size	Net Ag.Days Hired	No. of Household Worker Eqts	Farm Income (FRw)	Prodn. Surplus (FRw)	N of Cases
0.25 ha or less	-7.09	2.61	45,422	-4,080	68
0.25 ha - .50 ha	-3.55	3.07	53,307	-653	194
0.5 ha - 1.0 ha	-2.57	3.68	73,990	7,175	325
1.0 ha - 2.0 ha	6.14	4.29	101,237	24,663	251
2.0 ha - 3.0 ha	12.78	4.67	125,514	47,852	113
More than 3.0 ha	24.00	5.30	150,636	56,008	68
Total	2.57	3.86	85,708	17,024	1019
Eta	.23	.38	.47	.35	
F. Sig.	<.001	<.001	<.001	<.001	

The preceding analysis has highlighted some of the bivariate relationships found among the key variables which comprise the processes of social and demographic differentiation. In brief, a clear increasing trend exists in all cases (and all highly significant), except for production surplus in relation to household size. The following analysis separates the two outcomes: the first looks at income, and the second at production surplus.

Income Analysis

Throughout the previous section, both direct and indirect influences of all the key variables have been shown to be both internally consistent and mutually reinforcing. In addition, all the findings provide solid confirmation to the notion that farm size is a pivotal variable for the determination of income. The question that remains unanswered through this bivariate review of findings is how the two differentiation processes will intersect and compete when brought together in the same causal model. Figure 5 (below) was designed to help answer this important question, as it provides an empirical test, for farm income, of the conceptual model presented at the outset (Figure 4); but, in testing the model, I first use analysis of variance to take account of the non-linearity of Family Development Cycle. Table 27 shows the initial consequence of doing this. The alternative formulation with worker:consumer ratio as an alternative path from family development cycle to farm income is tested in a footnote,[1] but it does not offer as good a "fit" as does worker equivalents.

Table 27 Analysis of Variance: Model Test.

	Income				Production Surplus			
		coefficients				coefficients		
	F. Sig.	eta	beta	$regr^2$	F. Sig.	eta	beta	$regr^2$
Family Development Cycle	**	.21	.21	4.6	*	.11	.11	1.2
Hired Labor								
Hired Labor	**				**			
Worker equivalents	**				**			
Farm Area	**				**			
Head's Education	**				**			
Family Development Cycle	ns	.21	.05	37.9	ns	.11	.09	17.5
Worker equivalents								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.46	.41	30.4				
Hired Labor								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.14	.16	9.4				
Farm Area								
Head's Education	**							
Family Development Cycle	**	.22	.24	7.4				

* = Sig. at .05 level; ** = Sig. at .01 level.

Table 27 Analysis of Variance: Model Test.

	Income				Production Surplus			
		coefficients				coefficients		
	F. Sig.	eta	beta	r^2 regr	F. Sig.	eta	beta	r^2 regr
Family Development Cycle	**	.21	.21	4.6	*	.11	.11	1.2
Hired Labor	**				**			
Worker equivalents	**				**			
Farm Area	**				**			
Head's Education	**				**			
Family Development Cycle	ns	.21	.05	37.9	ns	.11	.09	17.5
Worker equivalents								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.46	.41	30.4				
Hired Labor								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.14	.16	9.4				
Farm Area								
Head's Education	**							
Family Development Cycle	**	.22	.24	7.4				

* = Sig. at .05 level; ** = Sig. at .01 level.

Family Development Cycle, as a six-phase process, is shown to make a significant contribution to farm income when acting alone (F.sig at 0.001 level), but family development is tied, in the model, to two other variables -- farm size and amount of family labor consumed on the farm -- which give the process substance and tend to vary together as households move through the cycle. In an analysis of variance containing all variables of the model, the significance of Family Development Cycle's contribution disappears -- the link shown between income and Family Development Cycle in Figure 4 does not exist in reality, and is not shown in Figure 5. Table 27 also shows the results of hierarchical analysis of variance with regard to the other elements of the model.

The test then goes on to use dummy variables to enter Family Development Cycle into a regression analysis by way of its contribution, in different phases, to family worker numbers (as worker equivalents) and land holding. Results of this process are presented in Figure 5. The path model is investigated first as a multiple regression with four independent variables and five dummies, and then as a hierarchical sequence to establish the coefficients for the pathways. Then, each of the two parts of the path is computed independently to allocate variance (Duncan, 1966, pp. 8-10),[2] to social and demographic differentiation, respectively.

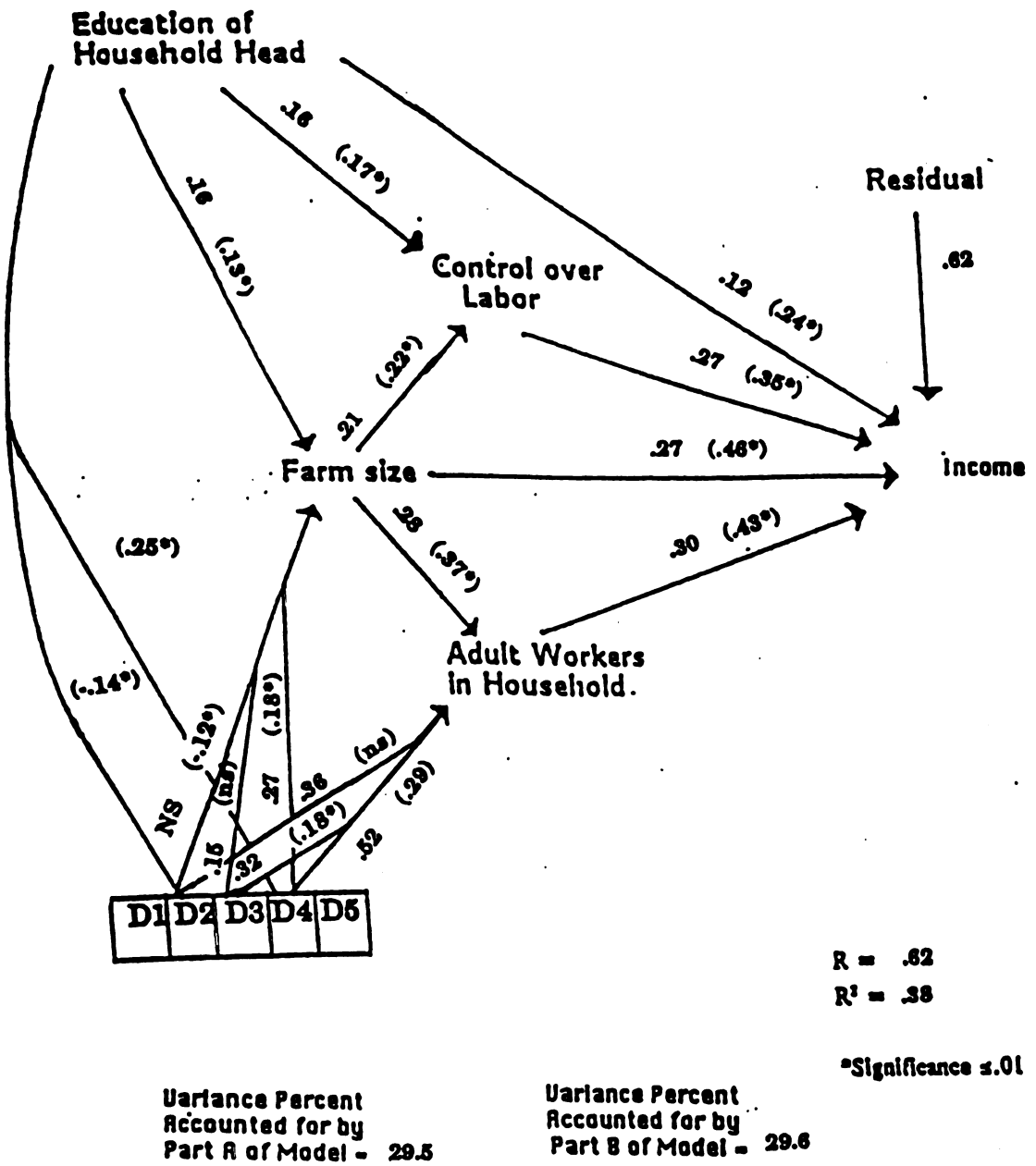

Figure 5 Regression Model of Social & Demographic Differentiation Variables on Income

The path model accounts for thirty-eight percent of the variance in income (This is the 37.9 percent R^2 shown in Table 27). This is considerable improvement over the variance-accounted-for which each part of the model can achieve alone -- 29.5 percent for the social differentiation part, and 29.6 percent for the demographic differentiation part.

Looking first at the variables comprising the social differentiation process, one concludes that income is directly and formidably affected by household variations in land holdings and the extent of household control over paid labor. Education of the household head, though initially demonstrating a moderate effect on household income (r = 0.24), declines in importance once other variables are included in the model. A large part of the influence of education seems to be channeled through control over labor, but the correlation with farm size increases slightly as other factors are added; that is, educated farmers have higher incomes apparently principally because they are able to hire more farm labor.

By way of contrast, control over labor as a determinant of income remains strong (beta = 0.27) even when controlling for farm size and level of education. Implied here is that there are farmers with low levels of schooling who are capable of improving their incomes by hiring farm labor -- and certainly they try: just over one-third of farmers with less than complete primary education do hire farm workers. In the process, they also often release themselves for work at even higher wages in the non-farm sector (Clay and Kampayana, 1991). The higher the level of education of the farmers the greater the numbers of days of non-agricultural labor they sell off from their households (eta = 0.17), with a tendency for this to be higher-paid labor -- particularly,

commerce and civil service. There is, though, a coterie of farmers who don't work off but, as entrepreneurs, hire labor (and often land, too) and presumably aim to alter their own economic position through enterprise, using hired labor. They are examined in more detail at the end of the chapter.

Turning to the demographic differentiation variables, one notes first that the zero-order correlation (r = 0.43) between family workforce size and income is deceased considerably by adding other variables to the model. The other coefficients on this side of the model are reduced by adding variables, too -- except for those associated with the dummy variables for Family Development Cycle. In sum, the income growth that households experience as they move through the family development cycle can be attributed substantially to concomitant growth in family labor supply. The dummy variable analysis shows, specifically, that the great contributions to family labor supply come when the family is growing (D2) and while there are adult offspring of the couple within an intact household (D3 and D4). Landholding's effect is diminished considerably by other variables entering the regression, but landholding receives a boost from the two family cycle phases (D3 and D4) when there are adult offspring within the household, possibly either increasing household efficiency of land use or renting more land (or both).

Based on its zero-order correlation with income (r = 0.46), one could conclude that farm size was the strongest determinant of farm income in Rwanda. However, by introducing the remaining variables in the model, its importance declines considerably (beta = 0.27). But the question one is forced to contemplate here is why farm size has any influence at all once both household workforce and hired labor have been

held constant. Apparently, the underemployment of household labor on small farms may be at least partially to blame, since farm size limits the productivity of labor, so long as this labor cannot find off-farm remuneration. Seen from another perspective, if land were infinitely plentiful, we would expect labor supply to be all-important (Schneider, 1981); farms controlling the largest supply of labor (all else equal) would be expected to be the most productive. But once land is limited, as it is for most households in Rwanda, income from farm production will tend to vary with that limit rather than with the labor supply. Implicitly this finding points in the direction of an underemployed rural labor force yearning to expand into the non-farm sector.

In their study of United States wealth distribution, Wright and Perrone (1977) point out that it is possible to account for as much of the variation in the most trustworthy common measure of wealth -- declared income -- by using a class classification of income recipients as is possible by using status criteria. What this dissertation has achieved so far seems to be analogous to their position. It has been shown that two systems of social classification are capable of accounting for roughly the same proportion of variation in the income of Rwandan farmers; when their effect is compounded, accountability is improved. In other words, an inadequate explanation is produced by concentrating on only one side of the model of prediction. The argument will go on to elaborate the consequences of compounded income inequality in hypothesis 2, but first we introduce the complication of how the elements of the model relate to production surplus, which incidentally adds weight to the above interpretation of influences on household income.

Production Surplus Analysis

Here too, Family Development Cycle is removed from the model as a direct influence on production surplus by adding additional variables as outcome determinants (see Table 27, again). Turning to the regression analysis, and looking first at the variables comprising the social differentiation process in Figure 6, one concludes that here, too, variation in production surplus results from household differences in land holdings and the extent of control over paid labor. Education of the household head initially demonstrates a moderate effect on household production surplus ($r = 0.13$), but it declines slightly in importance when other variables are included in the model. Control over labor, as a determinant of inequalities in production surplus, decreases almost by half when controlling for farm size and level of education. Again, farmers with low levels of schooling are capable of improving their ability to create production surplus by hiring farm labor, but farm size is the most significant contributor to production surplus.

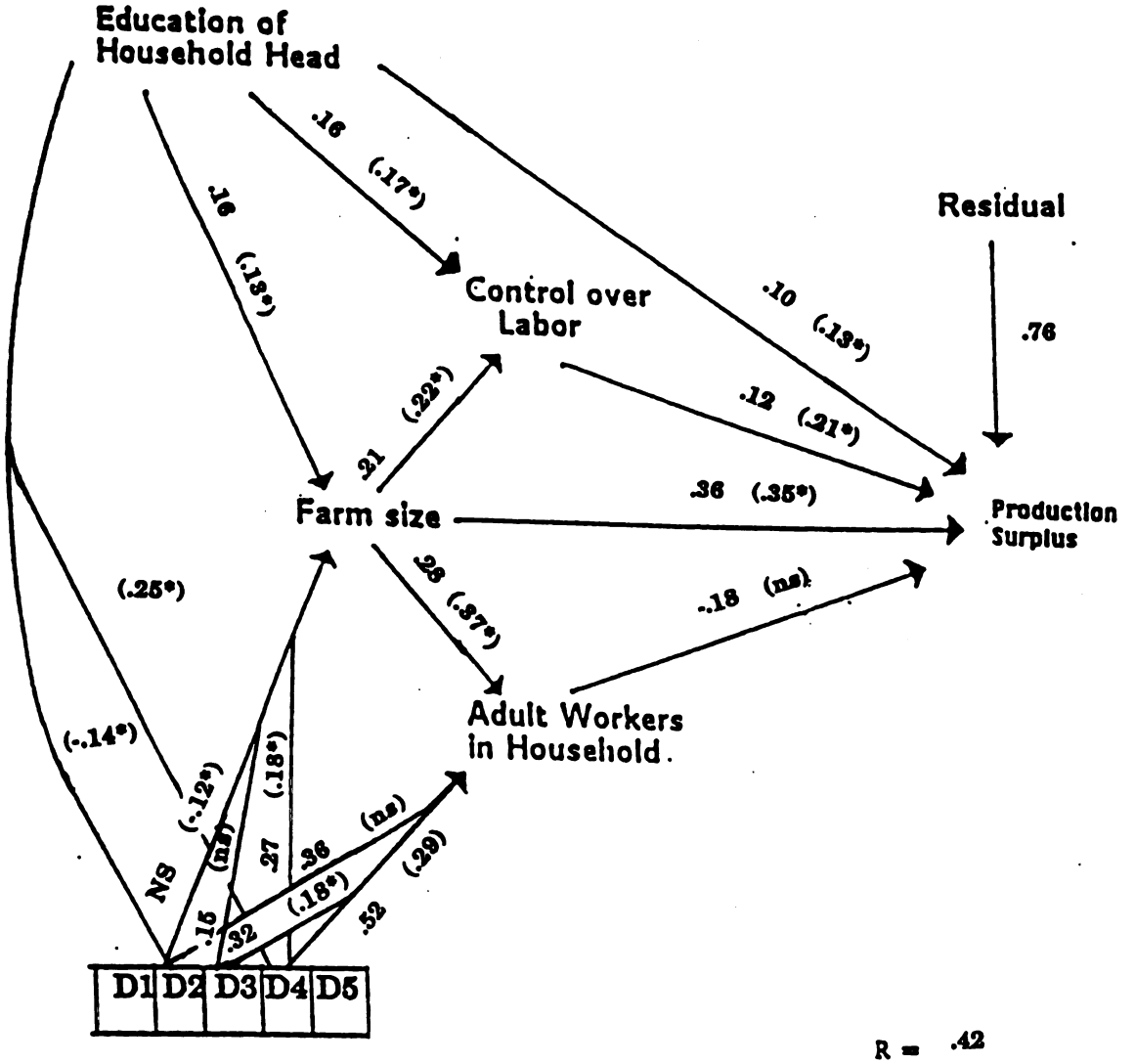

Figure 6 Regression Model of Soc. & Demog. Differentiation Variables on Prod'n Surplus

Turning to the demographic differentiation variables, we note first that the non-significant zero-order correlation (r = 0.07) between household workforce size and production surplus rises to negative significance (beta = -0.18) as other variables are added to the model. Farm size is clearly a strong determinant of production surplus in Part B of the model (r = 0.35), based on its zero-order correlation and introducing the remaining variables increases its importance slightly (beta = 0.36). We can assume then that what accumulative benefits there are associated with family expansion adhere to the growth in farm size this precipitates rather than the mere presence of more workers and their preparedness to apply their labor power.

The path model accounts for seventeen point five percent of the variance in production surplus. This is a slight improvement over the variance-accounted-for which each part of the model can achieve alone -- 14.5 percent for Part A and 14.9 for Part B -- but as with income determination, some improvement in specificity is gained by having a two-part model. What this part of the analysis has done in addition to showing this efficacy of the two-part model is that it has demonstrated that family size -- an outcome of family development cycle -- can remain an important contributor to the household's ability to accumulate wealth once subsistence needs have been satisfied only if additional land can be obtained. Otherwise, large land holding acts in concert with small family size greatly enhancing the household's accumulative capacity. That is, larger family size is by no means an automatic key to greater accumulation -- the ambiguous nature of this relationship was indicated in Tables 22a and 25.

These findings encourage us to go on to examine the influences of

family labour on Rwandan farming, and on production surplus creation by various types of farms. This is what we now do, in sequence, first examining family influences in farming, and then becoming concerned with the efficiency of various labor concentrations and farming techniques.

RELATIONSHIPS between LAND and LABOR: HYPOTHESIS 2

At the beginning of this chapter, I assumed that area of land controlled for farming would increase proportionately as adult workers in the family increase, and early tables in this chapter show this to be true -- despite the country's rising population density and increasing demands on the land base. The hypothesis test has gone on to show that both family labor and the agricultural labor that is bought and sold in the market each have an effect on production outcomes, and that in both cases the land base on which they operate is crucial in realizing production and accumulation. Further investigation of the apparent pattern of mechanisms used to obtain land shows that, while there is an active market in rented land, a proportion of the population obtains at least some of its additional land needs by a variety of social arrangements that don't necessarily involve money. I shall return to an analysis of the land-labor equation from the point of view of the on-farm balance under the rubric of this hypothesis, but after the formal hypothesis, itself, has been tested.

The set of Hypotheses in 2 is concerned with improving household wellbeing by a two-sided strategy -- both to make labor available from the farm family and to sell it into the market. This is presumed to be achieved by selling the labor of household adults, by raising new household members and bringing them into the market (at an early age if the

need arises), by keeping old people at work for as long as possible, and finally by training children in the school system to perform the tasks which require modern education and are highly rewarded in the modern sector of the economy.

H 2 a): Potential underemployment on the home farm, combined with the need for cash, will be relieved partly by I/ wage work, II/ early retirement, and III/ late entry into the labor force while market-acceptability is improved; these will vary with the level of household economic wellbeing as indicated by a measure of household production -

I/ The poor are more likely to look for wage work than the rich, however the jobs obtained by the poor are likely to be lower skilled than the jobs obtained by the rich.

II/ i) The rich will take the benefit of riches and retire early,
ii) the poor, by contrast, can be expected to extend their working lives as long as they can continue to work.

III/ Age at which children will be released into paid employment will vary with family's wealth. If the family is
i) resource rich and can educate children to well-paying jobs, they will leave home late,
ii) resource poor and needs to relieve pressure on the land, they will start work younger.

Selling Labor

Underemployment

Those farms will have the highest potential underemployment which have the highest density of household workers per hectare of land available to farm, and Table 28 which portrays ascending quartiles of worker density per hectare, indeed shows households with more workers per unit area selling more labor off-farm, in agreement with Hypothesies 2(a)I.

Table 28 Days Worked Off-farm (Total of All Work Days) (All Farms).

Worker Eqts. in H'hold per Hectare Farmed (Quartile)	Days of Work Sold	
Up to 2	10.84	
2 + to 3.3	19.46	
3.3 + to 4.9	18.09	
4.9 + to 7.6	20.57	
More than 7.6	32.36	
Total	100.00	(1019)
Eta	0.20	
F. Sig.	< .001	

Wage work

Data bearing on this issue are presented differently in Table 29, Part A of which shows that members of poor households sell on average less labor off-farm than do those from more prosperous households; the labor sold is also qualitatively different, and this, too, is as anticipated by Hypothesies 2(a)I. Part A of the table shows the average proportion of household income earned by members of households from differing income categories in various segments of the employed labor force -- the various components of total work sold off add across the table to the values in the first column. According to SESA's statistics on the value of labor in various occupations, the pay ranking of these types of work (and the "status" that pay implies) decreases from civil service to agricultural labor (left to right of the table). In general, total proportion of income derived from involvement in the paid workforce rises as income rises -- except for the second highest income category; but we should remember that the categorizations of income were generated by valuing produce and work sold off the farm (See footnote 2 of Chapter 3). Nevertheless, the remarkably heavy contributions made to high-income by civil service and business operation are important to current agricultural capitalization and to an appreciation of Rwanda's development future, and so is the fact that work concentration in artisanal and other salaried occupations does not propel the households of these workers into the highest income bracket. Finally, the highest commitment to agricultural labor is associated only with helping to create fairly low incomes.[3]

Table 29 Propn of Off-farm Income by Income, Prod. Surp. & Farm Area.

Categories of:	All Work	Civil Serv.	Bus. Oper. (All Farms)	Artis.	Other Sal.	Labor.	Other Work	Agric. Labor
A) Income								
Up to 35,000 FRw	9.7	0.0	0.9	1.6	0.1	1.0	0.3	5.8
35,001 to 70,000 Frw	14.0	0.0	1.4	4.5	1.4	1.4	0.2	5.1
70,001 to 105,000 FRw	15.0	0.2	3.3	4.4	2.2	1.4	0.3	3.2
105,001 to 140,000 FRw	8.3	0.0	2.3	2.9	0.8	0.5	0.2	1.6
More than 140,000 FRw	20.1	9.4	5.4	3.0	0.9	0.8	0.1	0.5
B) Production Surplus								
Less than -12,500 FRw	10.6	0.0	0.6	2.1	0.6	0.6	0.3	6.4
-12,500 to Zero FRw	12.8	0.0	2.2	2.5	0.8	1.1	0.3	5.8
0.0 to 12,500 FRw	13.2	0.0	1.1	3.0	2.1	1.7	0.3	4.1
12,501 to 25,000 FRw	12.3	0.3	3.4	5.0	0.4	1.0	0.1	2.2
More than 25,000 FRw	18.1	7.4	4.1	4.3	1.3	0.6	0.0	0.4
C) Farm Size								
.25 Ha or less	28.0	0.0	4.5	6.3	6.9	0.5	0.4	9.3
.25 to .50 Ha	17.5	1.4	2.2	4.9	1.2	2.1	0.3	5.4
.50 to 1.0 Ha	12.2	0.1	1.6	3.1	0.7	1.1	0.5	5.1
1.0 to 2.0 Ha	9.9	0.3	2.2	3.0	0.9	1.0	0.0	2.3
2.0 to 3.0 Ha	9.5	2.2	1.2	3.1	0.6	0.6	0.0	1.7
More than 3.0 Ha	9.7	3.0	3.1	1.1	0.0	1.0	0.1	1.3
Total	13.2	0.8	2.1	3.5	1.2	1.2	0.3	4.1
(N =)	(477)	(14)	(78)	(141)	(31)	(64)	(12(	(227)

Table 29, Part B reflects the pattern of part A as regards work involvement contributing heavily to production surplus. The reversal of the general trend by involvement in agricultural wage work is straightforward here -- production surplus from all work is least for those households most committed to selling their labor as agricultural workers.[4] The anomalous cases -- "Other salaried", and "Labor" having high row values (0.0 to 0.5 wage surplus) -- are not readily explained, but they can be amalgamated into a broader summary trend by comparing the combined column totals of skilled (cols. 2 - 5) with unskilled work (cols. 6 - 8): production surplus increases with workforce involvement for skilled work; for unskilled work, it decreases.

In Table 29, Part C, labor commitment to paid employment is examined against an independent wealth criterion (Castro et al., 1981) -- wealth in landed property (operated area). It is presented here again for purposes of validation of the income measure. Figure 6, earlier in this chapter, revealed farm size as closely correlated with income, but the latter has been developed as a wealth measure and despite some shortcomings, will be used throughout this part of the dissertation. Overall maximum commitment to paid employment occurs, as we might expect, and in reflection of Table 29, among the smallest landholders. This is reflected in their high involvement in paid agricultural work -- in this case supporting Hypothesis 2(a)I -- but also, surprisingly, in their high involvement in "other salaried" work, in business and in trades. As regards the high involvement in business -- half the respondents name sale of banana and/or sorghum beer (but generally only in small quantities) as their most important source of income. Despite the strong element of auto-correlation between each of

these types of work and the value it has assigned to it, alluded to above, the fact that all three measures of wealth are compatible suggests that, in this case, the income or production surplus categorizations offer equally valid proof of the veracity of Hypothesis 2(a)I as farm size would be.[5] In sum, the fairly high involvement of large farms in paid work is mostly accounted for by their releasing workers to higher-status activities -- civil service, and business -- but some of their workers go to general laboring, too. This lends some support to Hypotheses 2(a)III(i) and 2(a)III(ii). The general tendencies of the three parts of Table 29 are exaggerated, but not changed substantially, if we treat only households actually involved in the labor force.

Old and Young Workers; Riches and Poverty

Of a total 4230 people who are not "students", "unemployed" or unclassified, 3903 (92.3 percent) have "farming" as their first occupation -- farmer, farm-hand, family helper, or cowherd, and 361 of these (9.3 percent of farmers) fall outside the designated range for the active workforce -- 15 to 64 years of age. One hundred and eighty-one children (8 years of age and up to 14, in about equal proportions of boys and girls) -- 4.3 percent of all children -- make a contribution to the workforce and are enumerated in the 4230, and 212 adults aged 65 and older are counted in also -- 5.0 percent of the total number.

The Old

Twenty people (9.6 percent) out of the 212 who are 65 years or older apparently have retired -- the oldest workers are 88 years old. All the old women, and almost all the old men, work as farmers; a few men are artisans.

Nevertheless for two reasons it is not possible to persue these

interesting hypotheses {2aII (i) and (ii)} with the data available: numbers are too small for statistical treatment and at best might provide an indication of general patterns, but also "retirement" is a state entered into gradually by farmers, and without more detailed questioning than occurred in this case, it is not possible to be clear how uninvolved in work any of the 212 people over 65 are. Thus, Hypothesis 2aII remains untested.

Further to the above, if people do decide to reduce their work involvement, we need not conclude that this is an outcome of any deliberate desire not to work. Perhaps they have not the land resources to permit them to keep farming -- they may have yielded to the demands of their growing children to relinquish their property, or they may even have worn themselves out with hard work on meagre resources in their younger days. Since all of the old people or their spouses still claimed to be the heads-of-households (although at the same time they may claim to be no longer working), their income is the response measure of how they have applied their labor and the labor of others over the past year to their farming, and incases of low income, we cannot know whether it was low because of limited resources, or of reduced work activity, or even some other cause entirely.

A small proportion of the old people completed primary school, and these say they have continued to work -- in all, about 1 in 6 of the working people older than 64 has some schooling. By contrast, only 2 of the 20 who seem to have retired (10 percent) claims to have any schooling at all. Although formal education possibilities have improved considerably in the recent past, the children of the poor are still disproportionately under-educated, as the next section shows.

The Young

The principal occupation of the children is farming, but they also work as cowherds, as family helpers, and in other occupations. Table 30 shows that income of the families of working "minors" tend to be slightly lower than that of the homes of children who don't work.

Table 30 Propns (%) of Children (8-14 yrs) by Income of Fams. of Origin.

Income	Working	Not Working	Total
Up to 35,000 FRw	24.0	16.4	17.6
35,001 to 70,000 Frw	31.3	34.2	33.7
70,001 to 105,000 FRw	24.0	22.8	23.0
105,001 to 140,000 FRw	13.4	13.5	13.5
More than 140,000 FRw	7.3	13.1	12.2
Total	100.0	100.0	100.0
(N =)	(179)	(1010)	(1189)

Chi-square = 9.78, sig. at .05 level

Why the second lowest income category has the highest proportion of working children is not clear, but (although remittances from absent children are not included in "income") the work of home-based children undoubtedly increases the wealth of their families of origin -- without their income, their families may have been even poorer. The proportion of working children from the lowest income category is only eight percent higher than that for children who don't work, but -- otherwise -- only among the richest families are children who work under-represented. This occurs in association with the general trend, noted in Table 3, for rich households to have more children.

The data speak also to the earning power of working children and to their prospects for advancement within the workforce. Only two of the 181 working children have completed primary school, and just over 50 percent claim no schooling at all. Among the non-working group by contrast, a small proportion have completed primary and even some post-primary education, while 86.5 percent of them claim some education. The educated are, too, disproportionately the offspring of richer households (Table 31) -- the high percentages move down as we read across the table -- putting them in a more advantaged position compared with their poorly educated compatriots who are already working, in terms of their access to higher status occupations[6] -- at least, those requiring longer periods of schooling. This confirms Hypothesis 2(a)III(i).

Table 31 Propns (%) of Students by Income of their Families of Origin.

Income	Incomplete Primary	Complete Primary	Post-Primary	Total
Up to 35,000 FRw	15.0	3.4	1.1	13.5
35,001 to 70,000 Frw	33.0	33.8	15.7	31.9
70,001 to 105,000 FRw	24.4	21.8	30.6	24.7
105,001 to 140,000 FRw	12.9	16.4	13.1	13.1
More than 140,000 FRw	14.7	24.6	39.5	16.8
Total	100.0	100.0	100.0	100.0
(N =)	(937)	(43)	(69)	(1049)

- - - - - - - - -
Chi sq. = 45.71; Sig < 0.00

Another aspect of educational inheritability involves the period that young adults can remain out of the workforce while they get the education needed to fit them for high status/high income occupations in the public service and other salaried work. As reported previously, 1049 respondents were declared to be students. Each yearly age category between 7 and 18 contains more than 10 respondents. There are 30 students who are 19 years old or older -- the oldest of them is 28. Overall, just over fifty percent of all students come from the richest three categories of families, but among the oldest students, eighty-five percent are from these three categories. This general pattern of separation between the children of higher income families who remain students as compared with those who do not is demonstrated in Table 32, where a null hypothesis expects the proportions of children in each age group to be comparable to the row proportions.

Table 32 Propns (%) Various Age Students by Income of Fams. of Origin.

Income / Age	6 - 8	9 & 10	11 - 13	14 - 18	19+	Propn of Age. Cohort
Up to 35,000 FRw	16.4	17.3	12.5	9.6	0.0	13.7
35,001 to 70,000 Frw	31.5	37.1	28.2	33.9	14.3	32.0
70,001 to 105,000 FRw	25.4	22.0	25.1	24.3	40.9	24.6
105,001 to 140,000 FRw	12.7	11.1	15.9	11.3	14.5	13.0
More than 140,000 FRw	14.0	12.5	18.3	20.9	30.3	16.7
Total	100.0	100.0	100.0	100.0	100.0	
(N =)	(232)	(273)	(319)	(207)	(30)	(1061)

Chi sq. = 34.86; Sig < 0.00

There seems to be a tendency for children to begin their education later than we would anticipate, but from age about seven until they reach 10 or 11 years old, the children of low and very low income households are represented in above average proportions in school. The numerical superiority of the poor in education is not reversed, however, until the children have grown considerably older, leaving relatively more offspring of the richer households, in general, continuing their education into their teens and beyond. Clearly, the economic position of parents is influencing the educational opportunities of their children: children from poor families start working early, and if they don't bring resources into the household, at least they are less of a drain on it. This lends support to Hypotheses 2(a)II(ii) and 2(a)III(ii).

If the data of Table 32 are reclassified -- by combining the first three columns -- into what might be thought of as primary, secondary and post-secondary students -- it is clear that among the three out of four students in the primary education system, poorer children figure quite prominently, but the children of the very richest are not required to remain content with this level of education, although they do not come to dominate the one-in-five who have high-school education, the one-in-thirty-five who are being educated beyond secondary level are noticeably from richer families.

Summing up Hypothesis 2(a) in conjunction with Hypothesis 1, there is a clear tendency for the riches associated with current property-holding to be invested into employing labor and into education of children. For the former, in the short-term, the returns are quite high and -- unless an unlikely increase in labor costs occurs -- are likely

to continue into the future; for the latter, the costs are great but the enhanced earning potential for a new generation demonstrates the power to re-enforce property differences possessed by current property-holders.

We turn in Hypothesis 2(b) to concern with on-farm intensification adjustments, which can be one way of balancing existing resources to the arrival of new household members -- individuals to lay a claim to the output of the farm, and perhaps to contribute to it.

H 2 b): Small farms with large workforces will intensify: as number of adult equivalents per unit farm area increases, so does the likelihood that farms will have reduced their pasture, fallow and woodland areas.

The proportions of farms devoted to different uses are not reported to have changed much over the time period of the three questions: "Between last year and this year, have you

increased,
kept the same, or
decreased

the proportion of your farm you devote to pasture, fallow and reforestation?"[7], but Table 33 throws some light on the issue of why some large landholders act to conserve their resources while others act in an opposite fashion. In light of the explanation of the results of Hypothesis 1, there ought not, in general, to be resources in excess of labor available, but yet some farms are able to take resources out of production (at least, immediate production) and conserve them, possibly for later use.

Table 33 Proportions (%) of Farmers Making Land-Use Changes.

Consumer Density (Quintiles)	Land Now in this Use Compared with Last Year (No. of Farms with this Resource) More	Same	Less
Pasture			
No. of Cases 239			
Very Low Density	25.5	42.7	42.1
Low Density	41.5	30.0	25.5
Medium Density	7.4	13.2	20.6
High Density	9.4	11.9	8.9
Very High Density	16.2	2.2	2.9
Sub-total	100.0	100.0	100.0
Col %; (N =)	10.0 (24)	47.3 (113)	42.7 (102)
Fallow			
No. of Cases 473			
Very Low Density	34.3	21.7	30.2
Low Density	27.0	28.2	25.5
Medium Density	18.4	22.5	19.7
High Density	13.6	21.8	16.1
Very High Density	6.7	5.8	8.5
Sub-total	100.0	100.0	100.0
Col %; (N =)	33.6 (159)	23.3 (110)	43.1 (204)
Reforestation			
No. of Cases 693			
Very Low Density	25.5	23.0	28.7
Low Density	24.1	19.0	30.3
Medium Density	18.4	22.2	8.6
High Density	19.6	18.8	20.8
Very High Density	12.4	17.0	11.7
Sub-total	100.0	100.0	100.0
Col % (N =)	31.3 (217)	61.4 (425)	7.3 (51)

The table uses adult equivalent consumers per hectare of land farmed as the measure of consumer density. Augmented working household members ("family + wage" workers) per hectare was analysed, too, but the pattern differs so little from that shown in the table that it has not been reproduced here. The former represents a response to resource conservation in terms of consumption needs, whereas the other is in terms of labor availability.

To deal with majorities first, "no change" in the area they devote to pasture was reported by 47.3 percent of farmers with pasture land, and 61.4 percent of those with forest replanting have not changed their proportion of reforestation over the past year, either. By contrast, the highest proportion (43.2 percent) of those with land devoted to fallow have reduced it.

The hypothesis predicts that farm resources will be taken out of conservation as adult equivalents (or augmented working family members) per hectare on each farm increase. That is, "Same" category of land treatment technique should not alter with farm population density, but proportions of respondents in the "Less" column in each category is predicted to increase as consumer density becomes greater -- as density increases, more land should be taken out of conservation -- and the opposite is predicted for the "More" column. The situation is clearly much more complex; the table disconfirms expectations in regard to the former two columns, but confirms them for the other.

In general, the low population density farms are the ones most likely to have had a large number of performers of each technique with a consistent reduction to the most densely populated farms. The three obvious anomalies (one per technique) are each of the smallest sample of

respondents -- for instance, hardly any farmers (only 10.0 percent) have increased the area devoted to pasture, but even so, those who have are predominantly (2 out of every 3) land-holders with low adult equivalent consumer density. That is, farmers do act to place land in conservation when their numbers of consumers per unit area is low, but that category of farms is also most likely to have less land in conservation than they did a year ago.

Almost one farmer in three with fallow has devoted more land to that use, while one third as many again have reduced fallow. The pattern found for tree planting (reforestation) is for most to make no change, but nevertheless, almost one in three has increased reforestation. The prevailing tendency with the other two conservation techniques is for those who changed to take land out of conservation. By contrast, in reforestation, farmers who had more area under trees when interviewed than they had the year before were four times as numerous as those who had reduced area devoted to trees.

The best generalization seems to be that farms with low numbers of consumers per unit area have the most freedom to innovate, whereas conservatism (rather than considerations of conservation) is the predominant motivation of farmers with high consumer density. There is a suggestion too that extensive techniques may be utilized in the presence of low consumer density (or labor availability). Possibly, intensity of cultivation, rather than land area expansion, may be the response to increasing numbers of consumers per unit area. Table 33 demonstrates that some farms have insufficient labor to utilize adequately their exisiting resources, others have a surplus -- even after the hiring and other adjustments of labor-to-land mentioned briefly, previously. What

is particularly significant about this section is that it indicates that there is still room for additional labor employment on some Rwandan farms. Nevertheless, in the final analysis, the data available at this point are hardly adequate to the task of investigating this (sub-) hypothesis, and the issue will have to be left to more directed questioning at another time.

The analysis returns now to the matter broached early in this section -- concerned with this on-farm balance of labor and land. The rest of this chapter looks at some of the social arrangements for adjusting land to labor availability, and vice versa, but which -- although pertinent to the hypothesis -- are not explicitly part of the data available to test it. As a preliminary to this, I want to reintroduce the problem of land and examine the implications of how it is distributed.

Household Land-labor Balance

LAND: A Productive Resource and a Basis of Social Classification

Recent writers on Africa (Boserup, 1965 & 1985; Bilsborrow, 1987) have revived the model of agricultural involution originally proposed by Geertz (1964) which described the response of Indonesian peasants to high population densities and growing scarcity of farmland. The implication of the involution perspective is that land availability is governed only by supply and demand forces that are equally applicable to all. In a critique of this interpretation of the consequences of population densities and land scarcity, White (1982, p.303) points out that "it is important to distinguish the effects of absolute resource scarcity ('pressure of people on resources') from the effects of differential access to those resources ('pressure of people on people')."

Even in circumstances where pressure on resources (ratio of population to land area) appears to be not limiting on production, he says, structural unavailability of land and other resources can still create a reduction in productive potential, and hardships for some members of society.

Rwanda's population density in its rural areas is undoubtedly high, but it is not as high, for example, as that of Belgium -- which acted for almost half a century as Rwanda's colonial master, and where population is not usually conceived of as a brake on living standards. Clearly, what is at issue here is population density at a low level of technological development -- a technology, as emphasized previously, based on hoe agriculture. White's critique serves to keep us mindful of the importance of resource distribution in the processes of agricultural production. In circumstances of such wide disparity of farm sizes, combined with the low levels of labor productivity of the agricultural technology and the competition for larger farms that population density engenders, a certain proportion of the population will inevitably be short of land resources, and some will even be landless.

Landlessness

A body of evidence points to the centrality of control over land to Rwanda's agricultural production, and also to its importance in influencing social stratification. The proportion that apparently landless people are of the whole population is obscured by the nature of the survey design, and any attempt at calculating it is purely notional. There are two points in making an issue of the landless here. Firstly, it is pertinent to characterization of Rwanda's rural social structure to notice that this segment of the farming population is not "small

owner-operator". Secondly, while providing the following minimal evidence of its existence, I want to suggest that the size of this population, as well as its economic basis and conditions of living, may constitute a ground for further research into landlessness on another occasion. Five points are particularly salient.

1/ There are a variety of ways land can be obtained and held. The literature (e.g., Newbury, 1988) indicates that Rwandan land can be thought of both as personal property and as lineage property. My Rwandan colleague, Kampayana (pers. com.), reports that a dispossessed generation may attempt under current legal procedures to repurchase land sold off by their parents, and also that all those who would have been inheritors must give their approval before a new parcel is sold; this seems to demonstrate too that the same piece of land can be regarded as both personal and collective property. Earlier, I pointed out that about one-third of cases of access to land within the sample were available because respondents appear to call on lineage obligations. The possibility of obtaining land in this way would seem, at first glance, to blunt the force of lack of personal property, but Newbury (1988) points out for Kinyaga that there are rich and poor lineages, just as there are individuals, and that even half-a-century ago some extended families were struggling to make a living on inadequate land.

2/ A small proportion of adults in what we are used to calling the "economically active" population seem not to be working. Thirty-four people between the ages of 15 and 64 were declared, in each case, to be "unemployed" by the interviewee. It seems that they are either (a) (what would be called in the U.S.) "handicappers", or they are genuinely unemployed -- either from (b) farming, or from (c) the profession,

trade, or craft in which they usually find wage work. If they are non-working farmers, they may be unemployed through landlessness.

3/ Less than two percent of the sample (i.e., approximately 20 households) actually own no land although they control some area for farming purposes (MINAGRI, 1985) -- designated in the sample in terms of the land area they control rather than by their landless state. However, in the sample we also note that there are 18 people who live in respondent households without being related to the household head. Instead, they seem to fall into three categories: surrogate adoptees (three children), surrogate marriage (there may be 3 cases of this), and live-in labor force. The 15 adults live individually in households not their own, and their frequency (1.5 percent) is similar to that for the **abacancuro**. There is some likelihood, too, that they are landless -- seeking a domicile at their work, and their presence suggests that at least a doubling of the two percent figure of "absolutely landless" may be in order.

There seems to be every reason to believe that some other residents -- whom at first we were content to regard as "kin" -- may also be within this landless category. The following sections present data to support this claim. With regard to the social characteristics of the households where extended family, as well as non-family, find work and shelter, just over half (fifty-three percent) of those headed by monogamous women have taken in one or more "others" -- kin and non-kin, whereas only one in four households overall have resident others. That is, when women have their monogamous husband either working away from home or deceased they are twice as likely to have accepted additional people into their household as are households in general. By contrast,

two-thirds of all households are headed by monogamous males, but they accommodate only just in excess of two-fifths of the "other" residents. One-third of non-kin, too, were taken in by monogamous female-headed households, whereas their households overall are only one in six -- again twice the expected rate on the basis of their sample preoprtions. The six female heads in question were all widowed or separated and their need to provide for their farm labor requirements -- apparently unable to be fulfilled by calling on kinship ties -- seems here to have met the obverse need of the landless to find, at once, both domicile and work. This exchange of benefits appears to be an interesting example of farmers -- both those controlling land, and those seeking access to it -- attempting to balance their land and labor resources.

4/ A total of 6,701 days of agricultural labor were sold-off from 225 farms in the survey over the 3-month period prior to enumeration; and 10,342 days of non-agricultural work were sold-away from 194 farms.[8] By contrast, 405 farms purchased agricultural labor in the same period -- a total of 9,301 days. Thus, in the sample there appears to have been on average a net deficit of agricultural labor available for hire -- 2.55 days per farm [(9301 - 6701)/ 1019], as Table 4.1 (for example) shows. Thus, nearly forty percent more [(9301 - 6701)/ 6701] was hired than was sold by farm households. One seems compelled to surmise that this labor is supplied by members of non-landholding (and thus unenumerated) households.

5/ Rwandans live in all surrounding countries, too. Dorsey (1983, pp. 100-1) points out that even in the 1920s 100,000 Rwandans worked away from home as laborers, that the 1928 famine prompted an increase in labor migration, and that by 1948 more than 250,000 Rwandans lived in

Uganda.[9] Some of the current emigres are refugees (U.N. High Commission, 1982) from the 1959-61 (and subsequent) civil strife, and their relationships to the modern state have been touched upon previously (Chap. 1, p. 14). But Hyden (1969, p. 156) mentions the "Bashuti" [= "friends"] from Rwanda who went to eastern Buhaya (in Tanzania, on Lake Victoria) to work there as a rural proletariat; they are mentioned, too, by Henn (1983). Likewise, Bugandan landholders (in Uganda) can get much of their agricultural work done for them by Banyarwanda (Robertson and Hughes, 1987). Although these people are landless (technically proletarian) while abroad, it is not clear whether at home they would be landless, or are merely the migrant sons (and daughters) of farming landholders. Nevertheless, remittances from wage workers on farms and plantations at home and abroad, and in urban jobs, affect production decisions on home farms that do send out workers (Gravel, 1968; Clay & Vander Haar, 1993), as well as purchases of beans or sorghum (Loveridge, 1988) and often the very survival of the migrants' households of origin depends on remittances.

In summary, then, the place of land in Rwanda -- an agriculturally based society -- was never in doubt, but this review of evidence does indicate that land for cultivation is in considerable demand, and people go to extraordinary lengths to gain assess to it. The struggle for it appears to be entered into the more strongly the smaller an active farmers' landholding. The latter relationship cannot be demonstrated for individual farmers since the data merely record that some farmers rent land in (and out) -- only final holding (operated area) is recorded numerically. However, for the overall sample it can be shown that the relationship between land-holding, number of days worked on-(home)farm

by family members, and net days of agricultural work hired is

Farm area = 0.45ha + 0.29 * family work on-farm + 0.19 * agric. work.

Moreover, there is a net suplus of agricultural labor entering the market -- in excess of that appearing to be sold off-farm. We can surmise that the tendency of small-holders to take more off-farm work the smaller their holding[10] is even greater for the landless.

LABOR: To Work the Land, and to Claim its Products

The Claims of Kinship

"Kin" in households have, for the general run of western society, a ready-made "excuse" for being there; their relationship to the householders constitutes a claim to special treatment. Yet, cultural prejudice aside, the presence of a relative in a household is just as in need of explanation as is a non-relative resident. In Rwanda, daughters returning to their parental home from deserted marriages are exemplary of landless people finding a home where they work, or vice versa, but this might also be true for many other householders whom we would be prompted first to label "kin". All the cases of women living in the household of a man from their lineage are interesting because they reflect the practice -- according to informants, only recently being called into question -- that women receive no further part of their parental estate once the dowry has been paid. Presumably their only recourse to it in bereavement or destitution is by a claim against kinship through a current land-holder. Upon their return with their children, these women do not add to the land resources commanded by the household but they do usually contribute labor, and the "farm income" of this category[11] per hectare is higher than that for two-generation nuclear households with families at full extension. As Table 34 shows,

when compared with families at complete extension, 3-generation households (1-2-3 family) have higher agricultural income area efficiency deriving from slightly smaller farms and slightly smaller workforce; but their mean surplus production area efficiency is negative, because their proportion of children to active adults is very high and they also harbour roughly one-and-one-fifth more adult equivalent workers per unit area than the nuclear households. By contrast with this, extended households with the "parental" generation missing (1-X-3 family) have markedly lower adult equivalent workers than either of the other two types, even though they have smaller overall farm size, and their higher agricultural production surplus area efficiency when compared with the 3-generation households derives from their small size.

Table 34 Efficiency and Family Structure Changes.

* Family Structures	Farm Size	Persons			+ Efficiency per unit Area		Worker Equiv't per Ha.
		Adults	Children	Total Adult Eqt. Workers	Ag Income	AgProdn. Surplus	
Complete Extension	1.67	4.0	2.6	5.5	6.7	-0.2	4.94
3 Generation Households	1.42	3.8	2.6	4.9	7.3	-2.2	5.97
Generation 1-X-3 Hholds	1.01	2.0	1.2	2.6	7.4	1.0	4.18
Total	1.36	3.4	2.2	4.4	7.2	-1.0	5.28
Eta	0.23	0.60	0.41	0.60	0.05	0.18	0.15
F. Sig.	0.00	0.00	0.00	0.00	0.77	0.02	0.08

*
3 Generation Household appears to have grand-parental, parental, and offspring generations present.

1-X-3 Household appears to have grand-parental, and offspring generations only.

\+ Efficiency measures were defined in Chapter 3 (p. 60); refer also to the second paragraph on Efficiency of Farming -- the next section.

Appendix C enters into the variations on family type contained within households. My point here is to note that household structure -- which is an important variable in this analysis -- is produced not only by reproductive intentions and outcomes but also by evocation and manipulation of cultural meanings by both the landowners and others to their own benefit (Haugerud, 1988 p. 177) -- often with unintended social (as well as personal) consequences. The general implications of household structure for farming (and accumulation) efficiency are taken up below.

Gift Children

One-thousand-four-hundred-and-fory-one of the children of enumerated households have left home. Many of them have gone to set up households of their own, but some of them are younger than 15, and have been given up by their families to other households. These "gift children" seem to throw more light on the issue of households adjusting their size to their resources, at the same time as meeting social obligations. [They may too, in passing, offer another insight into a strategy of the landless to see their children settled in situations of access to productive resources, but this possibility is not followed-up in this analysis.] An obvious question arises when one hears about children leaving households, especially when they seem not to be accompanied by an adult: are there also households which claim to have received children, and what are the social circumstances under which households have been prepared to do either?

Two-hundred-and-thirty-eight households have juveniles up to 15 years in residence who are not the offspring of the household head -- a maximum of eight children in one household; sixty-six households claim

to have children who are living "away" from the interviewed household -- a maximum of three from one household. There are six households in both these categories -- they both received and gave children. There is no way of knowing from the sample whether some of the children are "double counted": gone from one enumerated household to be present as kin or non-kin residents of another. The family seems merely to be augmented (or depleted) by such exchanges and is just a larger or smaller family than it would otherwise have been. Sometimes, returning children -- predominantly daughters, bringing their children -- create three-generation households.

Poorer households, as measured by the income criterion, are more likely to give children than richer households. The distributions in Table 35 are clearly curvilinear, but it can be said that, although the very poorest households are neither the most likely givers nor receivers, a majority of exchanges involve households with income below one "family wage". Households within these income categories receive higher proportions of children than they contribute; the opposite being true for richer households. Nevertheless, the numbers of children in question increases as households get richer (up to the second-most-rich category). Apparently, socio-economic status is an important criterion of decision to gift children. It is not the full explanation, however.

Table 35 Gifting of Children by Income Category.

Income Category	Proportion of Gifting Households (% of Column)		Ave. No. of Children Exchanged	
	Given	Received	Giving H'holds	Receiving H'holds
Up to 35,000 FRw	30.3	23.9	1.15	1.54
35,001 to 70,000 Frw	45.5	31.1	1.23	1.66
70,001 to 105,000 FRw	16.6	24.8	1.36	1.83
105,001 to 140,000 FRw	7.6	10.5	1.40	2.20
More than 140,000 FRw	0.0	9.7	0.00	2.04
Total	100.0	100.0	1.24	1.69
(N =)	(66)	(238)		

Chi sq. = 20.67; Sig. < 0.01

Children are given disproportionately by married, intact couples where the head is up to 44 years old (families in phase II of the family development cycle). Nearly ninety percent of relinquishing households are headed by a male -- either married or living in free union -- and three-fourths of them have heads forty-four years of age or less. In brief, eighty-three percent of relinquishing households are in the extension phase of their family development cycle (this compares with just over half, overall).

The gift children are received disproportionately by households with one spouse missing, particularly if the remaining spouse is a woman -- four out of every nine receiving households are female headed (compared with one in four, overall), seven in every eight heads are forty-five or older (compared with half overall), and thirty-six percent of receiving household heads are separated, deserted, divorced or widowed (twice the overall frequency of these categories). These households also have a slightly smaller number of children than average, but in terms of total members this is compensated for by slightly more adults. Moreover, they rank almost one scale point higher on the class hierarchy (refer Table 15).

Children are sometimes sent to households of polygamous women (twenty-four percent of receiving households compared with eighteen percent, overall). There is no way of knowing from the data if this involves one wife receiving the children of a co-wife in the exchange; if this were not the case then this might be indicative of children being sent to households with greater resources. On the evidence of the above discussion, it seems that these children have, more likely, been placed with an older woman living most of her time without a spouse.

The implications of these findings are both cultural and economic. It seems that Rwandan family ideology sees women living alone as in need of the company of others, especially children, but there is also an indication that childhood dependence and the sustenance it elicits produces a reciprocal obligation for the maturing youngsters to care later for the aging benefactor. In a situation where children are so highly valued, too, the very idea of a grown offspring "giving" a parent one or more children -- as is suggested by the 1-X-3 households -- reflects this same obligation.

Evidence of the high value placed on the presence of children is derived from those few cases where a young married (or "free-union") couple, who have as yet no child of "their own", are "given" one or several young "other relatives" -- presumably by a reproductive sibling. A few couples have an "other relative" child who is older than their offspring, but whose life appears to have become so inextricably joined to that of this family that (s)he has not been relinquished when the couple's "own" children come. In three extreme cases of gifting, non-related children were taken into homes -- in one case, the couple is childless; in another, an elderly, childless widow has either "adopted" an orphan or has been gifted a child by some caring person.

The economic implication of gifting is that families are involved in making adjustments between fertility behavior and resource availability. The data provide no information to investigate householders' motivation, nor even to investigate how successful the exchanges are. Perhaps a more searching sociological study of this phenomenon would elaborate consumer resource balances in Rwanda and lay a groundwork for a comprehensive legal framework relating to inheritance and adoption.

Efficiency of Farming

The data on farming efficiency per unit area are first presented as a simple distribution, and then examined in more detail. The correlation coefficient between agricultural income area efficiency and agricultural income worker efficiency is 0.27, and that between surplus production area efficiency and surplus production worker efficiency is 0.58. Comparison of some of the values of area efficiencies from the following tables with worker efficiencies indicates that there is such a correspondence between them that only one need be shown to make the points which derive from the tables. A more detailed analysis of worker efficiencies will be made in a subsequent paper.

Table 36 demonstrates that income increases as farm size increases, up to the limit of the farm size categories, but agricultural income area efficiency decreases as average farm size increases. Areas less than half a hectare produce negative agricultural income, but income generation becomes more effective as farm size increases. Farm surplus production per unit area farmed is negative for farms smaller than a hectare, then it increases as average farm size increases up to three hectares, but thereafter it begins to fall off again, and, although surplus production as such may continue to increase, area efficiency of surplus production begins to decline.

Table 36 Efficiency by Farm Area Categories.

Farm Area Category	Farm Income (FRw)	Production Surplus (FRw)	Ag. Income Area Efficiency	Ag.Surplus Prodn. Area Efficiency	N.of Cases
0.25 Ha or Less	45422	-4080	16.53	-13.75	68
0.25 to .50 Ha	53307	-653	10.92	-3.87	194
0.51 to 1.0 Ha	73990	7175	8.98	-0.20	325
1.01 to 2.0 Ha	101237	24664	6.53	1.24	251
2.01 to 3.0 Ha	125514	47852	4.54	1.56	113
More Than 3.0 Ha	150636	56008	3.46	1.24	68
Total	85708	17024	8.38	-1.15	1019
Eta	0.47	0.35	0.49	0.43	
F Sig.	0.00	0.00	0.00	0.00	

It seems fair to assume that efficiencies might be influenced by the region in which the household farms, its class position (refer Table 40, below), the size of its total workforce, and its phase in the family development cycle. Table 37 shows the outcome of a ANoVa of this possible interrelationship. Although the amount of variance accounted for agricultural income area efficiency is relatively small when only family development cycle is taken into account, this variance doubles when class of householders and total workforce also enters the equation. For production surplus zone, class and workforce all combine to increase variance accounted for by a factor of five.

Table 37 Analysis of Variance for Farming Efficiency per Unit Area.

	Ag Income				Ag Production Surplus			
		coefficients				coefficients		
	F. Sig.	eta	beta	r^2 regr	F. Sig.	eta	beta	r^2 regr
Family Development Cycle	**	.17	.17	2.9	**	.15	.15	2.4
Zone	ns				**			
Class	**				**			
Adj. Worker Nos.	*				**			
Family Development Cycle	**	.17	.15	5.2	ns	.15	.13	12.2

* = Sig. at .05 level; ** = Sig. at .01 level.

SUMMING UP

Testing the two hypotheses has demonstrated that farming responses of Rwandan households are largely an outcome of their control over, and use of, resources, but that "old meanings" associated with traditional kinship ties, and new ones, arising from the market, are exploited in individual attempts to manipulate resources within the Rwandan social context. In this final section, I draw together the results of the hypothesis tests and show the nature of Rwandan rural society as it is revealed by the NFS survey.

Farm Production

Early in this dissertation, I designated 70,000 FRw as the potential annual earnings of a paid agricultural laborer's household and pointed out that that figure was used on the basis of its being roughly equivalent to the median income of all farming households. That equivalence being the case, it is pertinent to ask which of the existing arrangements of land and labor allocation and use allow some farming households to out-perform the average, and then to attempt to search out an explanation for their high performance.

Up to this point, explanation has been couched in terms of regional and individual resource differences, and variations in business and family structures. Tabulating household income and production surplus (as well as efficiency per unit area, and other performance measures) against phase of family development cycle and class category have indicated wide variations in outcomes within and between these variables, and the study has further shown that demographic and structural differentiation make roughly equal contributions to variations in income, while demographic influences add the greatest proportion of

variance to production surplus. This indicates a changing relationship of classes to property and also the importance of area of holding (especially area per adult equivalent) to variations in production.

The limits of current attainment

I speculated previously that differences in outcome may be alleviated or exacerbated by incomes unaccounted for in our dependent variable(s) (see also, Clay and Vander Haar, 1993), and there are factors of farm and labor market heterogeneity which also have not been recorded. Nevertheless, on the basis of the data available, several of the presentations of income and production surplus broken down by size of holding have shown a rise in outcome as worked area rises, and from a pragmatic point of view, this suggests two directions of development of the argument from here on:

- a study of categories of farm operators can show how they produce income and accumulate -- which social arrangements on farms (farm structures) yield best (and perhaps why);
- a deviant case investigation might isolate, and possibly learn from, the farms doing especially well or badly.

The former path of investigation offers elaboration of classes and their performance; the latter, insight into performers and their classes.

One of the practical benefits to be gained from a farm structure investigation is a discovery of the price producers may have to pay in terms of their living standards in order to gain higher performance;[12] the benefit from deviant case analysis is that we may be able to suggest policies to improve the performance of Rwandan farms, and thus improve "life chances" in rural society. My intention is to identify those features of farms and farmers which give them "leverage" in the struggle

for resources, and then in the final section to extrapolate to categories of farms which might be able to use the success formula(e) of the deviant cases.

Household and Farm Social Structures

Table 38 looks at consumers and workers, their incomes and accumulation capacities, and their agricultural income and production surplus area efficiencies in relation to family structure -- in this case, families which have grand-parents present are separated from family development cycle phases. The lowest (adjusted) worker to consumer ratio occurs where young children are being raised, the Extension Phase. This is followed more remotely by the 1-2-3 Generation category, and the Complete Extension Phase. The presence of growing children corresponds to, and is clearly directly influential on, those categories with very low production surplus generation.

Table 38 Characteristics of Various Family Structures.

Categories	No.of Cases (%)	Farm Income. (FRw)	Prod. Surp. (FRw)	Area Efficiency AgIncome	Area Efficiency AgProd. Surp.	Adj.W/C Ratio
Couple, no children	1.8	58,953	25,592	9.23	1.08	0.83
Extension	53.7	84,944	12,710	9.37	-2.14	0.61
Complete Extension	4.4	107,526	23,392	6.73	-0.20	0.79
Contraction	16.3	95,905	25,568	6.89	0.14	0.82
Complete Contraction	2.2	74,811	42,158	7.17	2.67	0.90
Dissolution	2.9	38,639	20,533	8.29	4.16	0.86
Extended Family (1-2-3 Gen.)	12.3	97,579	14,812	7.33	-2.25	0.73
Reduced Extended Family (1-X-3 Gen.)	6.4	61,934	19,610	7.35	1.01	0.85
Total(1016)	100.0	85,812	17,078	8.39	-1.15	0.70
Eta		0.21	0.12	0.18	0.17	0.51
F sig.		0.02	0.04	0.00	0.00	0.00

The most significant column in the table is the second to last one, where the two lowest values derive from those family structures weighed down with young children (Extension and 1-2-3 Generation) -- which also represent 2 out of every 3 households. While looking at the income column, I was tempted to ask why more Rwandan households don't have three generations (1-2-3 Generation is the second highest average income category). The production surplus efficiency column provides an answer -- its low savings potential. By contrast, family structures where we would anticipate few children -- couples with no children, or the family of a widowed aged person -- have the high production surplus area efficiencies. Together they are only 6.9 percent of the sample of families, and their farm area per household is known to be low, but the "savings potential" of childless couples seems to offer one small "entrance" to advocacy of deferred child rearing (although some of what I have written before about gifting of children to childless couples runs counter to this); cooperation between young childless couples and aging intact couples who have finished raising their children as well as widow(er)s offers powerful potential for production surplus creation. I shall return to the policy implications of this in the final chapter.

Table 39 shows the tendency for households which on balance hire labor to have higher incomes than those which operate with entirely their own labor resources, and considerably higher than those which sell their labor to other farmers. While the independent operators earn about ten percent more than sellers of labor, and employer-farmers earn sixty percent more, when production surplus is considered the ratios are ten times, and twenty-five times greater.

Table 39 Farming Response Variables by Labor and Land Hire.

Part A: Labor

Net Labor Hire	N of Cases (%)	Ave. FarmInc. (FRw)	Prod. Surp. (FRw)	Efficiency AgIncome	Efficiency AgProd. Surp.	Adj.W/C Ratio
Sells	20.6	67,110	1,356	8.01	-5.02	0.61
Neither in nor out	42.0	73,490	12,138	7.70	-1.56	0.71
Hires	37.4	109,651	31,120	9.36	1.43	0.74
Eta		0.30	0.22	0.12	0.27	0.24
F Sig.		0.00	0.00	0.00	0.00	0.00

Part B: Land

Net Land Rent	N of Cases (%)	Ave. FarmInc. (FRw)	Prod. Surp. (FRw)	Efficiency AgIncome	Efficiency AgProd. Surp.	Adj.W/C Ratio
Rents-out	12.7	95,521	22,066	6.37	0.13	0.77
Neither in nor out	47.5	87,710	18,358	7.67	-1.09	0.71
Rents-in	39.8	80,214	13,838	9.87	-1.63	0.66
Total (1019)	100.0	85,708	17,024	8.38	-1.15	0.70
Eta		0.08	0.05	0.20	0.06	0.17
F Sig.		0.03	0.22	0.00	0.14	0.00

This pattern is reversed in the second part of the table -- in relation to renting land in and out. The independent operators earn about ten percent more than those who rent-in land, and -- despite having relinquished some of their land -- renter-farmers still earn another ten percent more. When production surplus is considered in the case of land, the ratios are thirty-three percent greater, and twenty percent greater, but these differences are not significant.

Table 39 elaborates this trend by demonstrating, in Part A, how area in-efficient in surplus production generation selling oneself for wages can be, especially as compared with paying laborers to work rented land. It is significant to the differentiation debate to notice that owner operator farmers (who neither sell nor hire labor) are less income area efficient than both other farm structures in Table 39A but are also less production surplus efficient than employer-farmers. The second part of Table 39 demonstrates that owner operators who neither rent-in nor rent-out surplus land again lie between the other two categories on all measures: highest production surplus area efficiency goes to those who put their land surplus to rent, while those which have to negotiate additional resources -- in land this time -- remain lowest.

In sum, households which sell labor can potentially save only two percent of their income, owner-operators can save one-sixth of theirs, and employer households can save more than one fourth. Employer households thus have massive capital accumulation potential. By contrast, households which rent-out land are also potentially more accumulative, but labor hire (with an agricultural production surplus efficiency ratio of 1.43) is the activity which places the resource-rich farmer in the best position to accumulate quickly.

Table 40 demonstrates that the owner operator categories of the two parts of Table 39 overlap but are not the same. It also clarifies the issue of class efficiencies. Category 7 (one out of every five families) can be called the "pure" owner operators (with no land or labor transactions); their surplus production area efficiency is the second lowest in the table -- they are beaten to last place only by category 1, those small-area farmers who rent-in land as well as having some member(s) of their household work off-farm (usually in agricultural activity), and who also have both the lowest farm income and lowest worker:consumer ratio in the table. By contrast, the two categories which score highest for surplus production area efficiency are category 4, followed by category 8. Category 4 contains the "entrepreneurs" who rent-in land and hire laborers to work it. This would seem to give them a higher number of adjusted workers to create their worker to consumer ratio, but still they have they are quite low down the list with regard to proportion of workers to consumers. Category 8 are owner operators who hire others (usually at a lower rate of pay), and in the process create the third highest average farm income and surplus production.

Table 40 Farming Response Variables by Categories of Farm Households.

Categories			N of Cases	Ave. FarmInc.	Prod. Surp.	Efficiency		Adj.W/C Ratio
Hire in	Work off	Rent land in & out	(%)	(FRw)	(FRw)	Income	Prod. Surp.	
	Work	Land Rented-in (1)	11.2	64,650	3,192	8.21	-5.86	0.59
Hire	Work	Land Rented-in (2)	3.2	90,184	11,754	8.90	-1.85	0.62
		Land Rented-in (3)	13.2	71,933	10,557	9.31	-1.26	0.69
Hire		Land Rented-in (4)	12.2	100,792	27,723	12.26	1.91	0.72
	Work	Own Land only (5)	9.3	80,463	11,582	7.76	-5.31	0.59
Hire	Work	Own Land only (6)	3.4	133,446	52,536	9.84	0.98	0.59
		Own Land only (7)	18.8	70,056	7,297	7.08	-1.53	0.74
Hire		Own Land only (8)	15.9	103,130	28,147	7.86	1.47	0.77
	Work	Land Rented-out (9)	2.4	71,355	10,466	4.18	-1.38	0.66
Hire	Work	Land Rented-out (10)	2.2	163,488	40,425	8.44	-0.50	0.81
		Land Rented-out (11)	4.1	38,437	13,631	5.91	0.32	0.78
Hire		Land Rented-out (12)	3.9	106,303	27,844	6.44	1.21	0.81
	Total	(1019)	100.0	85,708	17,024	8.38	-1.15	0.70
Eta				0.34	0.23	0.27	0.29	0.36
F Sig.				0.00	0.00	0.00	0.00	0.00

Category 10 has the highest overall average income, as well as the highest worker:consumer ratio and the second highest surplus production area efficiency. Were there statistics for rentals, category 10's income would presumably be even greater, and here (as with categories 6, the highest, and catgery 8, the third highest) we are clearly seeing that resources-rich households are able to convert their physical and human capital into potential savings. One use to which they might turn their savings is to purchase further land; another might be to acquire better educational opportunities for their children.

From the table, it is clear that farms which hire labor have the greatest potential to accumulate production surplus -- this is true even if they must acquire the land on which to employ that labor. By contrast, "pure" owner operators and renter(-worker)s are the categories with the lowest capacity to accumulate. Precisely how much contribution they make can be clarified if it can be shown that farms with 1, 2, 3... children produce higher income, production surplus, efficiency, ... as compared with 1, 2, 3... employees. Fitting the data for the amounts of family labor and its equivalent required to alter the income and production surplus efficiencies produces the two regression equations:

Income Area Efficiency = 9.26 + 0.03 * Family Labor Equivalent
- 0.07 * Active Family Workers

(R^2 = 0.5%);

Production Surplus
Area Efficiency = 0.38 + 0.16 * Family Labor Equivalent
- 0.06 * Active Family Workers

(R^2 = 3.3%).

In the Income equation, the beta coefficient of family labor equivalent is only half that for active adult family workers; in the Production Surplus equation, the factor is more than two. That is, both family and

employed labor contribute to efficiencies, but in the latter hired labor is strikingly the more important as compared with the former where family workers make the more important contribution. What is not clear, however, is whether the process of taking laborers from some farms and employing them on others for wages represents a net gain for the total society or merely -- as the Marxists claim -- a transfer of wealth from the poor to the rich. Among the landless the question is less ambiguous; according to existing productive arrangements, they would be unemployed apart from wage labor on the others' farms.

Finally we turn to an investigation of those farms which make unexpected production responses when judged in terms of the "resource mix" they bring to their farming.

Larger and Smaller; Better and Worse

Of the eight largest farms, four are in the Eastern zone. Nevertheless, the largest farm in the sample -- 14.21 hectares -- is in Gitarama Prefecture in the North-central zone. It is farmed by a family consisting of a 57-year-old man, his 53-year-old wife, and their seven children still at home (four more are living "away"). Three of the children living at home are farming, and four are students; the household belongs in Stratum 7 in Table 40, and produces an income of 120,000 FRw while retaining less than 10,000 of that as production surplus -- an area efficiency of surplus production of less than 0.1: very low. This farm has income only half as high as the next-largest farm, which is in Kibungo Prefecture (Eastern zone). This family consists of a 53-year-old man, his 47-year-old wife and their ten children (two of whom are living "away", while three are farming). The household can be placed in stratum 2, and their surplus production area efficiency is 0.8; still

quite low.

The third largest farm produces in excess of 400,000 FRw income and retains three forths of it as production surplus; by contrast the fourth largest farm manages to retain no surplus production -- it seems to need to consume 8500 FRw more than it produces. Both of these are in the South-west zone. The fifth largest farm is half the size of the largest. With 480,000 FRw of income, it out-produces all seven other farms larger than six-point-one hectares, and it has four times the income of the largest farm. By contrast, the smallest two of the eight large farms are almost equal in size -- six and one-eighth hectares, the smaller from Kibuye Prefecture, the other from Kigali; again the income of the latter is nearly four times that of the former, and the biggest and smallest farms in this group have incomes that are almost exactly the same. Thus, here (Table 41) we are faced with two interesting comparisons involving precise mathematical permutations: largest farm with one half its size (C1), and between two whose area is the same (C2). Between the two comparisons, we might throw light on the causes of differences in efficiency of production outcomes.

Table 41 Comparison of Four Large Rwandan Farms.

Farm Size	Age of Hhold Head	Family Size (Adult Eqts)	Active Adults	Farm Income	Prodn. Surp.	Area Efficiency		FDC Zone Phase		Class
						AgIncome	AgProdn. Surp.			
Comparison 1 (C1)										
142096	57	9.12	5	120302.8	9491.3	0.85	0.07	4	3	7
71131	46	12.51	5	479208.9	314782.6	2.34	0.34	2	5	10
Comparison 2 (C2)										
61273	31	8.26	2	405103.0	173067.6	6.61	4.55	2	5	12
61234	61	8.19	5	119952.7	40511.8	1.96	0.66	4	1	3

As regards C1, the smaller farm produces a value of farm product only fifty percent higher than the other, but (while both have five active adults per household) it sells almost ten worker equivalents off-farm; in C2, the lower yielding farm produces only forty percent of is rival's farm production value but hires no labor, while the other supplements its two active workers with the equivalent of 3.5 hired employees and accumulates 4.5 times the surplus production of the former.

From among the eight largest farms, two have non-kin young men living in who describe themselves as "cowherds". They are the two highest income farms from among the eight, and they also retain the highest production surplus. Over the whole sample, thirty-eight individuals designate themselves in this way, and they live in thirty households some of which thus have more than one member involved in this job (up to four). In only two cases is this the head of household, but the number includes 5 women, only two of whom do not share domicile with a man doing the same job.

Cattle herding might seem to be an inefficient land use, but from Table 42 it appears that this is not so. Households which can spare the labor of a particular individual to care for cattle can perhaps take advantage of pasturing them on crop residues on the home-farm or by arrangement with neighbors, or they can herd them on common lands.

Table 42 Farming Response Variables by Cow Herding.

Households contains	N of Cases	Farm Size (Ha)	Ave. FarmInc. (FRw)	Prod. Surp. (FRw)	Efficiency		AdjW/C
					Agric. Income	AgProd. Surp.	
Cowherd	30	1.72	145,874	48,998	7.29	-3.26	0.73
No Cowherd	989	1.18	83,895	16,151	8.42	-1.09	0.70
Total	1019	1.20	85,708	17,024	8.38	-1.15	0.70
Eta		.08	.17	.10	.03	.04	.03
F Sig.		0.01	0.00	0.00	0.35	0.19	0.33

By contrast with these large farms, there are twenty farms less than 0.15 hectares in area (Table 43), and eighty percent of them occur in the North-western zone -- to the north and west of Kigali city. The largest farm in the North-western zone (the eighth largest overall) is 6.1 hectares -- almost 100 times as large as the smallest. When this farm is compared with one of almost exactly the same size in the Eastern zone the latter produces 3.5 times more income and retains four times the production surplus.

None of the smallest farms produces cattle. They have from 2 to eight occupants, but nearly half have only one active adult in residence. Only one fifth of them have a positive production surplus area efficiency, but this appears not to bear any obvious relationship to any other of the parameters shown in the table.

Table 43 Farming Response Variables of the 20 Smallest Rwandan Farms.

Farm Size Sq.M.	Age of Hhold Head	Family Size (Adult Eqts)	Active Adults	Farm Income	Prodn. Surp.	Area Efficiency		FDC Zone Phase		
						AgIncome	AgProdn. Surp.			Class
636	46	3.66	1	26929	-20382	10.9	-63.5	4	1	5
812	38	6.79	3	28890	-74146	16.9	-110.0	2	1	1
912	34	3.97	2	68617	24678	22.6	-25.6	2	1	5
1012	30	1.17	1	23308	11964	20.3	9.1	1	1	1
1074	60	1.95	1	45775	23438	9.1	-11.7	5	4	3
1111	78	2.00	1	5800	-12979	5.2	-11.7	6	3	7
1193	58	7.10	4	47919	-11637	8.0	-41.9	3	1	7
1221	30	5.62	2	28571	-51764	16.9	-49.0	2	1	7
1247	30	3.95	2	137228	101581	75.4	47.8	2	3	6
1275	36	5.66	2	33727	-26166	24.6	-22.4	2	5	1
1280	28	1.95	1	7995	-14799	6.3	-11.6	2	4	7
1297	35	2.78	1	24142	-5273	17.4	-5.3	2	1	5
1301	33	3.63	1	62925	-2252	48.4	.4	2	1	4
1362	65	2.91	1	28146	-28088	20.7	-20.6	1	5	3
1427	40	7.62	3	50614	-28428	35.7	-19.9	2	1	3
1436	30	5.68	2	19245	-42803	13.4	-27.3	2	2	4
1438	23	4.78	2	72120	3385	36.0	-7.7	2	1	4
1438	30	6.51	2	51712	-13922	50.2	5.4	2	1	4
1448	33	4.80	2	52606	-13526	9.8	-35.9	2	2	7
1488	36	2.86	1	11179	-21515	4.8	-17.2	2	4	9

Area Efficiencies of Income and Surplus Production

In an effort similar to the comparative strategy described above, clusters of farms exhibiting similar efficiencies were compared in an attempt to explain similarities and differences of efficiency. Of the eight farms with highest income area efficiency, five are in the second phase of their family development cycle and the other three are in phase four; all are from the west -- from zones one, two and three. They are all male headed households. The largest value, 110 FRw per square metre, is one third higher than the next highest value. This is, too, nearly ten times higher than the average for that family development phase (see Table 38).

By contrast, among the female headed households income area efficiencies are lower, as Table 44 shows. This table throws more light on the tables produced at the end of the previous chapter concerning income of farm households inasmuch as this is dependent on gender of the household head: the positive production surplus area efficiency of monogamous female headed households as against its negative value for all the male headed households reveals a high propensity toward accumulation for this category. Monogamous female headed households have the highest adjusted worker:consumer ratio, and by far the highest production surplus efficiency. This figure compares especially favorably with the negative production surplus efficiency of polygamous female headed households, and is despite the former having the lowest average farm income. Performance of female-headed households will be developed separately from this dissertation (Collier et al, 1982; Csete, 1988; Dixon, 1982; Due and White, 1986).

Table 44 Farming Response Variables by Gender & Polygamy of H'hold Head.

Household Headship and Polygamy		Farm Size (Ha)	Ave. FarmInc. (FRw)	Prod. Surp. (FRw)	Efficiency AgIncome	Efficiency AgProd. Surp.	AdjW/C
Polygamous Households							
Male	Headed H'holds	1.29	101200	24345	8.95	-1.28	0.74
Female	Headed H'holds	1.10	64243	12245	7.47	-0.51	0.74
Monogamous Households							
Male	Headed H'holds	1.27	91534	16863	8.45	-1.58	0.66
Female	Headed H'holds	0.91	62351	15934	8.19	0.38	0.80
Total	(1019)	1.20	85708	17024	8.38	-1.15	0.70
Etas		.00	.01	.01	.00	.01	.10
F Sig.		0.94	0.85	0.66	0.84	0.72	0.00

Entrepreneurs

Earlier, I referred to a category of farmers among those who rent-in land, who claimed they did so in order to produce a surplus for sale. I suggested that these 23 farmers were "Entrepreneurs". They are creating their own business opportunities by taking the risk of producing without owning the resources they farm; if they are going to be successful as producers of the particular commodities they have chosen, they will do so not by having initial endowments superior to those of their fellows, but by combining them in innovative ways.

Apart from them, the two categories of farmers who rent-in land and also hire labor to work it -- they are Categories 2 and 4 of Table 40 -- are also taking some risks in their farming, although their motivation is rather more obscure, and they seem to deserve to be treated as a separate category both from the entrepreneurs and the rest. This category contains one hundred and forty farmers whom I have designated "Innovators"; Table 45 demonstrates that separating them out from other farmers is justified. The entrepreneurs produce from farms appreciably bigger than both of the other categories of farmers, have larger family size (both in terms of active adults, and of worker equivalents), and have greater value of output and surplus retention. For them, production surplus is twenty-five percent of income, for innovators, it is twenty percent, and for the rest, it is nineteen percent. But their income area efficiency falls below all others, and their production surplus area efficiency is below that of innovators, but both these categories outperform the other farmers by at least a factor of three. Apparently, their high average final farm size causes the entrepreneurs to have low density of workers per unit area, even

after employees are accounted for.

Table 45 Farming Response Variables of Entrepreneurs compared with Other Farmers.

Part A: Commodity Production

Part B: Farm and Workforce Parameters

Enterprise	Sheep No.	Goats No.	Coffee Trees No.	Dry Peas Kg.	Dry Beans Kg.	Dry Sorghum Kg.	Sweet Potats. Kg.	Maize Kg.	Manioc Kg.	Farm Size Ha.	Family Size (Worker Eqts)	Active Adults No.	Farm Income FRw.	Prodn. Surp. FRw.	Area Efficiency AgIncome	Area Efficiency AgProdn. Surp.	Adult Eqts. per Ha.	Adj.W per Ha.	Sample Numbers
Entrepreneurs	1.44	2.50	180.8	20.0	201.6	170.9	855.4	53.6	537.0	1.66	4.39	2.82	102,085	28,059	6.68	0.79	2.55	2.54	24
Innovators	0.38	1.89	105.8	11.8	161.5	133.6	657.4	75.3	487.6	0.97	3.77	2.47	96,750	22,415	11.75	0.98	3.27	3.27	148
Others	0.60	1.57	93.1	9.9	140.5	137.2	743.1	61.2	331.6	1.23	3.86	2.54	83,330	15,779	7.84	-1.58	2.98	3.00	848
Total	0.89	1.64	97.0	10.4	145.9	137.5	733.2	63.0	359.0	1.20	3.86	2.54	85,708	17,024	8.38	-1.15	3.01	3.03	100.0
(N =)	(245)	(568)	(585)	(312)	(979)	(768)	(955)	(557)	(765)	(1019)	(1019)	(1019)	(1019)	(1019)	(1019)	(1019)	(1019)	(1019)	(1019)
Etas	.12	.08	.08	.06	.07	.02	.05	.02	.08	.10	.05	.04	.09	.06	.22	.17	.09	.09	
F Sig.	0.00	0.03	0.04	0.18	0.07	0.86	0.27	0.85	0.04	0.00	0.31	0.50	0.02	0.21	0.00	0.00	0.02	0.02	
(Row 1 + Row 2)	0.63	1.97	116.2	12.9	167.0	138.8	684.6	72.3	494.4	1.06	3.86	2.52	97,484	23,192	11.06	9.56	3.17	3.17	172
Others	0.60	1.57	93.1	9.9	140.5	137.2	743.1	61.2	331.6	1.23	3.86	2.54	83,330	15,779	7.84	-1.58	2.98	3.00	848
Etas (Comp. of 2 Cats)	.02	.07	.05	.04	.06	.00	.03	.01	.08	.06	.00	.01	.08	.05	.18	.11	.06	.05	
F Sig.	0.53	0.02	0.11	0.20	0.05	0.95	0.32	0.65	0.01	0.07	0.97	0.84	0.00	0.09	0.00	0.00	0.11	0.14	

The commodities which entrepreneurs produce from their larger farms in excess of the quantities produced by the non-innovator farmers in particular -- and which assist their greater overall income -- are listed in Part A of Table 45. Considerable statistical significance is gained by comparisons among the three categories. Entrepreneurs own almost one sheep and one goat more than ordinary farmers, as well as controlling seventy-five percent more coffee trees. They also produce more dry peas, dry beans and sorghum than other farmers -- although only the dry bean category produces statistical difference. It seems from the values of the etas, that the entrepreneurs produce statistically more livestock, coffee and beans (but not sorghum), and it is presumably on the basis of trading them that they plan to make their money. By contrast -- in regard to food crops -- production of sweet potatoes by entrepreneurs is only marginally higher and their maize production is down. Manioc, the only crop where significant differences occur, can be thought of as a drought reserve food, and their significantly higher production of it suggests that these risk-taking farmers also take precaution to lay reserves by against seasonal adversity.

Otherwise, little more than their barest objective characteristics is known about these entrepreneurs. Even the sources of their land, labor and capital are obscure,[13] and so, certainly, are the ways they combine them. Additional study might lead both to greater knowledge of these interesting individuals, and possibly lay a groundwork for emulating their innovative behavior.

NOTES

1. Tables 46 and 47 use worker equivalents and worker equivalents augmented by hired employees transformed to be equivalent to family workers, respectively, as an operationalization of worker: consumer ratio. In both cases, the link between Family Development Cycle and outcome variable is maintained, and for this reason alone, worker equivalents might again be confirmed as the appropriate family labor variable in the model. But, in addition, variance accounted for by the model is also lower for each of the other two variables than it is for worker equivalents - 31.8 and 25.9 for income (compared with 37.9), and 15.5 and 14.3 for production surplus (compared with 17.5).

Table 46 Analysis of Variance Result: Worker equivalents.

	Income coefficients				Production Surplus coefficients			
	F.	Sig.	eta	beta	r^2 regr	F.	Sig.	eta	beta	r^2 regr
Family Development Cycle		**	.21	.21	4.6		*	.11	.11	1.2
Hired Labor		**					**			
Worker eqt:Consumer		ns					**			
Farm Area		**					**			
Head's Education		**					**			
Family Development Cycle		**	.21	.16	31.8		ns	.11	.07	15.5
Worker eqt:Consumer Ratio										
Farm Area		**								
Head's Education		**								
Family Development Cycle		**	.57	.54	33.8					
Hired Labor										
Farm Area		**								
Head's Education		**								
Family Development Cycle		**	.14	.16	9.4					
Farm Area										
Head's Education		**								
Family Development Cycle		**	.22	.24	7.4					

* = Sig. at .05 level; ** = Sig. at .01 level.

Table 47 Analysis of Variance Result: Augmented Worker Equivalents.

	Income coefficients				Production Surplus coefficients			
	F. Sig.	eta	beta	r^2 regr	F. Sig.	eta	beta	r^2 regr
Family Development Cycle	**	.21	.21	4.6	*	.11	.11	1.2
Adj.Fam.Worker:cons	ns				ns			
Farm Area	**				**			
Head's Education	**				**			
Family Development Cycle	ns	.21	.13	25.9	**	.11	.14	14.3
Adj. Fam. Worker:consumer								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.49	.46	26.9				
Hired Labor								
Farm Area	**							
Head's Education	**							
Family Development Cycle	**	.14	.16	9.4				
Farm Area								
Head's Education	**							
Family Development Cycle	**	.22	.24	7.4				

* = Sig. at .05 level; ** = Sig. at .01 level.

2. Duncan (1966, p.10) phrases this: "How are the direct effects of the independent transmitted to the dependent variable via its components?"

3. Clearly, from Table 48, although for artisanal work the proportion of households not involved hovers around 7 out of every eight, the proportions of households taking 40 or more of such days employment per quarter rises as household income rises. By contrast, for houses engaging in agricultural work, the proportion doing none rises as income category rises, but the proportion working 40 or more of such days employment per quarter falls as income rises.

Table 48 Days Worked in Artisanal & Agric'al Work for Income Cats.

	Days of Work	
	Artisanal	Agricultural
Income Category	Days	Days
Up to Half F. Wker's Earngs	8.9	17.4
Half to One F. Wker's Earngs	20.6	29.0
1 to 1.5 F. Wker's Earngs	32.9	41.8
1.5 to 2 F. Wker's Earngs	34.4	53.4
More than 2 F. Wker's Earngs	48.6	33.8
Total	26.3	29.4
Etas	0.46	0.32
F Sig.	0.00	0.00

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4. Table 49 shows a different perspective on the same data. The sequence of significance of contribution to variance by the various types of farm work shows them to be the same as their appearance in Table 29 for farm income, but that only civil service, business, and agriculture influence production surplus outcome. Column three seems to suggest that only civil service and agriculture contribute to variation in farm size -- perhaps permitting additional farm area purchase. Finally, farm area per consumer receives its contribution to variance from agricultural work off-farm, with "other salaried" and artisanal work reducing this (coefficient) variable.

Table 49 Earnings, Workforce & Farm Size as Functions Work Sold Off.

Labour Sold into Type of Work	Income	Prod. Surplus	Farm Area	Farm Area/ Adult Eqt. Consumer
	(All Farms)			
Total Work				
R^2	10.4	6.3	-	2.0
Intercept	74057	9461		2637
Beta Coeff.	0.32	0.25		-0.14
Civil Service				
R^2	14.7	15.1	3.3	-
Intercept	83051	14779	11784	
Beta Coeff.	0.38	0.39	0.18	
Business				
R^2	8.2	5.9	-	-
Intercept	81733	14218		
Beta Coeff.	0.29	0.24		
Artisanal				
R^2	1.9	2.4	-	0.0
Intercept	83100	14572		2498
Beta Coeff.	0.14	0.16		-0.06
Other Salaried				
R^2	-	-	-	0.0
Intercept				2482
Beta Coeff.				-0.09
Laboring				
R^2	-	-	-	-
Intercept				
Beta Coeff.				
Other Work				
R^2	-	-	-	-
Intercept				
Beta Coeff.				
Agricultural				
R^2	-	0.0	1.0	2.0
Intercept		18560	12408	2566
Beta Coeff.		-0.08	-0.10	-0.14

- No. significant regression

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5. Clay, Kampayana and Kayatsiga (1989, Table 5) present this same conclusion in different form.

6. Moreover, the high correlation between the education level of the household head and his/her spouse (r = 0.39; Sig. at .01) reflects both a class continuity and a context of mate selection that values formal education very highly, and this is likely to continue the pattern of Table 34.

7. **Reforestation** seems to have been interpreted as replanting with forest plants areas which have been cleared previously for cultivation, rather than leaving existing woodland intact -- which might, perhaps, come under the category **fallow**.
Some farms might reduce their pasture, fallow or reforestation to zero. This would indicate that they are stretching their agricultural resources to the maximum and that if this question were asked next season, they would be non-respondents, but for the present survey, that doesn't alter their right to be included.

8. The possibility exists for a household which sells labor off the farm also to bring in agricultural labor, although on the face of it, it would have appeared to have had enough labor to take care of its own work. (See Athreya et al., 1987, p. 175 for a discussion of this). At the imputed prices used to calculate functionary-, business-, and artisanal-labor contributions to the "outcome variables", it may be beneficial for owners of this labor to sell it off-farm, and to purchase farm labor at FRw 100/day.

9. Mamdani (1987, p. 196) identifies them in the West Nile province in the 1950s and Swindell (1985, p. 149) notes in passing that farmers who originated in Kenya established themselves near Basse in western Uganda in the 1950s and farmed 23-acre plots using the labor of immigrant workers from Rwanda, and elsewhere. Stichter (1985, p. 3) points out, too, that "one third of the population of Buganda consisted of migrants from other parts of Uganda, or from Tanzania, Sudan or Rwanda" in 1948; she further mentions (p. 152) that in the 1970s the Rwandans were migrating as families.

10. When family labor and paid labor are combined to create the composite variable, adjusted farm workforce, the relationship is

$$\text{Farm area} = 0.26\text{ha} + 0.4 \text{ adj. workforce.}$$

That the equation quoted in the text records a positive effect of people working off-farm on final farm size can be attributed, I think, to the fact that remittances (and other contributions) of off-farm working members of the household appear to be turned to land acquisition.

11. I looked at the data only for three generation households. Another category is created by those women who leave their in-laws' land to go to live with a brother; an even more ambiguous situation is created by the household of two sisters, living with the children of one of them.

12. The principle involved here is one of "Pareto Optimality".

13. Apparently their land dealings are often with friends who are not their neighbours, but they get some free land from kin; and those of them who responded tend to pay cash for labor rather than trade produce -- but, overall, this is scant insight.

CHAPTER 5

DISCUSSION OF FINDINGS AND THEIR IMPLICATIONS

REVIEW OF FINDINGS

This study investigates three general questions:

1. What factors of Rwandan farm households have a bearing on income, earnings of the household, and surplus in excess of family consumption?

2. What part of the variation between farm production outcomes can be derived from categorizing production units according to a Marxist class position (a structural framework) and according to the phase of Family Development Cycle of the household (a demographic framework)?

3. What outcomes for Rwanda's agricultural structural development are suggested by current trends in existing data?

Two sets of hypotheses are developed to pursue these questions.

Greenhalgh (1985) raises the idea that while both demographic and social differentiation occur at once, they can vary in potency, but her longitudinal analysis is unable to establish causal antecedence to either form of differentiation. The model proposed to test the following hypothesis (1) is also concerned with potency of demographic and "structural" effects, but is also unable to allocate antecedence:

H 1: In Rwandan society, more of the variation in returns to farming will be accounted for by those factors which determine demographic differentiation than by those which determine structural differentiation

Quantification of the path model (Figure 4) permits us to account for thirty-eight percent of the variance in income. This is considerable improvement over the variance-accounted-for which each part of the model can achieve alone -- 29.5 percent for the social differentiation part, and 29.1 percent for the demographic differentiation part. The

(re-quantified) path model accounts for seventeen point five percent of the variance in production surplus. This is a slight improvement over the variance-accounted-for which each part of the model can achieve alone -- 14.5 percent for each part. In other words, two systems of social classification are capable of accounting for roughly the same proportion of variation in the income (and accumulation potential) of Rwandan farmers; when their effect is compounded, accountability is improved.

These results demonstrate the point being made more and more often in the recent literature, that social patterns are situation-specific and each research site or event has to be understood according to its own particular historical circumstances. Greenhalgh (1985, p. 582), for example, remarks that "the social differentiation hypothesis" "cannot be applied uncritically but must be carefully specified and modified to fit the circumstances of each society. Archer (1991) develops a similar idea, and suggests that we ought to anticipate the response of local systems to global mechanisms in terms of "4 Rs": the global tendency will be reflected, refracted, resisted, and/or rejected by each society in its own way (see also, Lyson and Geisler, 1992). Couching the major hypothesis in terms reflecting Greenhalgh, in particular, has demonstrated too the value of comparative study. The regional variability of yield and the variety of farming systems occuring within the survey data suggest that valuable national (as well as theoretical) insights could be generated by a study of changes affecting cultivators within and across regions and farming systems.

The set of Hypotheses in 2 is concerned with the way farmers improve household well-being by a two-sided strategy -- to make labor

available from the farm family and to sell it into the market. This is achieved by selling the labor of household adults, by raising a new generation of household members and bringing them into the market, and by training children in the school system to perform the tasks which require modern education and which are highly rewarded in the modern sector of the economy.

H 2 a): Potential underemployment on the home farm, combined with the need for cash, will be relieved partly by I/ wage work, II/ early retirement, and III/ late entry into the labor force while market-acceptability is improved; these will vary with the level of household economic wellbeing as indicated by the measure of household production.

Among the three out of four students in the primary education system, poorer children figure quite prominently, and while the children of the very richest still do not dominate the one-in-five who have high-school education, the one-in-thirty-five who are being educated <u>beyond</u> secondary level are noticeably from richer families.

Summing up this hypothesis in conjunction with Hypothesis 1, there is a clear tendency for the riches associated with current property-holding to be invested into employing labor and into education of children. For the former, in the short-term, the returns are quite high and -- unless an unlikely increase in labor costs occurs -- are likely to continue into the future; for the latter, the costs are great but the enhanced earning potential for a new generation demonstrates the power to re-enforce property differences possessed by current property-holders.

Hypothesis 2(b) is concerned with on-farm intensification adjustments, which can be one way of balancing existing resources to the arrival of new household members.

H 2 b): Small farms with large workforces will intensify: as number of adult equivalents per unit farm area increases, so does the likelihood that farms will have reduced their pasture, fallow and woodland areas.

Data are limited, but the best generalization seems to be that farms with low numbers of consumers per unit area have the most freedom to innovate, whereas conservatism (rather than considerations of conservation) is the predominant motivation of farmers with high consumer density. There is a suggestion too that extensive techniques may be utilized in the presence of low consumer density (or labor availability). Possibly, intensity of cultivation, rather than land area expansion, may be the response to increasing numbers of consumers per unit area.

In sum, testing the two hypotheses has demonstrated that farming decision making in Rwandan households is largely an outcome of their control over, and use of, resources, but that "old meanings" associated with traditional kinship ties, and new ones arising from the market, are exploited in individual attempts to manipulate resources within the Rwandan social context. The tendency is clearly for those with larger land resources to accumulate. Whether this would produce structural inequality in time is not proven -- and we need to keep in mind the complications (mentioned in the reference to Lemarchand's Byumba research in Chapter 3) introduced by political and produce-market power holding. Nevertheless, we can speculate about the implications of the patterns revealed.

Pressures for Change

At various places in this dissertation I have referred to issues of farm and family involvement in the market which seem to me to have repercussions for changes to the structure of agriculture in Rwanda. In

this brief section, I want to review them together so that the matter of a direction of change can be raised as a central concern. To a certain extent, this section can be considered to be speculative, but to me the evidence seems so compelling that it is reasonable to claim that Rwandan agriculture is becoming more commercial and that the pressure of economic change on small farmers is becoming so great that the need to take wage labor cannot be resisted.

In a recent paper, Lyson and Geisler (1992, p. 258) present the following encompassing formulation of a resolution to the differentiation debate:

> According to Piore and Sabel (1984, p. 298), an economic system organized around small-scale production units 'requires a fusion of competition and cooperation that cannot occur in the model of market transactions. In the market model, economy is distinct from society and firms are independent, competitive units.' By contrast, in a system composed of technologically sophisticated, flexibly specialized, small-scale operators, producers '... depend on one another for the sharing of skills, sharing of knowledge, information on opportunities and definitions of standards. Structure here shades into infrastructure, competition into cooperation and economy into society.'

The data I have used in this dissertation do not allow entry into the problem in such a way as might be able to decide that "segmented markets articulate with distinct types of production units (Lyson and Geisler, 1992, p. 258)," but one would assume that this would be as true for Rwanda as for the USA, from which these authors derive their data (despite some differences in "technological sophistocation"). "Segmented markets" is one way of conceiving of the differential demands for their production of a farm which produces for subsistence and one which produces for sale; the same could be thought to be true of the farm which hires labor (or sells its own) compared with the farm which uses only family labor -- as well as for those farms which combine

subsistence and market activities in the one enterprise.

It may be, too, -- and it's impossible to tell from the way the data were collected -- that farmers employ (for wages) people who have kinship relationships to them, which would make a mockery of the concept of labor market as it has been proposed here. A closer study of the labor market, with kinship and other obligations in mind, could make the nature of change from dependence on family labor to exchange in a capitalist labor market clearer. Be that as it may, at present, it is clear that farmers manipulate household (kin-obligated) labor through breeding, through their decisions about releasing labor to education and to the paid non-agricultural workforce, and through their manipulation of household size to make what seems to be maximal (perhaps optimal) use of resources in conjunction with claims on it. Here too, there is scope for further study concerning the sources of information about farm "carrying" capabilities and demand for labor, and the type of kinship ties which are permitted to be obligations -- either to assist in times of labor demand or to provide support when supply of resources exceeds immediate need.

From Table 3, it is obvious that those farm households which create high surplus production both sell beans, and also buy smaller average amounts of sorghum than less accumulative households. Neither beans nor sorghum is a component of (computed) farm income, and this means that the richer households spend less than others on grain (sorghum) purchases and also raise additional cash by sale of beans. They are, in brief, even more accumulative than is shown by their (computed) income and surplus product, and this could be turned toward attempts to alter their class position.

The data from Table 10 show that (from among the high surplus categories) the households which rent land out are the ones who can also sell sorghum (another source of cash). As well as this, the product of their letting of land is some sort of rent (Mamdani, 1987, p. 204) -- which may be money but could easily also be "in kind" payments, various kinds of "indebtedness" by their tenants, or "prestige values", and each of these, if not "cashed in" directly, may be "parlaid" against the enhanced status associated with inequality. Although, in theory, it can be said that immediately the landlord-tenant relationship is set up, (ipso facto) class difference is established, in any particular case, the limits of this distinction -- between friends (or kin) lending to, and receiving from, friends (kin) as against patron (landlord) providing resources to client (tenant) and being remunerated -- can be subject to debate. What this argument aims to show, thus far, is that as compared with "neighboring" -- where social equals provide and receive material assistance on a reciprocal basis -- in land renting, we seem to be dealing with a phenomenon which is persistently one-sided. The matter of additional sources of income for the already-well-to-do suggests that this inequality has the potential to develop.

Further evidence that the structure of agricultural resource holding may indeed be moving toward greater inequality derives from coffee tree ownership, and from wage labor. Those categories of farms which have a high average number of coffee trees stand to be able to sell coffee for cash, thereby improving their financial position. As the detailed analysis of Table 15 showed, often they will be constrained to create such extra cash to make up the shortfall in other income-earning spheres and to meet rent outlays, but for those categories of

that table which persistently hire labor (4, 8, 12), the chance to turn coffee earnings into savings is greatly enhanced.

Table 40 shows that the highest efficiency of agricultural surplus product accumulation occurs for those farms which are able to hire labor. As argued previously, some households have no source of cash income except their labor sales, and those which both farm and sell labor tend not to be very prosperous; it might even be that some households in the second category have not the financial strength to survive, nor the labor resources to support themselves.

Moreover, Table 14 demonstrates that owner-operator (self-sufficient) farmers are currently a relatively low proportion (c. 12%) of all farming households, and the indication from Table 11 is that they are decreasing as rentier (and hiring) households and labor selling households increase in compensation.

All these household movements and their apparent potential for change could apply equally well, however, to both a household differentiation model and a structural differentiation model. Indeed, that is the essence of the differentiation debate. The evidence which seems to tip this discussion toward a demonstration of permanent (structural) differentiation derives from the text round Table 31 which shows that richer families have more children and they stay at school longer. The anticipated outcome of this (at the level of a new generation) is that the rich (especially those who rent out surplus land and hire agricultural workers) will consolidate their position by financing their offspring into high-paying jobs which will not necessitate those left at home dividing the parental estate, and so employer farms will pass intact to a new generation.

An interesting category of farmers -- those who have grasped the market principle and begun to put rented land and hired labor together, but who seem to stand outside the inheritance/resource control assumptions of this analysis -- are referred to in the last part of Chapter 4 as "entrepreneurs". Their preformance perameters (income and production surplus) are the best of any group in the farming population (Table 45), their production of dry beans is significantly higher than for other farmers, too. Growth in numbers and prosperity of this category could be used as a marker of how rapidly some Rwandan farmers are seizing the opportuntites created by produce, land and labor commoditization; the concomitant "proletarian" workforce, developing to service them, deserves study, too.

While this dissertation ends with such a weak form of resolution of the differentiation debate, the NFS database is a benchmark for pursuing the debate in this country as the Post-Cold War era (and democracy at last for Southern Africa) creates new opportunities for all African States.

Save the Data

A primary requirement for following the development of a class-society in rural Rwanda is that the location and identity of residents of surveyed households (and those of the families into which they later develop) should be kept for a sufficiently long time that they will be available for a follow-up study of the same households -- intended to chart subsequent adjustments to the spread of commoditization of labor, land and produce. I encourage DNA to be vigilant in its custodianship of data about these interviewees' movements, as much as of the data bank itself, and USAID to be generous on a later occasion in making funds

available for a follow-up study.

On such a subsequent occasion, data collection might record owned-area and source of plots, as well as area farmed, which would shed much more light on the magnitutde of land-renting -- the more so, if rents paid and received were elicited, too. More information about the relationships between individuals across households and within households, and about the households' physical extent (e.g., number of roofs) would make the places of residence of household workers clearer, (and allowed the issue of landlessness to be investigated in somewhat more detail than has been possible with the data as they stand).

As they stand, the findings of this study have repercussions for the Sociology of Peasantry, for Development Sociology and the practice of development, and for policy issues within the Rwandan state. I shall deal with these issues in that order.

PEASANT STUDIES

This study has demonstrated that even under conditions of extremely limited industrial opportunities labor in Rwanda is being released from employment on household land and into agricultural and non-agricultural employment. Land -- while still generally under the control of families and lineages -- is becoming more commoditized (at least, access to it can be gained by offering cash-rent in remuneration -- whether within the lineage or in a wider market cannot be clarified), and gaining access to it is the motivation for strong competition.[1] The study has shown that family (demographic) factors account for nearly thirty percent of variability in farm income in contemporary Rwanda and this suggests a situation quite dissimilar to the predominantly "peasant" farming reported in the popular literature (Anon.,1987b; Codere, 1973; Jones and

Egli, 1984; Nyrop, 1985 -- but contrast Marijsse, 1983), in which structural differentiation is not considered, and demographic factors are, by implication, all-important.

In a comparative context, however, this interesting finding still leaves as a question why demographic differentiation substantially outweighs social differentiation in explaining income inequality in Greenhalgh's Taiwanese case while this is not nearly so obviously so in Rwanda. I surmise that any likely effects of class polarization in Taiwan have been mediated by the development of a vibrant rural and urban non-farm sector. In Taiwan land-poor households can improve their incomes through non-farm employment, but such is not yet the case in Rwanda, where the non-farm sector is still in its infancy. The most viable option facing Rwanda's poor and near-landless today is irregular employment, at very low wage rates, on the farms of their wealthier neighbors. Until the rural non-farm sector begins to provide poor households with an alternative to agricultural labor, it seems likely that social differentiation and its effect on inequality in Rwanda will grow.

Because of this agricultural preponderance of Rwanda's industry, proletarianization of its workforce is associated predominantly with employment in agriculture -- especially cash-generating agricultural production -- and in industries that service agriculture. At the same time as some households are able to accumulate capital by employing wage workers (often in cash-crop[2] production), and some use cash-crop production to accumulate the surplus they generate by their own labor, many households (forty-one percent) are not accumulative and are struggling to survive.[3] I shall treat the matter of accumulation in more

detail in the next section, on development. For present purposes, members of this non-accumulative category need sources of income in addition to their own farming. The research suggests, too, a significant but unenumerated category whose members have no land of their own, and to whom, in consequence, the availability of land for rent and wage work is especially important; there are indications that this category is growing, but it remains for later research to establish this with certainty.

Mamdani (1987) argues persuasively, in a comparative historical study of two areas in Uganda, that land-poor Bugandan cultivators -- next-door to Rwanda's northern border -- pay inordinately high rents for use of land. This amounts to a siphoning-off of their "surplus value" by those who have control of surplus land: as pointed out previously, control over land need not be private ownership but can be various aspects of the means-to-access.[4] Furthermore, Mamdani points out, there may be "hidden costs" to land-renting, such as clearing prior to planting, or returning land (rented for a limited season) with unremunerated improvements made during the cropping cycle. Since none of the costs of land-renting have been recorded in this study, it may seem unlikely that we can pursue this thought very far. However, it has been noted that small-holder farmers, especially those getting some of their land by renting (Table 14), are already close to the bottom of the scale of economic accumulation and are having difficulty "making ends meet"; we appear to have omitted a considerable element of our calculation of how well-(or badly-)off they are by leaving out their payment of rent. If in fact they have costs to meet that are even more hidden than rent, we cannot help but believe that their conditions are worse than this study

can show. Furthermore, this dissertation has argued that pressure on land is becoming greater and that the capacity of the rich to accumulate is increasing. We ought to pursue that logic then, and expect the renters of land to have even more difficulty in the future in gaining access to that vital resource,[5] and to expect that difficulty to be translated into higher costs and lower incomes (and/or standards of living) for those poor landed farmers and landless who rent land rather than hire themselves out.

Nevertheless, the small coterie (c. 5.5 percent) of renters who claim that they rent-in land for the purpose of using it to employ hired laborers to grow cash crops -- earlier, I named these predominantly young farmers "entrepreneurs" -- will continue to exist (and may even grow rich) if they can maintain a positive balance between their capacity to accumulate surplus value from their employees and the level of rent which extracts surplus from them. Tables 39 and 40 suggest that their accumulation potential is quite high, and it might be higher if these business activists were at work in the eastern region (Table 21). [The figures show, by contrast, that they are disproportionately active in the north and west.][6] A good case could be made for an active policy to encourage entrepreneur renters -- offering them loans to assist both their capital accumulation potential and their capacity for providing employment opportunities for farm workers.

DEVELOPMENT

In Chapter 1, I noted the singular conditions facing this second smallest African country. I believe Rwanda has valuable lessons for theory about the ways in which societies dominated by a peasant agriculture can change. In 1964, Geertz proposed the term agricultural

involution to explain the capacity of Java (Indonesia), throughout the Dutch colonial period, to support an expanding population -- in the absence of alternative employment opportunities. His model includes two elements: the ability of the production system to continue to absorb labor, and the ability of relatively fixed peasant capital to provide greater yield in response to that labor. Although his conceptualization has been frequently criticized (e.g., White, in Harriss, 1982), recent writers on Africa (Boserup, 1965 & 1985, Bilsborrow, 1987) have revived his model of agricultural labor intensification to attempt to account for the response of Third World peasants to high population densities and growing scarcity of farmland.

It has been noted in this study too that households under resource limitations have involuted their agriculture. With crops as part of the rotation, both of involution's principles are clearly demonstrated -- small areas can be "stretched" to support higher densities of population, and farm families can produce more on smaller plots. Of course, the potential for this is not limitless; this is well illustrated by Table 36 which shows that farms below half a hectare are on average <u>non</u>-accumulative. The actual situation of individual farms will vary with stage of family development cycle and other factors, but the general need on small farms, in present circumstances, seems to be to provide alternative sources of income for household members (Mead, 1988). Nevertheless, all farms and the national food security (Loveridge, 1988, pp. 221-44) could clearly benefit from immediate research investigating high-yielding carbohydrate crops and the technologies to produce them over the long-term, and from "agricultural extension packages" that attempt to develop new farming systems.

The study has demonstrated, in passing, the relevance of region to such factors as farm and family size and polygamous marriage. This is another way of saying at once that certain farming systems (the most important concomitant of region in this study) have higher carrying capacities, and that focusing research on improving inputs to the systems of particular regions might offer greater yield increases than nationwide strategies. Net caloric yields -- the balance of high physical yield over fairly high harvest-labor and other input requirements -- of many root crops (sweet and tuberosum potatoes in suitable environments, for example) are higher than those from grains; their fuel requirements for cooking are probably lower, too. But considerations of crop cultivation practice and improvement are at first the proper province of agronomists, and -- for want of a specific interest at present in their culture (but see Csete, 1988; Monares, 1984) -- we leave them to the appropriate authorities, while the line of this argument moves on to the potential of various farming structures, rather than farming(-technique) systems, to accumulate wealth.

Capital Accumulation

Mamdani (1987, p. 197) notes that "social differentiation...does not have to develop around differentiation in landed property. It may develop around differentiation in any one of the elements of the labour process: land, labour or its implements". Because of the singular nature of Rwanda's industry (viz., its agricultural preponderance), its workforce proletarianization is associated predominantly with employment in agriculture, and in industries that service agricultural production, and capital accumulation is related to land and labor availability. Nevertheless, Shanin (1972), too, had already pointed out that

bifurcation is only one of a number of tendencies acting on peasant farm structure; he identifies **marginalization**, **pauperization**, and **collectivization** as other possible development pathways for peasant communities.

Marginalization

As noted in Table 14, "pure" (ideal type) owner-operators are now only one out of every eight farmers, and while other owner-operator farmers may not deviate much from the pure type, the latter are apparently considerably diminished from their imputed post-revolutionary position of predominance as a proportion of all farmers. Moreover, the only times during their family development cycles at which the pure owner-operators appear to be accumulative is phase two -- married, but prior to reproduction, and phase five -- when the couple is still intact but their children have left home. Thus, they are now neither numerically predominant nor economically influential -- they have moved to the margin of Rwandan agricultural production; by contrast, employer farmers have a high potential to accumulate surplus product and their improving financial position seems to be moving them toward "centre stage" in considerations of the development process.

Pauperization

At the same time as some households use cash-crop production to accumulate their own surplus product, and some are able to accumulate still more capital by hiring in wage workers, many households are not accumulative and are struggling to survive. Making an argument about the poor and the very poor, Chambers (1987,pp.13) notes that the different poverty groups are constrained by different time horizons -- the very poor being forced to do what they must to keep going now; some richer groups may be able to accumulate small savings against future

contingency. As mentioned previously, small-area landholders in Rwanda (especially widows on small plots) and those who have neither enough land of their own nor the required attributes to command land[7] are especially vulnerable -- already making very low incomes, and unlikely to be able to improve their situation by their own efforts, short or long term.

National population pressure ought to be mentioned here because it seems to be depressing national standards -- area per worker, etc. (Clay, 1992). This is complicated by the observation that when large families reach full extension their levels of production are high, a question-mark remains against resource distributions resulting from division of the family estate. Over against that, the previous statement about family development cycle phase two suggests that postponed reproduction -- i.e., lengthening of the accumulative phase before children arrive -- has wealth-accumulating potential which, if operative on a national scale might produce a growth in national wealth combined with a tendency towards reduction in child-bearing period. Gifting of children to childless couples seems to act contrary to this possibility, but a national banking policy of easier credit to childless married couples might encourage lengthening of this period.

Collectivization

Shanin argues that peasants can use their social strengths (family farms and community) to create a new kind of society -- which does not bifurcate -- through cooperation. There are, however, limitations on this process that derive not only from local productive circumstances but also from the nature of world society and its market, and the late start that the ex-colonial countries have in development.

This dissertation has been concerned with the question of the inexorability of the replacement of peasant farmers by capitalist employers and their wage-earning employees. This argument is not advanced by a comparison of the relative efficiencies of these two forms of production, but a comparison of efficiencies bears on motivation of producers employing various land-labor combinations, and can provide an economic justification for giving political support for one form or the other -- using one measure of efficiency (agricultural income per square meter), it has been possible to compare categories of farms.

We noted a loss of efficiency above 3 hectares at present levels of technology, but efficiency for employed labor is three times as high as for family labor. This seems to suggest that larger-than-family-farms offer some development possibilities. Large capitalist farms present one set of problems alluded to at other places in this dissertation, but collective farms also deserve brief consideration, and this occurs in the section on **Policy**. The next section draws attention to resource holding constraint on raising agricultural production and standard of living.

Resource Distributions

Other studies (e.g., Lemarchand, 1982; Mamdani, 1987) have shown the influence exerted by current power holders, especially the political elite, on resource distribution but since the data available here do not permit further probing of the relationships between resource-holding and political power, it remains only to point out from the foregoing analysis which social patterns are likely to be responsive to application of political leverage, and the likely outcomes of different pressures.

The intersection of social and economic policy relates to the commoditization of agricultural produce and to the varying capacities of social categories to enter the market for stock and crops (especially beans and sorghum), and the growing market for labor and land. This study has shown that only some categories of producers manage to create a trading surplus of beans and/or sorghum -- farmers with a land surplus who are themselves employed and who hire labor, and their non-hiring counterparts, especially if they are in the first phase of their family development cycle. They are the rich by other criteria, and this trade makes them more so (Mamdani, 1987, p.208). In most other countries and circumstances where structural differentiation of the peasant stratum has occurred, it was these "kulak" classes which were able locally to accumulate production surplus and to turn it, if they choose, to farm resource accumulation - getting bigger in farming. The positions of these categories of producers in the structure of the market other than as grain sellers and perhaps as petty traders -- i.e., as rentors of land and (for some) hirers of labor -- mean that, under present economic arrangements, they are providing social goods to other potential producers in their community -- land and jobs.

POLICY

For policy purposes, the problem at issue is raising living standards for poor people, and, as this research shows, both intergenerational and life-cycle policies can assist this -- putting different emphases on the abilities of different categories of actors to influence development. This study demonstrates that both social and demographic differentiation are taking place in Rwanda and allocates roughly equal potency to each. An obvious part of structural differentiation is

resource unavailability to some, and concentration in the hands of others -- a condition whose essence is its longevity; by contrast, inequality related to life cycle factors is likely to pass away with any particular generation. Long-term (intergenerational) accumulations of inequality are amenable to certain types of policy initiatives; short-term (life-cycle) changes require quite different policy inputs -- a holding-action (or alleviating) policy may be effective in this case (Greenhalgh, 1985, p. 590).

Policy issues deriving from this research are social, economic and political. Social issues raised are related to households and families, but also to lineage and local groups. To my mind, there is a logic about treating policy (in so far as responding to the findings of this dissertation is concerned) in the order of theories about the market, self-help, government spending, and socialism -- each step implicitly having more self-conscious (political) organization of human endeavor associated with it.

Market

According to its own ideology, capitalist development needs no policy, but merely "the free interplay of market forces". No-government-involvement-in-the-economy is itself a policy and what is at issue here are the likely consequences for categories of farm households in the event of complete government abrogation of responsibility for its citizens. Capitalist theory proposes that capital will move to the areas where a comparative advantage exists, but in the resource-poor circumstances outlined in Chapter 1, Rwanda's one competitive resource is its cheap labor. Militating against its use are the vast distances any product it might produce would have to be transported to market, and

the low level of education of Rwanda's working population which makes it, **prima facae**, unsuitable for industrial employment in high-tech industries which have a reputation for the best possibilities (high value/low volume) for overcoming the tyranny of distance.

The best short-term hope for income enhancement in Rwandan agriculture seems to be migration by the children of the farming generation to sell their labor in the eastern region, and perhaps in Uganda or the Zaire copper mines (should the price of copper rise), or to attempt to take up simple commodity production on either rented or gift land in the less densely populated neighbouring province of Kivu in Zaire. It is ironic, as Faraizi (1993, p.155) notes for Bangladesh, that "peasant" households will gain the resources to survive (reproduce the peasant farm structure) inasmuch as their country's neighbours become more tightly incorporated into the world capitalist economy.

The place of the family unit (as here studied, in its household form, but perhaps also at the level of lineage) as a productive and redistributive unit, and also as a **social security system** has been demonstrated -- especially for widows and orphans. It is not clear from the data whether gifting of a young child, particularly to an old woman, implies that the donors have the responsibility to provision the household of destination. In some resource-poor cases, if this is not so, the standard of living within the host household must be extremely low. Were more information available on the quantities of household transfers (Clay and Vander Haar, 1993), levels of living would be clearer. Four widows in the sample rent-out their land, and they declared rent their major source of income. In the countries of the west, enfeebled widows attempting to live off rent income are one of the significant poverty

groups (Henderson, 1974). The sample is small here, but the pattern appears to be the same. On the face of it, widows live poorly, especially if they have small children "dependent" on them.

Self-help

As compared with most of sub-Saharan Africa, the Inter-lacustrine Bantu kingdoms have no history of village community life, nor (within the Hutu caste) of mutual assistance outside the lineage. This is complicated in Rwanda in the post-revolutionary situation by a self-conscious de-emphasis, especially during the Second Republic, of "ethnic" mix of the community and of the places (geographical sites and areas) where group solidarity will be sufficient to attempt community mutual support with any hope of grass-roots motivation.

Nevertheless, at the household level, the discussion of "kin" within farm households and "gifting" of children can be interpreted as attempts, by people who regard themselves as fictive kin, at mutual aid among households (Butler Flora, 1991, pp. 11-34). The comparative scarcity (14 cases) of non-kin residing within households may be some measure of a charitable cooperativeness, it may be -- as my earlier discussion interpreted it -- at least partly local housing for a "contracted" workforce.

To clarify the standard of living issue, it would be important to know, too, whether the growing commoditization of labor is associated with reduction of commitment to the kinship obligation to care for one's close relatives. If it is not, then perhaps the condition of the apparently isolated poor is not so parlous as it first seems, but if increasing sale of labor by the land-poor also represents -- as it does for small farmers in North America, for example -- increasing demands on

the time of producers (Fuller, 1984), we could surmise that kinship obligations will probably be one of the "unnecessary" aspects of life that is relinquished. A specific attempt to examine conditions of land and job availability in subsequent research might throw more light on how people are currently balancing labor and land within kinship obligations, and how much, and under what circumstances, they are succumbing to the pressures of the market.[8]

Government spending

The **Umuganda** too is both a community self-help venture and a public works program (and, in this context, may merit further study). At the level of intent, the Umuganda indicates that the government attempt to create useful public works by harnassing local labor surplus on public projects has potential for success, if land-owners are able to create valuable soil conservation and transport structures (contour banks, roads, etc.) by communal cooperation. On the other hand, only some farm families have labor surplus to the needs of their own farming and in general those who have most unspoken-for labor to contribute stand to gain least from enhanced value of their smaller landed property and are more in need of selling their "surplus" labor rather than contributing it **gratis** to the common weal.[9] Yet another consideration might be that large families could be in a position to support one of their members in public works and stand to gain some reasonable "added value" to their farm real estate as a result, but even here, cash remunerated labor by this household member (on an individual basis) probably offers better value to the household, at least in the short term.

The **paysannats** were clearly a direct attempt by government authorities to create relatively autonomous communities from disparate

people dislocated from the ties of home and lineage. Inasmuch as they have been successful, communitarianism can be said to have succeeded in some areas.

Poverty may be short-lived if the next generation can be prevented from inheriting it from their household of origin, i.e., if it is contained within the life-cycle and does not become a barrier to the social aspirations of a new generation. It can be thus prevented, I believe, by assisting life-conditions of both the care-giving and care-receiving generations -- the widows and the children. Rwanda's government has shown itself concerned with keeping inequality as low as possible, and I believe public spending is the most effective way to ensure that temporary disadvantage does not become entrenched inequality. I shall begin by suggesting a source of finance, and go on to elaborate schemes into which it might be invested. Certain money is available to Rwanda from aid, both Government-to-Government and Non-government Organization aid. It could be turned to improving the financial circumstances of the women and to increasing the life chances of children in their care. I shall deal with the women first.

Surplus land is not common any more in Rwanda, but the study did show some public land still available and being placed into the land market. Government edict, as well as local concern, could make this land preferentially available to needy able-bodied widows supporting children. Secondly, public subsidy of housing construction for "supporting widows" might have the dual effect of improving living conditions for this poor segment of society, as well as providing a boost to the national building industry -- the most vibrant non-farm employment sector of the national economy. Thirdly, teaching non-

agricultural skills -- or, at least, making available the wherewithal to practice non-farm skills -- especially to younger women, would increase their earning power, and also the diversity of the national economy. The used-clothing refurbishing industry has been mentioned by Hagblade and Minot (1987). Its existence is a stinging indictment of dedication to inequality in the West, but while it does exist, direction of its work-opportunities to needy widows could use a semi-charity industry to create social good as well as useful products. As a final resort, payment of a child-support pension to totally disadvantaged, especially disabled, widows can be argued to be a responsible use of public money, and might even be a means of creating a channel of deserving aid funds.

As far as assisting the orphans themselves is concerned, apart from directing all available resources to general schooling, it might be possible to endow boarding facilities in schools to provide special care to needy students, or to attach an endowment to a needy child, to be paid to whatever household is prepared to take in this additional member.

Socialism

For such a small, weak country so thoroughly within the US sphere -- especially within the "New World Order" -- it seems fanciful to even consider socialist development possibilities in Rwanda, but despite production and efficiency problems encountered by socialist enterprises in other countries, I believe their potential for absorbing labor at rising levels of productivity has not been appropriately recognized. They might be able to do that, and at the same time provide less of an incentive to produce children to supplement the farm work-force (Clay and Johnson, 1992) than occurs on family-sized farms because they create

a substitute for the social security aspects of large numbers of offspring (Harris, 1990, p. 27). Now that "cold war" propaganda can be expunged from debate about what can be learned from "eastern" and "western" development patterns, we would serve the developing countries well by taking a new look at the kinds of social life which arose from the forms of agricultural production practiced in eastern Europe and its satellites -- as well as in collectivist experiments in the First World (Weintraub, 1967) -- and by deciding whether some of them were more conducive to "real development" (Seers, 1977) than the development trajectory promoted in the West (Constance, 1988). In my opinion, Second World agriculture (Cuban agriculture, in particular) is worthy of further investigation (Moreton, 1975), from the points of view of research, of production enhancement, and of population policy.

At the end of an argument concerned with using the same Rwandan data as has been employed in this dissertation to decide whether farm size determines size of family or vice versa, Clay and Johnson (1992, p. 503) decide that the former is the guiding causality, and they go on to argue that

> [L]and reform policies that redistribute holdings more broadly among cultivating households and inheritance laws that partition holdings more equally among sons and daughters will increase the ability of the many otherwise landless and near-landless farm couples to conceive, bear, and keep alive a large number of children.
>
> By contrast, insuring land ownership rights to women, particularly widows or divorcees, will diminish their feelings of uncertainty and the need to rely on a large number of children to support them as they age (Clay and Johnson, 1992, p. 503).

The consequences of this finding can also be pursued somewhat differently. We can argue for communal ownership of land with the cooperative as the provider of labor supply in periods of peak demand

and of a social security base from which out-of-season surplus labor could be available to seek paid employment or to fall back on the support of a large-scale communal farm (Worsley, 1970). Out of this, we might foresee an alternative, collectivist solution to the demand for labor and a foil to the need for large families as both labor supply and social security insurance.

The argument about **umuganda** labor of a few pages ago has relevance here, too. Clearly, land accumulation to create more efficient and communally-supportive holdings releases labor which (again) might be turned to land enhancement if the released workers could depend on the communal holding for daily sustenance and social security. This seems to depend on two things: improved efficiency of production of larger farms (which may require additional "modern" inputs to sustain any yield increase, and external input both to provide public planning of where this surplus labor can be best directed (in designated Umuganda works) and to provide tools and minimal maintenance for these workers until the structural adjustment of agriculture moves to a new stage. This is another potential claim against international aid.

It is at this point in policy making that "the agrarian question" develops its full impact: What structure of agriculture shall to develop for our country? As usual with policy, the question has to be couched in tandum with its rejoiner: What do you hope to achieve?, and placed within the political context: What will the big powers allow us to do? For Rwanda, the analysis of efficiency has been formulated presupposing an answer to all three questions: maximize production while attempting to keep social inequality as low as it appears to be at present.

At the very least, Clay and Johnson (1992, p. 503) deserve to be interpreted in the broadest possible context when they conclude the above quote by saying:

> The perceived need for social security on the part of couples in small holder agricultural systems, and the strategies that these couples engage in to ensure their sustenance as they age is still an undeveloped research question.

NOTES

1. This is demonstrated by the facts of the young (? and energetic) being more likely to rent-in, and by the general recognition that, despite the small excesses of land some farmers control -- which was mentioned toward the end of the previous chapter, farmland is in limited supply overall in the country. No data are available from this survey to indicate that renters are prepared to bid against each other to gain access.

2. Not to complicate the main point in the text, it has already been noted that surpluses of food crops can also be sold for cash (Little and Horowitz, 1987).

3. Haugerud (1988, p. 170) in Kenya comments "How households that underproduce survive depends in part on sociopolitical structures that link them to households that overproduce"; and later (p.175) that relationships between households define, and become defined by, "whether producers make that [surplus] product available to others as a purchased commodity, as a gift, or as in-kind payment for labor."

4. Awiti (1973) shows results similar to Mamdani's, but he points out also that the other investments of the rich assist their accumulation -- extraction of wealth from those with few property resources to swell the riches of those who already have property.

5. Ideally, from the point of view of those who rent land, the wealth they generate from doing so would be turned to land purchase which would then remove their dependence on the land market and from their being subjected to surplus value stripping through "rack renting". Two problems appear to face them. As mentioned earlier (Kampayana, pers. com.), land does not easily become available for purchase under current conditions -- although this may change. Moreover, the majority of renters are struggling farmers whose intent is not to grow rich, but to gain access to enough land on an annual basis to provide their family subsistence (refer Table 3.16). The **entrepreneurs** mentioned in the previous chapter are one group who are attempting to break the bonds of this rent trap, and for them the possibility of wealth accumulation seems to provide an incentive.

6. Robertson and Hughes (1987, pp. 434ff), with regard to a similar situation among the Ganda of Uganda.

7. I want to call this **reputation** -- and I expect it would be associated with family or lineage wealth, prestige, and power; "friends and 'friends of friends'" (Boissevain, 1974); "credit rating"; etc. Haugerud (1988, p. 177) calls them "...socially defined channels of access to land and labor...".

8. Recent studies in Tonga (James, 1993) and Indonesia (Stoler, 1988) offer examples of the ways in which more well-to-do landholders side-step obligations, when they want to introduce a market. In the Javanese (Indonesian) case, landlords have "traditionally" been

obliged to offer in-kind payment to village women hand-harvesting paddy rice in large work teams (a technique the author argues implied considerable community wealth redistribution). More recently, the landlords have hired outsider contractors who bring their own workforce and entirely displace the female workteams; but after a short number of years, the innovator landlords dismiss the contractors and feel quite justified in now hiring only small groups of local women to do their harvesting, for wages.

Butler Flora (1991, pp. II-34) notes Tienda (1980) with regard to fictive kin contributing to household wealth, but points out that "it is not the labor performed by each household member that is critical, but the labor relations under which they are performed that influence whether members of the household" contribute willingly to household accumulation, or rebel against it. This issue too could clearly be another avenue for fruitful further research.

9. Mamdani (1987, p. 217) points out that "peasant labour is demanded for a whole series of 'community' projects, as their pockets are emptied to comply with equally compulsory demands for 'contributions' to another assortment of 'development' projects. The air is charged with calls for 'self-reliance' as 'fund-raising' campaigns abound". See also, Porter, Allen and Thompson (1991).

APPENDICES

APPENDIX A

Comparison of Sample Size Distributions

MINIPLAN Budget Study and Non-Farm Strategies Survey

Income Categories (F Rw)	Cum. Proportion of Hholds.		Aver. Hhold Size		Farm Size (Operated Area)	
	MINIPLAN	NFS	MINIPLAN	NFS	MINIPLAN	NFS
LOW TO 10000	.8	.8	1.0	2.9	.13	.26
10001 TO 20000	4.5	4.4	2.1	3.3	.57	.55
20001 TO 30000	13.6	10.7	3.2	4.0	.57	.57
30001 TO 40000	30.3	21.4	3.9	4.4	.84	.73
40001 TO 50000	46.5	32.0	5.8	4.8	1.08	1.00
50001 TO 60000	59.9	40.4	5.5	5.7	1.26	.98
60001 TO 70000	69.2	49.1	5.5	5.3	1.35	1.03
70001 TO 80000	76.7	58.3	5.8	5.5	1.49	1.11
80001 TO 90000	83.5	64.5	6.4	5.6	1.64	1.26
90001 TO 100000	86.8	71.7	6.7	5.9	1.69	1.35
100001 TO 150000	97.1	88.5	6.2	6.4	2.03	1.55
150001 TO 200000	99.2	96.1	7.8	6.7	3.13	2.15
200001 or MORE	100.0	100.0	8.1	7.9	3.80	2.77
TOTAL (1019)	100.0	100.0	4.9	5.5	1.28	1.20

Source of MINIPLAN Statistics: Loveridge, 1988, p.159.

APPENDIX B

Households

This addendum briefly makes a problem of the sampling unit, the household, and attempt to operationalize it in terms of the occupants, and their relationships to each other.

In societies where the nuclear family is less of a norm than in the west, the task of family categorization is made easier if households are examined and classified according to the variants of family type they contain. Chart App2 classifies 14 household types, by making the following assumptions: a) there is at least one person in the household who will answer to being "head"; b) this place may be the domicile of a family; c) the four types of potential occupants are men, women, and children -- family members, and "others"; and d) the categories "nobody" and "other only" are absurd.

Categ.	Attachment	Gender	Children	Other occupants	
1		Male	only		Household
2 a	Unattachd	Male with no	children	(& other)	Household
b	Unattachd	Male w	children	(& no other)	Household
c	Unattachd	Male w	children	(& other)	Household
3		Male-female	no children	(& other)	Household
4		Male-female	only -		Household
5		Male-female w	children	(no other)	Household
6		Male-female	children	(& other)	Household
7			Children	(no other)	Household
8			Children	(& other)	Household
9 a	Unattachd	Female w	children	(& other)	Household
b	Unattachd	Female w	children	(& no other)	Household
c	Unattachd	Female w	no children	(& other)	Household
10		Female	only		Household

Figure 7 Household Structures.

In fact, no households are headed by children, and there are thus twelve extant household types, distributed as shown in Table 50.

Households headed by men without wives are few, especially when compared with households headed by women without husbands -- which are 7.5 times as frequent. Most of the characteristics in the table increase with increasing household complexity, but the four households which contain "men, children and others" consistently upset this regular pattern. They are especially productive of sorghum for sale, and also have large numbers of coffee trees. Precisely why they should be so wealthy is not immediately apparent, but they do have unusually large farms. Three of the four are "capitalist farmer" households; two have household heads older than 70 years; one head is polygamous and the other three are widower; two rent-in land while the other two farm only their own land; and one (a farm in the eastern zone) has a workforce of 12 adults. All the additional members of this household are kin to the head -- apparently the children of his children. It seems that a small sub-sample size has caused the anomalies here.

The only households which produce a small surplus of beans for sale are the childless couples. As was shown to be the case in Table 15 the households with the largest numbers of occupants, and in general the largest farms, also grew the largest numbers of coffee trees.

Table 50. Farm and Family Characteristics by Household Structure.

Categories		No.of Cases (%)	Area Farmed (Ha)	No. of Persons Childr.	Adults	Ave. FarmInc. (FRw)	Net Sales of Ave.No. Coffee Beans (Kgs)	Sorghum (Kgs)	Trees
1	M+W-C-O-	0.9	0.67	0.0	1.0	55,763.3	-44.6	-2.7	18.7
2 a	M+W-C-O+	0.4	0.95	0.9	3.1	72,181.6	-57.0	-22.5	35.7
b	M+W-C+O-	1.3	1.16	0.9	2.3	73,783.7	-33.8	-21.8	37.9
c	M+W-C+O+	0.3	2.16	3.6	3.0	96,600.5	-9.9	161.9	173.9
3	M+W+C-O+	2.7	1.33	1.3	2.4	88,401.2	-11.3	-48.5	77.7
4	M+W+C-O-	3.0	1.06	0.1	1.9	68,573.1	3.2	-3.8	85.0
5	M+W+C+O-	56.7	1.22	3.3	2.8	89,924.0	-40.4	-25.2	112.0
6	M+W+C+O+	11.3	1.61	3.3	4.1	120,856.4	-51.0	-90.1	121.7
9 a	M-W+C+O+	6.3	1.37	2.4	3.0	80,318.8	-18.6	-61.8	59.3
b	M-W+C+O-	10.3	0.92	2.4	2.2	64,307.6	-21.2	-35.4	70.0
c	M-W+C-O+	4.9	0.73	0.9	1.8	46,197.7	-19.9	-10.1	51.2
10	M-W+C-O-	1.9	0.56	0.0	1.0	33,270.3	-4.4	-0.6	10.3
	Total	100.0	1.20	2.7	2.7	85,707.9	-34.3	-33.8	97.0
Eta			0.21	0.51	0.50	0.29	0.13	0.12	0.16
F. Sig.			< .001	< .001	< .001	< .001	0.13	0.25	< .01

Legend

M+W-C-O-	Male present	Woman absent	Child(ren) absent	Other absent
M+W-C-O+	Male present	Woman absent	Child(ren) absent	Other present
M+W-C+O-	Male present	Woman absent	Child(ren) present	Other absent
M+W-C+O+	Male present	Woman absent	Child(ren) present	Other present
M+W+C-O+	Male present	Woman present	Child(ren) absent	Other present
M+W+C-O-	Male present	Woman present	Child(ren) absent	Other absent
M+W+C+O-	Male present	Woman present	Child(ren) present	Other absent
M+W+C+O+	Male present	Woman present	Child(ren) present	Other present
M-W+C+O+	Male absent	Woman present	Child(ren) present	Other present
M-W+C+O-	Male absent	Woman present	Child(ren) present	Other absent
M-W+C-O+	Male absent	Woman present	Child(ren) absent	Other present
M-W+C-O-	Male absent	Woman present	Child(ren) absent	Other absent

APPENDIX C

Families

Categories of Kin

Within the unweighted sample, the 260 non-nuclear households contain 457 individuals, whose relationships to the heads of households in which they live are designated by the survey as:

male parent of the head-of-household	none
female parent of the head-of-household	three widows
parents of the spouse	none, of either sex
male sibling of the head-of-household	three in three households
female sibling of the head-of-household	15 in 12 households
sibling of the spouse	two sisters in two hholds
other relative of the head-of-household	416 and
non-relative of the head-of-household	18 in 18 separate hholds

Apparently, parents of the male household head only come to stay if they are widowed; parents of the spouse never live in their son-in-law's house. One of the widowed mothers lives in the household of her married son, but she is accompanied by her unmarried adult daughter, the household head's sister. Of the other two mothers-of-household-head in residence, one, a widow of 92, is the only other person in her son's household apart from his wife and three of their six children. They are a different kind of three-generation family to the one described in the text.

The situation of the other widowed mother is rather more complex: aged 80, she lives in the house of her civil-servant son who has 8 children -- who all live at home. Also in residence is an 18-year-old man, unrelated to the household head, who tends the family cattle; the household head has no sons old enough to work, even at cattle-minding. Moreover, the employment status of the head means that he is not only wealthy enough to own cattle, and employ a youth to tend them, but also

-- probably -- that his own sons will have access to educational opportunities that will make it unlikely that they will ever have to tend cattle as work, even for their father. The household also contains a 65-year-old widowed kinswoman who still farms (and who might be a sister to the elderly mother), and a girl of 10 who is, perhaps, a grandchild of the 65-year-old -- a total of 14 people in all. This is, then, a supplemented three-generation family; perhaps it is two three-generation families within the one household. In all three cases where the mother of the household head has come to reside, the household head is also polygamously married.

Polygamous wives, by contrast, usually live one to a household, but two households each contain two wives of the same husband. One household head reported he has three wives -- but only one in the household of interview.

The NFS sample has five unmarried household heads, but only one, a single man, aged 26, lives alone. A 46-year-old woman has two teenaged children, one of whom still lives with her mother. I classified this woman in the family cycle analysis as if she were a deserted wife. Another single woman, aged 19, lives with her unmarried sister, aged 17. One of the single men (aged 29) shares his residence with his three sisters -- two of them are single, one (aged 26) is deserted; a child (aged 4), whom I intuit to be her son, also lives in the household. Another single man, aged 28, has two of his sisters living with him and in this case, the one who is deserted is accompanied by three children.

In a few cases, a kinswoman with children (a niece, perhaps) is taken into a family, as if she were a daughter from a broken marriage. In two cases, the sister of the household head's wife, a child, lives with her sister's family of procreation, presumably either <u>for</u>

educational convenience, or because of trauma in her parental home.

In the case where the male household head (aged 53, whose wife is 48) took in both his brother (aged 13) and sister (aged 9), he also has three of what I presume to be his grandchildren living in the augmented family arrangement. One could safely surmise that his own father is dead and that his sibling's are orphans. In a second case, an 88 year-old widow whose 33 year-old daughter has left home, now has her 65 year-old "kid brother" living with her. In the third case, the household head, a 30 year-old widow and her three children, is co-resident with her 27 year-old, single brother.

In the first case of a household head's sister living with the family of the interviewee, the separated sister (age 33) of a 35-year-old man with a wife and six children has come to his house with her own children (ages 12 and 1). In theory, there are two families at issue here, and since neither woman is near 45 years old, both of their families are potentially capable of further expansion. The case where a widowed 80 year-old lives with her 78 year-old brother's family after all children have left home is clearly a supplemented nuclear family, and she has returned to her patrimony -- apparently once her late husband's estate has been dispersed. A young woman, aged 22, with her two year-old daughter has been deserted, but has brought in her 13 year-old sister and another 13-year-old girl, probably the sister's friend, who designates her work as "housewife".

Further examples of two families in one household are the case of two "separated" sisters -- the head-of-household with her three children and one more child who seems to belong to her sister; and an elderly widow (aged 62), her children gone, who would be living alone except that her sister (aged 43) and two children live with her. A young man

and his wife and three children have his teenaged sister living with them, and in another case the live-in sister is a 48-year-old divorcee.

All these cases of women living in the household of a man from their own family (or lineage) are interesting because they seem to reflect the practice -- only recently being called into question (according to informants) -- that women received no part of their parental estate once the bride-price had been paid, and presumably their only recourse to it in bereavement or destitution is by a claim against kinship to a current land-holder.

A surprisingly high number of cases (35.1 percent) of additions to households occurs where the householder interviewed in the NFS survey is an aging woman, made single by union breakdown, or by death of her spouse (but none of the four divorcees). Where a woman is left in charge of a household, very often others will move in -- in fact, of non-polygamous female headed households, 53.1 percent have "others" resident.

Family/household clearly acts as a local social security system -- "widows and orphans" are folded into its protective cover; there are features of "cottage industry" attached to it, as well. Equally clearly, if additional members of households are to be classified at all, the big issue arising from this table is the need to classify the 416 "other-relatives" of household head.

Other Kin

In households which contain the head and his/her mate, and a number of their children, if one of the resident children of the head is an adult woman who is an unmarried mother or is separated, divorced, deserted, or widowed, the children who are "other relatives" to the head appear to be also the children of these "returned" daughters. Cases

like this represent a significant category -- 12.3 percent of the "other" residents. I infer that these grand-children of the head have accompanied their mother to her parental home in a time of need. A less frequent variant is a son of the head-of-household returning from one of these types of marital breakdowns.

Another frequent category (6.4 per cent) of "other relatives" occurs when an old couple, or a single survivor from the parental generation, has none of his and/or her children still at home, but instead provides a home for a "gift child" -- probably one of her/his own childrens' offspring -- (i.e., a grandchild of the householder in question) probably both as a solace in loneliness and a helper for a time of growing infirmity -- a singular example of this is the 84 year-old widow who lives with a related child of 8 years, who might be so far removed as to be her great, great grandchild.

If each of the family types described in the previous two paragraphs is enumerated separately [1-2-3 Generation and 1-X-3 Generation households], they fall into four categories -- cases where two grandparents are in residence, and those where only one grandparent remains.

The other relatives/presumptive grandchildren may be one of three types: totally dependent children, pre-teenagers, and young adults -- up to eight individuals in a household. Pre-teenagers are presumably intended to mature into the responsibilities of household support as the grandparents decrease their own work involvement. There is a suggestion that each of these household arrangements places the children to take advantage of better educational opportunities or a greater share of the grandparental estates.

APPENDIX D

Sources and Suppliers of Land and Labor

Every household in the unweighted sample had a claim over land -- they were chosen on the basis of their land-holdership -- and all attempted to gain access to labor to work it.

In preparation of the sampling frame, the research team determined that less than two percent of rural households owned none of the land they farm; often these households did not own the house in which they lived either. The data reveal, in fact, that some first phase and some last phase of family development cycle predominate in the poor quality housing. In addition, the four households that do not contain married couples (or their remnants) -- Family Development Cycle category = 0 -- are generally poorer in quality of housing and have low income.

It seems fair to expect that the landless would be less likely to be married, and that they even moreso would live in poorer housing, and have lower income than their landed counterparts. The data record area operated (not owned), and so these **abacancuro** (the landless) are lost to our investigation as a separate category, but later -- in Chapter 4 -- the matter of landlessness is treated in some detail.

In the survey, the questions that relate to land renting (-out and -in) record first and second choice of recipient (source) of rented land to the questions:

Do you rent-out (or -in) land, free?
Do you rent-out (or -in) land ?

Both the householders who revealed that they make land available to others, and those who take up land made available by others (free and rented), indicated that there are a number of categories of preferred

persons to take up (provide) available land. The survey lists these as

Brother
Other household member
Neighbor
Friend (not neighbor), and
Other.

The "other household member" category was created out of the data by the SESA team: some household heads must have indicated that members of their household brought in land which is now treated as if the household head owns it, or that some household members use land that cannot be regarded as now under the control of the household head. The other categories are, however, not mutually exclusive -- e.g., "neighbor and brother" and "neighbor and friend" can overlap -- but I have used them as if the "brother" and "other household member" refer to the practice of making land available within one's lineage (although "other" may contain responses refering to this, as well, and a household member could be non-lineage); the other three categories are treated as non-kin.

Renting-out Land

One-hundred and fifty-two households rent-out land, and 14 of them report information on more than one tenant. Almost two-thirds of these 166 transactions are to non-kin, and almost a third claim that they rent-out land for reasons of "friendship". Two-hundred and eighteen households make land available free -- 17 to more than one recipient (N = 235); again, two-thirds of transactions are to non-kin. Of the 147 who responded concerning the remuneration that they receive as landlords, sixty-two percent said they receive cash, and another seven percent receive some cash in association with produce and exchanged work.

Thus, for holders of surplus land, one parcel in three seems to be put with kin -- apparently in satisfaction of a claim against lineage, and remunerated either in obligations of various sorts (I infer, despite the respondents' having proposed they get it "free"), or in cash or kind. By contrast one-third is put into a cash market where it is taken up by unrelated households suffering from a land deficit -- which may include households who "own" no land at all -- and is remunerated mostly in cash or kind. Another one-third is "free" to non-kin.

Renting-in Land

Of the 417 households who rent-in land, four-out-of-five (N = 333) claim that they rent-in because of a household insufficiency of land; another one-in-eight claim that they need land of a different type (more fertile, "river-bottom", etc.), or that they must fallow their own land. Of the 446 parcels of rented-in land accounted for, three-quarters were obtained from non-kin, and an equal proportion was remunerated in cash. Another five percent paid some cash. The renters-in of land who say that they do so because they want to produce a surplus (just over one-in-twenty of those who rent-in) present an interesting case in terms of analysis of the development of capitalist farming. The Dissertation returns to them in Chapter 4.

Almost thirty percent of households (N = 304) claim to have received some land free. Just over half these farmers received the free land from kin, but thirty-percent got it from neighbors and friends; and farmers in early phases of their family development cycle are the most likely recipients.

Land could be available to potential renters not only from other (land surplus) farmers and nonfarming landholders (widows and absentees, for instance), but also from the local government authority; but in only

one-percent of cases where land was actually rented-in did it come from this source. By contrast, almost one-parcel-in-seven which was obtained free was made available by a government authority.

One gains an impression from the literature on Rwandan land availability (Anon., 1987b; Codere, 1973; Lemarchand, 1987) that "common lands" are now rare. This result speaks, by contrast, of one land transaction in 16 deriving from a local government authority. Prima facie, this seems to be, under the circumstances, considerable public involvement in the land market. Possibly, the public land parcels were only small, or low-quality lands, but the data are inappropriate to deciding this issue. They do show, however, that free public land is disproportionately available in the north central and eastern zones. In the former case, it goes especially to families in their extension phase; in the latter, more to families which have begun to contract.

Limited availability of public lands is only one of the mounting indications of rising population pressure on the land, and this pressure puts additional strain and on the labor-absorptive capacity of other industrial employment in Rwanda. Aricultural production occurs within land settlements, and agricultural estates, but it is carried out predominantly through small-holder agriculture. The small State-owned mines are subject to fluctuating world market prices for low grade cassiterite ore (Nyrop, 1985), and industrial development is not great despite an active government campaign of import substitution (Ngirabatware et al., 1988). Nevertheless, non-agricultural employment is found by considerable numbers of people.

Interviewees are characterized in the survey response as working in a variety of occupations as their first and second "jobs" (see Table App4), and the 314 artisans/craftspeople who responded are further

categorized by type of trade or craft. Clearly the highest proportion of all workers make their living as "farmers", or as workers ancillary to agriculture. Among the one-third of non-farmers who are artisans, just over one-third are involved in the building industry. The strength of business -- one in six of non-farm workers -- is also noteworthy, especially as a secondary occupation.

Table 51 Employment of the Working Population.

Activity

	Principal (+Sec)	Total
	(% of all workers)	
Farmer	90.5	81.2
Non-agric	9.5	18.8
Subtotal	(% of Non-ag.)	
Farm Hand	10.2	10.0
Cow Herd	6.2	4.1
Family Helper	5.0	3.0
House-Wife	3.2	1.7
Self-employed Artisan	14.0	31.8
Salaried Artisan	3.5	2.3
Civil Servant	15.2	7.4
Other Salaried	5.2	2.7
Laborer	12.2	10.4
Businessperson	11.7	17.4
Miner	0.5	0.4
Other	13.0	8.8
Subtotal (% of Sample)		
Student	15.0	
Unemployed	25.7	
Missing Cases	-	
Total	7117	

Artisanal/Craft (% of Artisans)	
Basket Maker	22.4
Builder/Construction worker	19.1
Tailor	10.7
Artifact Artisan	10.0
Woodworker /Furniture Maker /Carpenter	10.1
Brick Maker	7.0
Mechanic	1.0
Charcoal Maker	0.6
Potter	0.3
Black-Smith	0.3
Other	18.5
(% of Workers)	34.1
Subtotal (% of Sample)	4.4
Missing Cases (% of Sample)	95.6

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