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## Agricultural Productivity Gaps: A Case Study of Male Preference in Government Policy Implementation

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Studies rarely examine the differential impact of policies on the sexes or draw implications about differentiation for the productivity of sex groups. Social scientists typically treat women's interests as automatically tied to those of men by utilizing the family as a unit of analysis.<sup>1</sup> The failure to recognize women's interests in, for example, societies with separate spouse economic activities or separate spouse residences as a result of migration (and thus female-headed households), significantly clouds our understanding of the government distributive process.

It is widely recognized that in many parts of Africa women are important contributors to the agricultural economy. In addition to their domestic labour contributions, women plant, weed, harvest and trade crops.<sup>2</sup> Boserup has designated certain parts of Africa as 'female farming systems', where a large part of agricultural work is done by women.<sup>3</sup> This economic participation, often combined with female control over the fruits of their labour, may account for the economic autonomy of many African women, the extensive contribution they make to household maintenance, and their relatively high status.<sup>4</sup> Yet changes in technology appear to be associated with decreasing participation by women in agriculture and their productivity is alleged to decline in relation to that of men.<sup>5</sup> A result is a widened gap in productivity between the sexes, and a tendency toward female economic dependency on men. Although this tendency appears to be borne out in general historical perspective and in cross-sectional aggregate analyses of women's participation in various stages of economic technology,<sup>6</sup> there is very little evidence on specific factors which contribute to declining productivity by women.

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Of general interest in this paper is the role of government in creating, maintaining or actively perpetuating this tendency toward productivity gaps between the sexes. In particular, I shall document the extent to which governments channel agricultural services to men at the expense of women or of farms managed by women, in a sample of farmers from western Kenya.

#### AGRICULTURAL POLICIES: HISTORICAL AND CONTEMPORARY PERSPECTIVES

A common methodological problem in policy analysis is to determine whether policies produce intended (or unintended) effects on a targeted populace, or whether change results from other environmental factors subsumed under socio-economic change. In reality, these two analytically distinct processes are hopelessly intertwined, as they interact with each other as well as on the clientele of a bureaucracy. A further problem is to determine how long a policy should be in operation before its effects can be measured. A precise impact study is longitudinal: it measures baseline characteristics of a sample prior to the intrusion of a policy change and then, after a designated time period, utilizes the same instrument to measure change. Many differences could be attributed to the policy change, though the sample is still affected by external distorting variables. Another measurement technique provides a controlled comparison of two units, alike in all ways except for the policy change. Of course, no 'control' unit is identical to another; it is a different environment, with different people.

This analysis consists of a controlled, cross-sectional comparison of two sublocations in Kenya,<sup>7</sup> alike in all features with two exceptions. Both areas are populated by the Idakho subgroup of the Luyia people. Climatic rain and soil features are similar, and the same proportion of men work away from home, leaving women to manage the farms. Economic standing, according to the measure developed,<sup>8</sup> resulted in the same mean for both areas. Finally, both sublocations were subject to similar mission influences and schools were introduced in similar time periods. The sublocations vary in the amount of agricultural services available, and in the density of population. The average sample farm size is 1½ acres in the densely served sublocation, Shitoli, and 3 acres in Shikulu sublocation.

To compensate for the non-longitudinal design of the study, farmers were asked factually-oriented questions about their past

agricultural behaviour and their perceptions of when and why they had changed it. Questions were also asked about their awareness, receipt and evaluation of agricultural services. To support the notion that services, in conjunction with land density, cause women's productivity to decline as compared to that of men, I rely on a comparison of productivity measures in the sample, on historical evidence which documents a preference for serving male clientele in initial policy planning, and on the advantage of the densely served unit relative to other areas.

Initial colonial policy intentions, enforced by a meagre staff in the 1920s, are evident from the statement by Lord Lugard, which was reprinted in Kenya Colony reports:

Since men alone tend oxen in Africa, the result, as I have elsewhere said, will be to replace female labour in the fields to a large extent.<sup>9</sup>

Government contracts were generally made by men to male heads of households.<sup>10</sup> Women were given belated recognition in the 1950s, though women's policy services were confined to domestic training, with only slight attention to vegetable gardening. These services were staffed by a handful of women assistants.<sup>11</sup> Since the inception of the agricultural administration, Shitoli has been more intensively served and, by definition, more intensively affected by male-oriented agricultural services than Shikulu.

Research was conducted in Western Kenya,<sup>12</sup> a small-scale farm area designated as 'high potential' in agriculture by the Kenya government because of its soil, climate and rainfall. Maize and beans are the most common crops grown; during the last decade, hybrid maize seed has been introduced which can potentially double the output per acre if the proper husbandry techniques are utilized. Higher productivity per acre is critical, given the land density of the entire southern half of the district where this research was conducted.

Informing farmers about hybrid seeds and practices has been a major activity of the Ministry of Agriculture's field staff, who are assigned to each administrative hierarchical division.<sup>13</sup> The agricultural staff have also promoted the growth of hybrid beans, 'European vegetables',<sup>14</sup> passion fruit, sugar cane, and coffee. Maize and beans are grown for family consumption, and also serve as major cash crops in the district.

The agricultural field staff make advice available in four forms. The most common service is an individual visit to farm households to provide advice about crops or information about other services.

These visits are generally unsolicited, although prestigious farmers occasionally request staff to visit their farms. Secondly, the agricultural staff provide group training by lecturing about and demonstrating farming techniques on small plots in the community. Third, the staff recruit farmers for Farmer Training Centre courses which are one-to-two-week specialized programmes in crops or farm technology. Approximately one-third of all trainees have been women,<sup>15</sup> although women are largely channelled into home economics courses rather than agricultural courses. Finally, the staff provide information on government cash loans that are available to farmers. Loans have increased in importance only in the last few years due to the recentness with which land reform was completed. Loan guarantees are usually in the form of land title deeds which, in the area of my research, became available in 1973.

### THE DATA

Previous ethnographic research documents women's extensive participation in agricultural work and decision making. In Western Kenya women plant, weed and harvest crops, while men (who remain in the rural areas) clear land prior to planting, plow with oxen, and occasionally help the women in the fields.<sup>16</sup> Women's work has increased in the last few decades as a result of migration patterns, whereby men seek employment in distant areas. Migration frequently spans a man's working life, and distance prohibits frequent visiting. Consequently, women not only work on farms, but also manage them and are de facto household heads.

A full 40 percent of the sample were female-managed farms, corresponding closely to 1969 census figures on the number of female household heads for the district.<sup>17</sup> Managers are defined as persons in day-to-day charge of the farm, and are distinct from farm owners who are invariably men, given the recent land reform which has institutionalized men's names on land title deeds. The sample has been broken into two farm management types. Female-managed farms include those in which women's husbands work or live away from home, or are deceased. The other category is labelled jointly-managed farms, and includes all farms with a man present. Usually joint management indicates a husband-wife team, but occasionally it reflects a corporate inter-generational management pattern, in which farms have not yet been parcelled out to sons.

Table 1. Farms Not Receiving Services by Farm Management Type\*

	Female-Managed	Jointly-Managed	
Farms NOT visited	49%/42	28%/36	**N = 212 Q = .42
No Household Member Attended Demonstration Plot	62%/52	46%/59	***N = 211 Q = .31
No Household Member Trained	95%/80	80%/102	**N = 211 Q = .66
No Loan Information, Application or Receipt	99%/83	86%/109	**N = 211 Q = .86

\*Because this is not a random sample, and thus does not comport a normal distribution, the ChiSquare Tests of Significance are technically not appropriate. The size of the sample may mean it approximates normality; thus, significance tests have been included for exploratory purposes. A total N of less than 212 indicates missing data. 'Q' denotes Yule's Q, a statistical measure of association. Another more stable measure of association, TauB, is added in a later Table.

\*\*Significant at the .01 Level

\*\*\*Significant at the .05 Level

Table 1 substantiates the extent to which services are channelled to farms where there is a man present, and designates farms *not* served by the various services. Women managers have significantly less access to these services, particularly to the more valuable ones of training and loans. While training and loans are not widespread in their availability, access by sex is extremely differentiated. Farms with a man present are four times more likely to have a household member trained, and fourteen times more likely to have acquired, applied for, or have detailed awareness of loan application procedures.<sup>18</sup> Women on farms with a man present benefit from male presence, but the extreme disparities between farm management types severely constrains those women who manage farms alone. Although not documented here, these sex differences hold under a number of controls, including economic standing and land size.<sup>19</sup>

Agricultural staff orientations towards farmers conform to a diffusion of innovations model.<sup>20</sup> Given the scarcity of administrative resources and the resulting inability to serve all farm clientele entitled to services, agricultural staff tend to focus on innovative farmers, or those who seem receptive to new ideas about farming techniques and

crops, i.e. the 'progressive farmers', on the assumption that new ideas will naturally diffuse to other members of the community. This approach has been criticized for disproportionately concentrating services on wealthy farmers (who are not necessarily innovative) who have sufficient cash and land to experiment with new ideas.<sup>21</sup> Critics have questioned whether agricultural staff are able to increase productivity, in view of their low level of technical information and the constraints under which they operate. Serious questions are raised about the ability of instructors who respond correctly to only one-half to three-fourths of agricultural questions.<sup>22</sup> While the extent to which staff directly cause farmers to innovate is uncertain, there is little doubt that they support innovative behaviour through encouragement and through the provision of knowledge about and contacts for other services. One cannot dismiss the fundamental advances that agricultural staff have helped to make in the last few decades, such as the use of better tools, oxen plowing, planting in lines, and fertilizer application. There is another reason to focus on available staff and services; it is the factor most susceptible to controlled and planned intervention.

It cannot be assumed that concentrating on 'progressive farmers' or wealthier farmers will automatically exclude women managers. Research in other parts of Kenya has located women managers in the progressive farmer category.<sup>23</sup> In the sample, women managers were found to span all economic categories in the economic standing scale developed, and the mean score was identical for female and jointly-managed farms. Women acquire cash from a number of sources: they sell produce, brew beer, and some obtain remittances from husbands working elsewhere.

Despite its shortcomings, the progressive farmer model has merits in settings where administrative staff work under financial constraints. Staff focus on innovators without regard to their sex, yet the interaction of change agents and innovators may be affected by the social context. Over 98 percent of the agricultural staff in this district are men; the society is characterized by communication between men on governmental matters and by symbolic male authority over households, despite extensive male absence in rural areas. This social context may thwart the natural diffusion process.

Three important attributes of farm innovativeness are easily observable and identifiable to the agricultural staff, and will be used as surrogate measures of productivity: crop diversification, farm income-earning orientation (as distinguished from subsistence

orientation), and timeliness of innovation.<sup>24</sup>

The purpose of this section is to illustrate how services are withheld from a capable clientele, the women managers. Rather than support those farmers who independently innovate — key targets according to the diffusion model — staff tend to disproportionately channel services to farms where a man is present.

Diversification of crops enables farmers to spread risk in case of crop failure, to market crops in a staggered fashion, and to experiment with a variety of crops for possible farm changes. Crop diversification is promoted by the agricultural administration and if practiced, is immediately evident to field staff making their rounds. Table 2 shows the proportion of farms receiving services, by farm management type, controlled for the number of crops grown for cash. Female managed farms are only slightly more likely to be monocultural than are jointly managed farms.<sup>25</sup> Female managers

Table 2. Diversification: Cumulative Service Scale by Farm Management Type, Controlled for Number of Cash Crops Grown\*

	0-1 Cash Crop		2+ Cash Crops	
	Female	Joint	Female	Joint
0-2 Services	92%/46	72%/50	63%/22	50%/29
3 Services	8%/4	22%/15	34%/12	29%/17
4-5 Services	-	6%/4	3%/1	21%/12
	N = 50	N = 69	N = 35	N = 58
		N = 119		N = 93

\*Items on the cumulative service scale include 1 visit, 2 or more visits, demonstration plot attendance, farmer training, and loan application or receipt. The cash crops include the hybrid maize-beans (interplanted) combination, coffee, European vegetables, passion fruit and sugar cane.

A three-way, rather than four or five-way breakdown, was made for table manageability. Moreover, interest lies in differential access to a *comprehensive* set of services. Though services are not equally valuable to farmers, it is assumed that access to a greater number of *varied* services is of higher value to farmers.

who demonstrate cash crop interest by their adoptive behaviour are still clustered in the low service categories. Over a quarter of farms with a man present, in which only one cash crop or less is grown, have access to a wide array of services (3 or more), whereas only one-twelfth of female-managed farms have similar access. Among farms

with two or more cash crops, slightly over a third of the women managers have access to 3 or more services, in contrast to the half of jointly-managed farms. Even in that category, a minute proportion of female managers have four or more services extended to them.

This phenomenon can also be examined by categorizing farms according to whether they are consciously income-earning enterprises, a conception promoted by the agricultural administration. In this study, a subsistence farm is defined as one where surplus was not grown or sold on a regular basis. Income-earning farms are of various types, including farms where a crop surplus is regularly sold or is used as a base for brewing beer or a trading business. This category also contains farms with a plowing business. Table 3 shows a wide array of service delivery to different types of farms, both subsistence and income earning, by farm management type.

Table 3. Cumulative Service Scale by Farm Management Type, Controlled for Economic Orientation of Farm

	Subsistence		Income-Earning	
	Female	Joint	Female	Joint
0-2 Services	80%/48	62%/42	80%/20	63%/37
3 Services	20%/12	31%/21	16%/4	19%/11
4-5 Services	-	7%/5	4%/1	19%/11
	N = 60	N = 68	N = 25	N = 59
		N = 128		N = 84

An economic classification appears to have no influence on service delivery. Approximately twice as many subsistence farms with a man present receive 3 or more services than do farms managed by women. Female managers, whose farm operations are quite obviously income-earning enterprises, received only the most minimal services. Although there are slightly more women in the subsistence category relative to their proportion in the sample, this appears to make little difference to the regularity in which they experience inequitable access.

According to the diffusion model, farmers who are willing to experiment with new ideas earlier than their neighbours are considered 'innovators'. A striking finding is the large proportion of female early adopters of hybrid maize who have never been visited

by extension officers, as shown in Table 4. Late adoption is defined as 1973 and thereafter; mid-level adoption, 1970 to 1972; and early adoption, 1969 or before.

Table 4. Time of Adoption by Agricultural Instructor Visits, Controlled by Sex or Farm Manager

	Female-Managed			Jointly-Managed		
	late	mid	early	late	mid	early
Farm Never Visited	61%/17	48%/19	31%/5	55%/16	30%/18	3%/1
Farm Visited Once or More	39%/11	53%/21	69%/11	45%/13	71%/43	97%/33
	N = 84			N = 124		

Almost one-third of the women who were early adopters had no administrative support or advice for such a move, but only 3 percent of farms with a man present were so neglected. Hybrid maize adoption is associated with a number of key and somewhat complex husbandry practices which ideally should be introduced by persons with technical expertise. Farmers become aware of the practices through various sources of information, but secondhand information may lose something vital in the process of transmission. Perhaps a *focus* on women managers would have quickened the diffusion process.

All three criteria of innovativeness denote progressiveness in farming according to the diffusion model and to the agricultural staff mode of operation, and thus worthiness for services. Yet women who demonstrate innovativeness and who achieve progressiveness in their farm operation, receive considerably less services than do farms where a man is present. Paradoxically, non-innovative farms with a man present have considerable amounts of services extended to them. This general pattern in which capable women are ignored in preference for men significantly thwarts the intents of a diffusion model and suggests administrative problems in achieving increased productivity goals.

Finally, farmers were questioned regarding their initial source of information about hybrid maize, and about hybrid maize husbandry practices. This is the most important new crop introduced in the last decade and proper husbandry practices are essential to maximize

output. The proportion of farmers who did *not* receive this information from technically trained agricultural staff is shown in Table 5.

Table 5. Sources of Information for Hybrid Maize and Practises (Hybrid Maize Growers Only)\*

	<i>Female-Managed</i>	<i>Jointly-Managed</i>	
Initial Information NOT from Ag Staff	75%/63	56%/65	**N = 200 Q = .23
Information on Husbandry Practices NOT from Ag Staff	57%/46	28%/32	**N = 196 Q = .55

\*The N of less than 212 indicates farmers who did not grow hybrid maize, did not relate any recommended practices, or missing data.

\*\*Significant at the .01 Level

Women managers receive considerably less initial encouragement or later practical information on growing practices from agricultural staff than do men. When probed about their source of information, far greater numbers of women managers cite neighbours and market women than do members of jointly-managed farms. Women have an important organizational resource at their disposal — that of communal agricultural groups to which 90 percent of all women in my sample belong. Groups are organized on a neighbourhood basis, sharing labour during peak work seasons and information about agriculture. In a short-term perspective, these groups compensate well for the government's failure to serve women. In a long-range perspective, however, they appear to be unable to substitute for the specialized training and large cash sums made available through government credit.

### IMPLICATIONS FOR PRODUCTIVITY

The mean numbers of crops grown are similar or almost the same for both farm management types. Female and joint farm managers grow a mean of 1.5 cash crops, and 1.9 and 2.0 respectively for food crops.<sup>26</sup> In the aggregate sample, women's productivity appears to

equal that of the men, contrary to some of the allegations of theorists previously cited. Indeed, the mean may actually under-estimate women's productivity, because female-managed farms operate under greater labour constraints than do jointly-managed farms.

The sample as a whole conceals an important difference between the sexes which is beginning to emerge in Shitoli, a densely administered unit both in historic and contemporary times. What appears to be women's equal productivity to men is distorted by the high scores of Shikulu women managers and low scores of their Shitoli counterparts who appear to be experiencing a decline in their relative productivity to men.<sup>27</sup>

Shitoli sublocation has the equivalent of three agricultural extension staff for approximately 1,500 households; this contrasts to the one staff person in Shikulu sublocation for 2,000 households in a far greater area. In Shitoli, a multipurpose cooperative society, created in 1972 by a Dutch grant and supported by government technical advisory services, has provided easy access to maize and fertilizer inputs, a forum for demonstration plots, and a grade cow loan programme. Furthermore, Shitoli has the historical advantage of being the birthplace of Location chiefs, two of whom have spanned over a half-century's rule. Shitoli houses the administrative offices from which staff operate and the area thus benefits by their proximity. Divisional administrative offices border that sublocation, with similar benefits of staff and proximity. Shitoli also contains a coffee cooperative, and the contemporary multipurpose society is similar to one which operated during part of the colonial era. Despite the density of service in Shitoli, women's productivity appears to be declining in comparison to that of the men.

The level of agricultural services in Shikulu is fairly typical for the western Kenya area, considering the number of staff who are assigned to it. Service availability is generally low for all farmers, though this especially true for women managers. Since the recent opening of the cooperative, Shitoli has received a dramatic infusion of staff and services. While women's absolute level of service receipt there increased compared to female counterparts in other areas, the relative differences between the sexes remain the same and are still acute for the more valuable services, as is shown by Table 6.

How does the level of services affect relative productivity between the sexes? In a short-term perspective, women's advantage and experience in farming maintains productivity levels between the sexes. Key to this maintenance is the low level of service which has yet to

Table 6. Farms Not Receiving Services by Farm Management Type and Sublocation

	Shikulu			Shitoli		
	Female	Joint	Assoc.	Female	Joint	Assoc.
No Visit	61%/28	37%/23	Q = .45* TauB = .24	36%/14	30%/13	Q = .38 TauB = .18
Never Attended Demonstration Plot	72%/33	56%/35	Q = .32 TauB = .16	50%/19	37%/24	Q = .26 TauB = .13
No Training	98%/45	82%/51	Q = .81* TauB = .24	92%/35	78%/51	Q = .52 TauB = .18
No Loan Information or Application	100%/46	81%/50	Q = 1.0* TauB = .30	97%/37	91%/59	Q = .58 TauB = .13
No Loan	100%/46	97%/60	Q = 1.0 TauB = .12	100%/38	98%/64	Q = 1.0 TauB = .08
Summary Service	0.8	1.6		1.6	2.2	
	N = 108			N = 104		

\*Significant at the .05 Level

make its impact on farms with a man present. In an area of intensive, male-oriented services over a period of several decades, however, the structural advantage to men does appear to have made an impact, as Table 7 shows.

Table 7. Mean Number of Cash Crop and Food Crop Types and Years Since Hybrid Maize Adopted, by Sublocation and Farm Management Type

	Shikulu		Shitoli	
	Female-Managed	Jointly-Managed	Female-Managed	Jointly-Managed
Cash Crops	1.4	1.4	1.7	1.8
Food Crops	2.2	2.0	1.6	2.0
Years Since Hybrid Maize Adopted	3.6	3.5	3.3	4.2

In Shikulu, with relatively few services both now and in the historical period, women managers either surpass or equal farms with a man present in innovativeness, as measured by diversification in crops grown for sale and family consumption and by the earliness with which they adopted hybrid maize. In Shitoli, on the other hand, women score lower on all measures and particularly on food crops grown for family consumption. This is noteworthy because food crops are customarily thought to be within the work domain of women and the government has renewed its interest in promoting food crops. Women's declining interest in food crop diversification is in part attributable to the past agricultural priority promotions for export crops, such as coffee, at the expense of food crops. In recent years, however, staff have become attuned to the importance of promoting food crops, particularly since maize and beans are important cash-earning crops. Jointly-managed farms retain a more diverse repertoire of food crops, which may be partially due to their greater access to services, particularly the more recent ones which stress food.<sup>28</sup>

These sex differences in productivity between two areas of varying service availability, land density, and male preference in policy implementation, result from two factors. First, the effects of land density are critical for an assessment of female productivity. In Shikulu, a factor contributing to female productivity is organizational activity, of great use when land is available above and beyond that which is necessary for basic, minimum food production. An overwhelming majority of women participate in communal groups which share agricultural information and labour. Women's timeliness in innovation and responsiveness to new ideas about diversification results directly from ideas diffused through their group network. Additional land above the minimum that is necessary for the family food supply enables women to put ideas diffused through this network into practice, without risk to the basic food supply. In Shitoli, this extra land is simply not available, although food crop diversification has been maintained through continued encouragement to jointly managed farms. The pattern in Shitoli will in all probability also prevail in Shikulu in the next few decades, given the continued subdivision of land among sons, unless administrative support for deterring this tendency is strengthened among *all* farmers, not simply those in jointly-managed farms.

The second factor accounting for productivity gaps is the systematic discrimination against women and the structural advan-

tage which men enjoy in a service delivery system whose implementation norms suggest a preference for men. The ability of Shitoli jointly managed farms to increase innovativeness suggests that governments *do* play some role in productivity which can offset the effects of land density. As I have shown, women demonstrate a capacity to innovate independently without the support of the agricultural staff. Yet, after a period of systematic neglect in support services or material aid — which in recent years have become increasingly valuable through the provision of loans — women's productivity can only decline. Similarity between the sexes may alter in settings where resources are channelled extensively and intensively to one group at the expense of another. It appears that women managers have an edge in contexts with minimal services, but that in densely administered contexts the balance is tipped in favour of farms where a man is present. Such services put resources at the disposal of men, or farms with a man present, rather than of female-managed farms.

Women's ability to sustain innovative behaviour, in face of a rather concerted policy of neglect, might well lessen even more during the next few decades. It is impossible to say how many potential female innovators have not been actualized because of the administrative preference for serving men and the channelling of resources in the direction of men. Structural disadvantage indeed takes its toll.

## CONCLUSION

If present trends continue, women's productivity as compared to that of men will lessen, with several detrimental consequences to the development process. First, women's autonomy as economic units will decline and their dependency on men will increase. Second, governmental capacity to promote agricultural productivity and raise output — ostensibly the aims of agricultural policy — will lessen. Denying access to capable groups because of norms which support male preferences represents an inefficient use of scarce resources. Finally, access denied in the initial stage of the distributive process creates a structural disadvantage which may be later difficult to overcome.

In female farming areas, women have an advantage in knowledge and skill relating to agricultural activity. This is a result of their experience, commitment and socialized responsibilities in farming, as

well as of their supportive social networks in which agricultural labour and information are shared. Furthermore, the sexual division of labour may make men reluctant to do what is considered to be 'women's work'. The intrusion of government resources directed primarily towards men alters what appears to be an equalized productivity between the sexes. Rather than channelling resources to those with experience, policies appear to systematically benefit men at the expense of women, resulting in lower productivity by women. Moreover, to channel resources away from a capable farm clientele dilutes government capability to meet its goal of increased output. Agricultural staff have apparently been unable to capitalize on the capability and innovativeness of women managers. Attention to the female segment of its farm clientele would increase its ability to achieve goals of diversification and early adoptiveness.

The examination of a case such as this is also instructive because it occurs at a transitional period when government services are becoming institutionalized, and when the rapidity of change has telescoped economic processes that elsewhere in the world have lasted centuries. Parallels between processes examined in this paper can be drawn to other categories of persons. The process whereby systematic privilege enhances the productivity and status of one group, which after extensive time periods culminates in the lesser productivity and status of another group, is critical not only to sex groups but to ethnic groups and nations which are unevenly integrated into a political-economic relationship. Later attempts to achieve equity are made enormously difficult by the belated integration of historically disadvantaged groups.

Persistent privileges extended to one group at the expense of another can result in real differences in economic productivity between those groups, with important consequences for their political power and ultimate life chances. A continued policy of extending services by virtue of a recipient's maleness rather than merit or demonstrated innovativeness, suggests rather ominous implications for government ability to significantly maximize agricultural goals.

## ● NOTES

1. For example, see Frank Parkin: *Class Inequality and Political Order* (London: MacGibbon and Kele, 1971). For critiques of that approach see Joan Acker: 'Women

and Social Stratification: A Case of Intellectual Sexism', *American Journal of Sociology*, 78, 4 (January 1973), 174-183, and Ann Oakley: *The Sociology of Housework* (New York: Pantheon, 1974), Chapter 1; and for an alternative to Parkin's approach, Gerhard Lenski: *Power and Privilege* (New York: McGraw Hill, 1966).

2. See, for example, Ester Boserup: *Women's Role in Economic Development* (New York: St. Martin's Press, 1970); Irene Tinker and Michele Bo Bramsen (eds): *Women and World Development* (Washington, D.C.: Overseas Development Council, 1976); Marjorie Mbilinyi: 'The "New Woman" and Traditional Norms in Tanzania', *Journal of Modern African Studies*, 10, 1 (1972).

3. Boserup, Chapter 1.

4. On women's high status in a pre-colonial or non-westernized setting, see Lynne B. Iglitzin and Ruth Ross (eds): *Women in the World: A Comparative Study* (Santa Barbara, Calif.: Clio Books, 1976), xvii, and Denise Paulme (ed): *Women of Tropical Africa* (Berkeley: University of California, 1960).

5. Boserup, Chapters 1 and 3; M. Kay Martin and Barbara Voorhies: *Female of the Species* (New York: Columbia University, 1975).

6. Boserup treats this in broad historical terms, while Martin and Voorhies divide societies by their levels of technology and show women's declining proportion of agricultural participation within each incremental increase of technology (283).

7. The sublocation is the smallest administrative unit in Kenya, numbering 1,000-2,000 households.

8. The five point economic standing-scale was based on house construction and material possessions within the house, including such characteristics as roof, wall, and floor construction, and the type and amount of furniture.

9. Lord Lugard: *The Dual Mandate in Tropical Africa* (London: Frank Cass and Co. Ltd, 1965, first published in 1922), 517. Reprinted in Kenya Colony and Protectorate: Annual Report (London: HMSO, 1929), 57.

10. Boserup, 55; ILO/UNDP: *Employment Incomes and Opportunity: A Strategy for Increasing Productive Employment in Kenya* (Geneva: ILO, 1972), 64. For an analysis of these problematic communication patterns for women, see J.E. Smithells: 'Agricultural Extension Work Among Rural Women: An Assessment of Staff Training Needs in Selected Developing Countries' (University of Reading, Agricultural Extension Rural Development Centre, March 1972).

11. Lord Hailey: *An African Survey* (London: Cambridge, 1953), 894.

12. This research was made possible through grants from the African Studies Program for travel funds and the Graduate School for computer funds, both of the University of Wisconsin, and the NDEA Title VI Foreign Language Fellowship Program.

13. A Junior Agricultural Assistant is assigned to the Sublocations, a Technical Assistant to the Location, and an Assistant Agricultural Officer to the Division level. As a rule, the amount of agricultural training for staff increases as the level of hierarchy increases, though this is also affected by their year of entry. The two lower level staff live in or near the area they serve, and thus are familiar with farmers.

14. A summary statement for cabbages, tomatoes and onions.

15. According to Annual Reports of the Ministry of Agriculture, 1963-1968 (Nairobi: Government Printer).

16. Gunter Wagner: *The Bantu of North Kavirondo*, Vol. 1 (London: Oxford University, 1949), 41; Walter Sangree: *Age, Prayer and Politics in Tiriki*, Kenya

(London: Oxford University, 1966), xxxvi. Though not reported here, farmers in my sample show that women are as likely to make decisions on initiating crops or changing crop practices as men when husbands are present, and overwhelmingly likely to do so when husbands work away from home.

17. A geographically purposive sample of 212 farm households was obtained in the Idakho research site between December 1974 and June 1975. It represents 10 percent of the total number of households in the geographic areas targeted. My initial concern was to assure that varying distances from the road and main paths, and thus from agricultural officers and services, would be covered. These geographic areas coincide with clan and subclan identities. Once spatial areas were designated in order to obtain geographic and clan representativeness, I attempted to select farms that would be representative of varying economic standings and age groupings. Numbers were based on my approximations of their proportion of the population. I did not know in advance, however, about the farm management type until the interview had begun. The close correspondence of women managers to the proportion of female heads in Kakamega reported in the 1969 Census supports the notion that my choice of farmers was 'chance-like' in method. The sample is not, however, a random one, and the universe of this sample is restricted to one location. The sample does not purport to generalize to all Kenya or Africa, but rather to illustrate sex differences within a sample which may be suggestive for other parts of Kenya or Africa with agriculturally based economies in areas of high land density and rates of male out-migration. Though scientific sampling techniques were not utilized, I am confident that the sample judiciously represents a reasonable cross-section of farmers in western Kenya. The basis of this confidence is my six-month residence in one of the sublocations studied with a family who graciously welcomed me as an additional member. Through my residence there and my participation in community life, I gained in-depth knowledge of that subclan and geographic area. A female research assistant from the area and I conducted the interviews, and she translated questions and responses from Kiluyia to English. We asked a systematic set of questions from each farmer about crops, husbandry practices, sources of information about farm practices, agricultural services, and demographic information. A typical interview took 40 minutes. The Republic of Kenya Census, 1969, reports a 36 percent female household headship in Kakamega District (the lowest administrative level available with this data).

18. In real numbers, this amounted to 4 women from the 84 female-managed farms being trained, and, of the 25 jointly-managed farms in which some member had attended a training course, six of these were women. Five percent of the women managers had a household member trained, in contrast to 20 percent of the jointly-managed farms; thus, the latter were four times as likely to have a member trained. The same reasoning was used for loans.

19. See my: 'Women Farmers and Inequities in Agricultural Services', *Rural Africana*, 29 (Winter 1975-76).

20. Everett Rogers: *The Diffusion of Innovations* (New York: Free Press, 1962) and *Modernization Among Peasants* (New York: Holt, Rinehart and Winston, 1969).

21. See David Leonard: 'Why Do Kenya's Agricultural Extension Services Favor the Rich Farmers?' (Paper presented at the 16th annual meeting of the African Studies Association, Syracuse, N.Y. October-November 1973); Joseph Ascroft, Fred Chege, Joseph Kariuki, Niels Røling and George Ruigu: 'Does Extension Create Poverty in Kenya?', *East African Journal* (March 1972).

22. M. Crawford Young: 'Agricultural Policy in Uganda: Capability and Choice', in Michael Lofchie (ed): *The State of Nations: Constraints on Development in Africa* (Berkeley: University of California, 1971), 141-164; David Leonard: 'Organizational Structures for Productivity in Agricultural Extension', in his *Rural Administration in Kenya* (Nairobi: EALB, 1973), reports these proportions.

23. John De Wilde: *Experiences with Agricultural Development in Tropical Africa* (Baltimore: Johns Hopkins, 1967), 169; Judith Heyer and Joseph Ascroft: 'The Adoption of Modern Practices on Farms in Kenya: Preliminary Results of a 1968 Survey of Farms Across Kenya' (Dar es Salaam: University of East Africa Social Science Conference, Volume V, 1970), 336.

24. There may be questions raised about the use of these measures for productivity. Measuring actual output per acre would be an ideal way to explore this problem, but would require research presence and measurement of agricultural input and output during the agricultural cycles. Extraneous factors such as weather and climate would have to be accounted for, and there is no precise way to substitute measures for change over time. These pose some problems to the social scientists, ill equipped to measure agricultural output. Such problems have been discussed by Anthony King: 'On Studying the Impact of Public Policies: The Role of the Political Scientist', in Matthew Holden and Dennis Dresang: *What Government Does* (Beverly Hills: Sage, 1975).

For an excellent study by an agricultural economist who precisely measured such output and compared this by sex of farm manager in the southern part of the district of my research, see Peter Moock: 'Managerial Ability in Small Farm Production: An Analysis of Maize Yields in the Vihiga Division of Kenya' (Unpublished Ph.D. Dissertation, Columbia University, 1973). Moock found equal productivity between males and females among a group of progressive farmers, but when controlled for access to extension and education, female managers had a higher yield (168).

Number of adoptions (diversification) and timeliness of adoption are frequently used in Diffusion of Innovation Studies, and have therefore been utilized in this study. These measures are in line with the purpose of this study — to examine the contemporary Kenyan agricultural administrative style which conforms to the Diffusion of Innovations model. Agricultural instructors themselves rely on diversification, income-earning orientations, and a reputation of early innovativeness in their perception and evaluation of farmers.

25. As 40 percent of the sample, I would have expected 40 percent women managers in each control category for equivalence. Instead, women comprise 42 percent of the monoculture category.

26. For cash crop possibilities, see note to Table 2. Food crops include the hybrid maize-beans combination, European vegetables, root crops (sweet potato or cassava), millet crops (finger millet or sorghum), and nut crops (groundnuts or monkey nuts).

27. Given the cross-sectional nature of this research, this is suggested in the research design propounding Shikulu and Shitoli as a controlled comparison. From this comparison, I infer that women were once relatively equal to men in productivity.

28. This paper is not addressed to explicit policy implications; see my 'Inequalities in Agricultural Services to a Female Farm Clientele: Some Implications for Policy' (Institute for Development Studies, University of Nairobi, Discussion Paper 247, October 1976).

An interesting line of inquiry would be to assess whether more female staff would begin to address these inequities, a research design made difficult to administer because of the few existent female staff. As described previously, only 2 percent of the

district agricultural staff in this research area were women, and the proportion included Home Economics Assistants, who have different job descriptions and a wider array of functional areas to cover than agricultural instructors. In 'Inequities', I, as have others, advocate the *integration* of female staff into the agricultural hierarchy. The data in this paper, particularly that on the densely administered unit, suggest that mere incremental improvements in the existent agricultural administration will be unable to redress inequalities, and in fact, may exacerbate them.

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