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SOME PROBLEMS IN THE VALUATION OF SUBSISTENCE OUTPUT:

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* This paper was written for the purposes of discussion and the views expressed should only be regarded as tentative.

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Some Problems in the Valuation of Subsistence Output:

Studies of subsistence farm production in Africa have often ignored the problems that arise in the valuation of output, in situations where market prices have little meaning. The difficulties of non-market valuation are seldom considered in detail, and people are often content with using local prices as best available approximations, while recognising that they do not really apply.[1] Even where risk and uncertainty are specifically included, local prices may bear little relation to the values accepted by subsistence farmers, and may thus be poor representations of the basis on which farm decisions are made, and poor criteria for evaluating performance in these conditions. Subsistence farmers still form the bulk of the population in Kenya,[2] and analyses of their production are badly needed, both in order to judge the efficiency with which they are satisfying their own desires, and to judge their contribution to the economy as a whole. In assessing their overall contribution to the economy, measures such as the market value of their production, or the value of their marketed production, may be of use. If there is some concern for the welfare of the subsistence farmers themselves, attention must also be paid to their nutritional status and the extent to which they are satisfying their own needs as well. In detailed studies of production, the desires of the subsistence farmers assume major importance, because under the present political and institutional framework any improvements in performance will only come as improvements which subsistence farmers can recognise themselves. It may be possible to persuade them to adopt changes which enhance their own satisfaction, but not those which lead to normative goals which are unacceptable to them. The present paper is primarily concerned with values which can be said to be the values of the farmers themselves, though some attention is paid to normative values as well. The paper is based on data from a study of subsistence farming in lowland Machakos. It begins by considering why subsistence farmers remain outside the market economy, and why market prices have no meaning for them; it then examines ways of valuing subsistence output in isolation from the market; and finally it suggests criteria which might be used to analyse performance in subsistence farming conditions.

1. Preliminary Definitions:

We can make a distinction between a subsistence farmer who produces the bulk of what he and his family consume, and whose market sales are either very irregular, or only a very small part of his total production on his farm; a subsistence plus surplus farmer who produces the bulk of what he and his family consume, but who regularly markets a sizeable surplus as well; and a market farmer whose production is entirely determined by the market, and who only produces for his own consumption the goods which he can produce cheaper than he can buy. It is the inability to exploit the opportunities offered by

the market that distinguishes the subsistence elements in this definition. In Kenya there are very few small-scale farmers whose production is wholly market-determined and who would thus qualify as market farmers above. Most of Kenya's small-scale farmers still produce a big proportion of their subsistence needs in isolation from the market, regardless of whether or not it is cheaper for them to do so. A pattern of farming that was entirely market-determined would look very different from the pattern that is present in Kenya today. There would be far more specialisation, particularly with respect to food crops, and the geographical distribution of food-crop production would be completely transformed. It is this kind of extension or improvement of the market which is important, not just the familiarisation of more backward peoples with the practices of market exchange.

Where the majority of farmers are subsistence plus surplus farmers, and surplus production is a substantial proportion of their total, it may be possible to deal in market prices, with some sort of qualification to allow for the subsistence elements. But where, as in lowland Machakos and other places, the majority of farmers are subsistence farmers, and relatively few are subsistence plus surplus farmers (the surplus forming rather a small proportion of their total output even then), it is essential to find some other way of valuing their produce. The fact that lowland Machakos is renowned for its colourful and thriving local markets does not in any way contradict this view of the area as predominantly a subsistence one. Markets do thrive, particularly at certain times of the year, and particularly in prosperous years, but they deal only in small quantities of the important crops, and in many peripheral products as well. The years in which large proportions of the total output enter the market are few and far between. Windfall gains in years of good rainfall alternate with years of poverty which are much more frequent. The pattern of production is wholly or partly determined by the needs of the household through the year, and not by the profits and losses of market exchange.

Those who participate in the market economy are not substantially different from the subsistence farmers in their attitude to and reliance on the market. They do not rely on the market for their basic foods any more than the subsistence farmers do. It is just that they have a surplus with which they can play around, and it is this that enters the market, not their basic subsistence needs. What is needed is a market that is reliable enough to cater for subsistence as well as surplus needs. The real revolution comes with total reliance on the market, not just reliance for surplus gains. In the discussion that follows it is the subsistence attitudes, both in subsistence farmers and in subsistence plus surplus farmers, with which we are concerned.

2. Subsistence Farmers and the Market Economy:

Normally in a fully monetised economy, people improve their position by production and by exchange. They satisfy their material needs out of their own production where costs are low, and through exchange when this costs them less than to produce. There is no a priori reason why people at a very lowlevel of living should not do likewise. People producing the bare necessities, mainly food, should also be able to benefit from market exchange, and attain a higher level of living by specialising in production where they have the relative advantage, and exchanging their produce for food or other goods where the advantage lies elsewhere.

The main reason why subsistence farmers do not use the market is nearly always that the market is too variable with respect to prices and sometime also with respect to supplies, to be relied on. Where the basic foodstuffs are subject to market control, as in Rhodesia and Kenya, the price system is such as to reinforce the variability.[3] Lack of familiarity and knowledge of the market is usually another disincentive, but this is only transitional. Subsistence farmers cannot sustain wide variations in income. The variability of the market, particularly the market in foodstuffs, is such that farmers cannot always be sure of being able to obtain food on the market, and they can be even less sure of being able to get it at a reasonable price. Whereas the average price, or even a price substantially higher than the average, makes exchange attractive, at times of shortage the position can become extremely unfavourable to the man who purchases his food. Farmers cannot afford to plan their production on the basis of average, or even higher than average purchase prices of food, when they know that at times of difficulty the prices can move completely out of their reach.

Thus it is not enough to argue that subsistence farmers in areas that are marginal for food production would do better on average if they entered the market and produced for sale and exchange. The sub-average years might be intolerable where the margin of subsistence is critical. It is important to consider the series of gains and losses in each of good, average and poor conditions, and to consider whether <u>all</u> of these are acceptable or not.

Taking the present system of subsistence production as a basis for comparision, alternative strategies can be considered. They will not be adopted if they produce marginal or uncertain gains, or fail to take account of the effect of a sub-average year on a subsistence farm. Further, they will have much more likelihood of success if in no situation is there a loss, and in some there is substantial gain. In lowland Machakos, for example, a loss over the present position in bad years cannot be tolerated because it involves real starvation and the risk of deaths or permanent nutritional damage, particularly for small children.

But a loss over the present position in years of good rainfall can seldom be accepted in the short run either, because it exposes a progressive farmer to the ridicule that follows if hedoes badly when everyone else is doing well. One might eventually be able to convince people that it was worth suffering the contempt of neighbours for real overall gains, and as more and more people adopted the new policy this element would gradually disappear anyway, but it would be a real problem in the initial stages, and one which should be reckoned with in implementing a new policy which involved that kind of loss.

An interesting example of this is the difficulty which the Agricultural Department is having in getting a drought-resistant strain of maize adopted in lowland Machakos, where the major problem is one of low and uncertain rainfall distribution. Katumani maize, and its predecessor Taboran maize, give substantially higher yields than the local maize in poor years, and often give a crop when no other maize yields at all. In good years, though, they fall well below the yield of local maize. Katumani maize shows some improvement over the Taboran strain in this respect, but there is still great resistance among farmers to adopting the seed. There may be other factors, but discussions with farmers suggest that the most important objection is the prospect of obtaining only a moderate yield at times when everyone else is reaping a bumper crop. The shame attached to this, in addition to the change in habit required by the lack of a periodic bumper year for building up capital and durable goods, would be hard to overcome. In the long run, though, this should be a possible change.

For a farmer in a region of uncertain rainfall, it might be useful to consider three major alternatives. He can continue to strive for subsistence by growing all his own food in isolation from the market. He can specialise, at least to some extent, in a drought-resistant food (or cash) crop. Or he can specialise in a crop with high cash returns. As examples, bulrush millet will be taken for the drought-resistant food crop, and cotton for the cash crop giving high returns. These examples will help to illustrate the issues involved.

In lowland Machakos, a man growing all his own food suffers in years of drought, because even his food crops do not yield enough to keep him and his family adequately fed. He may obtain enough in the best years, about four years out of 10, with a surplus for sale; barely enough other years; and less than enough in the drought years, three years out of 10, sometimes finding it difficult to keep all the family alive. In very bad years about 1 in 10, he may expect to get Government famine relief, when there is no money or food left in his area, but this famine relief is given so sparingly that it involves the risk of children dying and such severe hardship that it is unlikely that it is ever a disincentive to provide for the years of drought if this is possible.

The present subsistence position can be compared with the two alternatives. A drought-resistant crop, in this case, bulrush millet, is grown

for its resistance to drought and is not attractive enough to be grown otherwise, because it is not liked enough, and because it is costly to produce. In years of low rainfall the yield of millet is higher than that of other crops, but the rate at which millet can be exchanged for other foods is less favourable than usual. In times of general food shortage, millet prices rise slightly, but maize and other food prices more than double. In lowland Machakos the improvement in yield would have to be very large to counter the adverse move in the terms of trade, unless millet were an acceptable substitute for other foods for home consumption at such times. For families that found a millet diet at the new level preferable to a maize diet that was grossly inadequate at the old level, there might be a substantial gain in bad years from growing millet. Otherwise the gain would be reduced, non-existant, or negative, because of the adverse move in the terms of trade.

In years of higher rainfall, sufficient to grow a good maize crop, and reasonable crops of pulses as well, the millet-grower might still be in a better position. A drought-resistant crop always yields less than other crops in the good years, and millet yields are no exception to this, so the millet-grower would experience a poor yield compared with his neighbours. But the terms of trade, the rate at which millet could be exchanged for other food crops, would move in his favour. The price of maize and other foods falls drastically in times of plenty, whereas the price of millet does not change very much. It stores well, so even if there is no immediate market, a trader will probably take it to store until the price is good. If there is a market, the loss in yield is likely to be more than compensated by the gain in terms of trade.

This holds if the millet-grower is one of rather few, among a population of subsistence farmers growing maize and pulses as before. If a large number of people change to millet, there will no longer be a glut of maize and other food crops in the good years. The terms of trade in good years will then be less favourable than in the bad years, and thus there will inevitably be a loss over the previous subsistence position.

Thus a drought-resistant food crop, which at first sight might seem to be the answer, proves to be of doubtful value for these people. In drought years only if they are prepared to accept an inferior dietcan they hope to experience any gain; in good years, only if there is market, and if not too many other people also turn to millet, can they expect a gain. Specialisation in a crop such as bulrush millet is not to be recommended except in rather special circumstances.

A drough-resistant cash crop, which by definition yields well in years of drought, and not as well as other crops in years of high rainfall, could be considered in similar terms. In lowland Machakos the crops that qualify are chillies, castor, garlic, and any of these might become successful if the market for them could be made more stable. Price fluctuations in cash crops are independent of changes in food crop prices, unless they are limited to the local market which these are not, and there is always the possibility that the poor cash crop price will coincide with high food crop prices, and the terms of trade will become extremely unfavourable to the cash crop grower. The risk thus involved may be too much to bear. If the price fluctuations could be reduced and the market assured, the risk would be reduced, and the farmer might gain from specialising in this sort of crop.

It is only if the cash crop alternative is sufficiently attractive that the farmer is likely to face a certain gain. Such a high-priced cash crop alternative is considered here, using cotton as an example from lowland Machakos again. Cotton is subject to decreased yields in drought years, just as food crops are, but its advantage lies in the fact that the returns in all years are substantially higher. In good years, cotton represents an undisputed and substantial gain, with both high yields and high prices, at a time when the price of food crops which the farmer has to buy are low. In drought years, when food prices are high and cotton yields are low, it is important that even in these circumstances the overall returns should be sufficiently high to command the necessary food supply. If the yield and price of cotton are still high enough to produce a good return, these years may be all right. But if the price is variable and able to fall, and if the returns are only moderately attractive anyway, there may be a loss. However, the improvements in the years of good rainfall may be sufficiently great to warrant the operation of a savings scheme, whereby cotton-growers put money into a fund in good years to be used in times of difficulty later. This fund could either be limited to assistance at times when poor prices coincide with poor yields of both cotton and food, or it could be used at any time when yields are low due to drought, whether the cotton price had fallen as well or not. The overall performance of cotton is likely to be good enough to warrant the operation of some such scheme, where the performance of food crops at present most certainly does not. The total production of food in the District, taking the good years with the bad, is never sufficient to cover the total consumption if averaged out. Even with savings, there would be a substantial deficit in food. For cotton, with its overall surplus, a savings scheme would be viable, and might help greatly in the extensi

of specialisation in this crop.

Thus it is by no means clear that the limited extent of participation in the market economy is due to opportunities that exist and remain unexploited. It seems rather that the opportunities need to be increased before a subsistence farmer can be sure that he really would be better off by changing his production pattern.

The trouble is that in areas such as lowland Machakos, there is an obvious misallocation of resources. People are trying to grow basic foodstuffs in an area which is not suited to their production. A better allocation of resources would be achieved if people would turn to cash crops more suited to the area's ecological conditions, and use the proceeds to buy their food. The market does not operate well enough to bring about this change.

We have already seen that the major problems lie in the market variation and uncertainties. We have mentioned the fact that the way in which the controlled marketing system is operated at present distorts the pattern further. The basic food in the diet of the people of lowland Machakos is maize, and the local market prices of maize vary as much as any others, in spite of the fact that they are controlled by a statutory marketing organisation, the Maize Marketing Board (MMB). The MMB operates a system of guaranteed prices at which it buys from producers and controlled prices at which it sells to consumers. The guaranteed producer prices are subject to deductions for traders' commissions, transport, etc., and the pay-out received in a Machakos local market is somewhere around 20/- (1963). The controlled prices at which the MMB sells to millers and traders for retail sale allow for export losses and Board's costs and is subject to a fixed mark-up for the traders' margins again. This leads to a consumer price in local markets of about 50/- (1962). The MMB operates within a District, through the local markets, only when there is a surplus and the internal price falls to the MMB buying price, in this case 20/-, and the Board steps in to stop the price falling further and to buy up the surplus for export from the District; and when there is a deficit and the internal District price rises as far as the MMB selling price of 50/- and the Board steps in to prevent the price from rising higher and to fill the shortfall at that price. Thus the lowest prices experienced in a local market are the MMB buying prices at times of surplus maize production in the District, except for occasional pre-season sales and poor quality maize. The highest prices are those of times of shortage when the MMB selling price is reached, except for occasional Black Market sales at times of temporary shortage due to delays in supplies. When the District as a whole is neither importing nor exporting, the maize price is somewhere between the two extremes. The extent of the variation is thus determined by the MMB differential, which is extremely wide, and which puts a very high premium on subsistence production. The cost of producing a shortfall is much higher than the cost of producing a surplus,[4] and subsistence production is thus

disproportionately encouraged. Any reduction in the width of the differential due to increased efficiency in the operation of the MMB or the traders, or any reduction of international export losses, would reduce the artificial incentive to produce for subsistence and would encourage a more rational allocation of farming resources.

For food crops other than maize, price fluctuations can also be high. Pulses are the most common addition to maize in the diet, and the price of beans and peas in lowland Machakos can vary from about 30/- to 80, or 90/- depending on the variety. These are not considered essentials, and if the price goes too high people abstain. Fluctuations in the prices of pulses are directly due to fluctuations in the free market, which are not cushioned by the operation of a control. Recently the Agricultural Produce Marketing Board has started distorting the variations between varieties a bit, but not altering the free market prices for the pulses as a whole.

If market supplies and price fluctuations can be controlled to encourage participation in the market economy, this should lead to a more efficient allocation of resources for which it is worth paying a price. And it is not only the food crops markets that need control in the right direction: the stabilization of prices for alternative cash crops is important as well. It is the terms of trade between food crops and cash crops that will determine the re-allocation of resources, not the prices of one or other alone.

3. Non-Market Valuation of Subsistence Produce:

There are many elements of small-scale farm production that rarely enter the market, and for which we have to find alternative value systems. For normative purposes at least, nutritional values might be appropriate, and even as approximations to actual goals pursued by small-scale farmers these may not be so far removed from reality as they seem at first sight. It is surprising how often tastes and habits are found to contribute to nutritional balance, and how often people who appear to be quite unconscious of nutritional needs in fact aim to achieve diets that have good nutritional value. This idea should not be carried too far because while local tradition reinforces some of the most basic nutritional needs within the range of foodstuffs locally available, it seldom goes further to include any awareness of the missing elements, such as vitamin C in many areas, where it is very difficult to obtain. Local custom and taste may encourage the addition of pulses, wild vegetables, milk and meat to the basic staple food, but in an area devoid of sources of vitamin C there is unlikely to be any attempt to obtain it from outside. Similarly, the literature is full of instances of nutritionally valuable foods that are really available, but subject to taboos forbidding their use. Chickens and eggs, for instance, have until recently been completely forbidden for women of most tribes in Kenya, and sometimes for men and children as well. There are obvious exceptions to the general rule, but within limits it is often true to say that taste and custom make for a fairly balanced and varied diet, avoiding the worst kinds of

mono-consumption that are the result of poverty alone. In some areas, at least, it might not be unreasonable to take nutritional standards as an approximation to values actually held by the local farmers, and nutritional goals as the ones actually pursued in the subsistence economy there.

It is certainly true that different tribes and different groups of subsistence farmers vary in this respect. It might be quite reasonable to take nutritional standards as a good approximation to actual values for one group, while it would be inappropriate for another. It might be reasonable to take one kind of nutritional standard for one group, but a different one for another. The two tribal areas in which I did fieldwork are good examples of this. The Kipsigis among whom I worked were remarkably conscious of nutritional values, as they were of their own physique. I was frequently offered food because it was good for building up my strength, my bones, etc. Foods were discussed in terms of their value in contributions to physical strength, and bodily appearance, Kipsigis on the whole do have fine, strong bodies, and their diet is reasonably good and easily obtainable. They are rich in foodstuffs, and take advantage of this. Their basic preferred staple food is millet, rather than maize; their local beer is of high nutritional value; their additives are good wild spinach, fresh or sour milk, and fairly often meat. Recently they have started growing citrus, fruits, and European vegetables of which they consume a fair amount as well. Even a poor Kipsigis family tries hard to maintain its diet above other things, and attaches considerable importance to a lack of nutritionally important foods. The lowland Kamba, offer a marked contrast as far as awareness of nutritional values is concerned. There seemed to be incredibly little awareness of nutritional needs, and apart from the recognition that a pregnant woman and a small child need millets and sorghums and a woman who has just given birth needs building up with meat as well, there appeared to be no concessions to nutritional needs. Even for pregnant women, and women who have just given birth, Kipsigis practice is far better. The Kamba are much poorer in foodstuffs, and perhaps because of the foods available to them, they are much more concerned with bulk than with content, The Kamba diet used to be based on millet, but over the last 50 years maize has completely superceded this as the preferred basic food. There are isolated examples of old people who eat millet and sorghum rather than maize, but this seems to be because the liquid porridge made from millet is more tasty than that made from maize, and old people do not have strong enough teeth for the favourite mixture of maize and beans any more. It is not because they are old-fashioned and have not made the conversion to maize. Millets and sorghums are always grown in small quantitites, and are considered the food of old people, and occasionally women and children, in the form of porridge. They are no longer acceptable as frequent components in the diet, except in times of famine and shortages of maize, although even then people will make considerable sacrifices to get

maize instead. Maize now forms the bulk of the Kamba diet, with pulses when available too. The difficulty is to get enough in bulk, because food shortages are frequent and also because the bulk they need in order to satisfy their requirements of protein from maize is considerable. These lowland Kamba are concerned with whether their stomachs are full, and then with whether pulses or vegetables are available to improve the taste of maize. They like milk and meat but these are rare luxuries, no longer standard additions to the diet. I never heard anyone referring to the nutritional value of meat or milk or the need for children to have them. Children usually did badly where meat and milk were concerned, and where they were given their share it was because they like these foods, not because anyone thought they ought to have them. Meat and milk are extremely popular when available, and more recent additions of nutritionally valuable mangoes and citrus fruits are equally appreciated for their taste.

Thus, while Kipsigis are preoccupied with considerations of food content, and its contribution to physical strength, lowland Kamba are more concerned with bulk. If nutritional standards are to be taken as approximations to real values, for Kipsigis some sophisticated measure of nutritional value might be best, while for lowland Kamba some cruder measure of bulk, such as calories, or perhaps protein-calories,[5] would be more realistic.

With calories or protein-calories there is no problem of weighting, but if any attempt is to be made to include items such as vitamins as well, the problem of relative weights occurs. The nutritionists have worked on a measure of proteins and calories combined, taking account of interactions of the two together and establishing one common measure for the two, but nothing has been attempted to include other items such as vitamins as well. If there are conflicting possibilities, they can tell us how to compare one combination of proteins and calories with another, and which would be preferred by how much, but they cannot tell us how to compare a marginal unit of vitamin A, say, with a unit of protein, in a particular diet. If vitamins and proteins are to be included in a nutritional value system it is important to be able to make this comparision. The alternative production possibilities may well include this choice, and the value system must be able to tell us which would be preferred and by how much it would be preferred. It is not yet possible to say this on scientific nutritional grounds. But neither is it possible to establish the preferences of the farmers in this respect. There is no reason why the farmers' preferences should coincide with the scientific norms even if they did exist. While a nutritionist might say that a unit of vitamin C should be preferred to 10 units of protein at a particular point, the farmer might disagree, and might not be prepared to sacrifice his protein accordingly. A method of overcoming these difficulties will be suggested in the last section of this paper, but these difficulties are fundamental.

Even if we could decide on the right scientific nutritional standards,

and could solve the aggregation problem, there are further important considerations with regard to distribution between household members. it is not sufficient to evaluate production in terms of nutritional content per person. The nutritional requirements of different age-groups, and of different groups of adults, are quite different, and the views of the Society about distribution of foods within the family are different again. One could decide for each household what are the nutritional needs, according to the ages of the children, and according to whether the women were pregnant, lactating, or neither, and whether the adults were hard-working or not. The composition of the household makes a great deal of difference to the food requirements. But the scientifically established needs of the different household members might conflict with the accepted orders of precedence which dictate distribution of food in any peasant family. In any Kamba family, the head of the household has precedence, together with other adult males. In times of shortage, or where luxury foods are concerned, it is they who get the largest share. Where meat, milk, or sugar are available, the men usually get liberal portions, leaving smaller amount or sometimes none, for the other members of the family. Where pulses are short, the men again get fair amounts, and the women and children little or none. The women and children may have to content with a diet of maize and little else, at times when the men are eating quite liberal supplies of additives as well. It is only when there is plenty that the women and children also get their share. This directly contradicts the nutritional needs. Adult men tend to need less of all nutritional elements than any other group. This the traditionally accepted distribution of available foods within the family, is extremely inefficient as far as nutritional standards are concerned.

For the purposes of planning production, or improving present food supplies, it is seldom possible to do a detailed investigation of the distribution of food. But it is important to take distributional factors into account, and to realise that the provision of food supplies that would just be adequate for all members of the household if properly distributed, will almost certainly result in shortfalls for the women and children in practice. If the women and children are to get what they need, some extra will have to be allowed above what the men require.

However, even this may not be enough. If the men judge that there is a surplus at all, there may be pressure to sell in exchange for money to buy clothes and minor essentials, rather than to consume. And if there is money which could be used to add to the food supply, there may well be pressure to use it in a similar way. There are ample examples from Kikuyu homes, and many less celebrated examples from the Kamba as well, of considerable wealth accompanied by severe malnutrition among women and children of the home. It is a much more widely established fact that increased participation in the cash economy tends to be accompanied by nutritional loss. The attack on this may have to come from a different front, but the economist would do well to

remember that even if he can devise schemes to provide for adequate food for all concerned, there is no guarantee that this food will be consumed.

Thus while there may be a strong case for evolving scientific nutritional standards for normative purposes, their use as approximations to values actually held seems hazardous and should only be attempted in full knowledge of all the pitfalls involved. A less dangerous alternative may well be to fall back on some observable goals that the decision-maker considers adequate in practice, such as a diet that is acknowledge to be good in a year of adequate rainfall, and to concentrate on achieving this.

There is another approach that ought to be mentioned. Anthropologists are fond of talking of "subjective values", and trying to establish these. The subjective values of subsistence farmers are usually seen as a complex set of factors determining the relative weights a man attaches to one crop or another, or to one product or another. The relative value a man attaches to a product depends on risk; taste; usefulness in payments in kind, in kin obligations, in rituals; storage capacity; waste or bi-products; the status attached to it as a food, (eaten at home or offered to guests); the prestige attached to the crop in the field; the pleasure gained from looking at the crop in the field; etc. etc. Many of these factors vary in importance from one man to another, and thus values also very from one man to another. Values are subjective and cannot be standardised. Intra-personal comparisions cannot be made. This obviously leads to difficulties with which an economist cannot cope, making such a value system unusable. But an approximation might be attempted assuming that in general everyone in the community has the same values, and taking into account factors such as those listed above.

But values containing all these factors can best be obtained in exchange, or in different uses, and not by summarising the contributing factors. An anthropologist might attempt to establish them through questioning in indifferenc curve terms, but this is a field in which too little work has yet been done. Further work on values by anthropologists might well yield results of great interest to us, but until advances are made we have to be content with the other approaches instead.

Criteria for Use in Production Studies:

Performance can be evaluated according to how well it serves goals of national importance such as employment goals, according to nutritional standards, according to cash gains, etc. But here we are interested in how well subsistence farmers achieve goals which they accept; how well they manage and use their resources to achieve maximum satisfaction for themselves. We have already seen the difficulties in trying to find a proper value system for this. None of the value system for this. None of the value systems available can approximate the farmers' values well enough. However, perhaps we do not need a complete value

system at all. Perhaps we can use some other criterion than the maximisation of the value of output within the resources available. The available resources and the technical production possibilities, give us a series of points of maximum production, depending on the system we use to value this production. Each of these points represents a maximum according to some system of values. Instead of first finding a value system by which to judge, we can start by looking at all of the possible maximum points and narrowing these possibilities down. There will be some which obviously could not be commended from any point of view. There will be others which are all interesting from a nutritional standpoint, and between which we could choose according to farmer's known preferences, or according to how closely they correspond to the traditional diet. There may be some which provide adequate diets under any assumptions, and which give more or less substantial surpluses as well. When the problem is limited to a choice between several specific alternatives, it may be possible to choose in accordance with more than one set of values, and it may be possible to avoid at least some of the difficulties encountered in trying to establish a value system. Given the difficulty of deciding on systems of values, this line of approach may be more promising than any straight forward attempt to maximise the value of output. The alternative possible maxima can be found quite easily by the use of parametric programming techniques, and the valation problems should then be far less difficult to solve. Unless some such approach is adopted, the complex problems of subsistence valuation remain to be faced.

Judith Heyer
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1. See for example A. McFarqhar In Nigeria; R.W.M. Johnson in Rhodesia; and others.

2. It is estimated that 17% of the total production on smallscale farms is marketed production in Kenya. Economic Survey 1964.

3. See also: B.F. Massell & R.W.M. Johnson: African Agriculture in Rhodesia, June 1965.

4. See B.F. Massell & R.W.M. Johnson, op. cit. for this argument.

5. Recent nutritional work suggests that proteins and calories should be treated together. Proteins are used as calories, where calories are deficient, and only when calorie needs have been satisfied can proteins be used in normal way. A protein-calories measure has been devised to takeaccount of this.
