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The Role of the Village in Sahelian Development

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I. Introduction and Overview

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Background of the Drought

[1972]

The economic consequences of the drought between 1968 and 1973 in West Africa were profound. Extreme rainfall deficits which occurred in 1971, 72 and 73 caused 40 percent losses of livestock in Mali, over 30 percent in Upper Volta, Niger and Senegal, and possibly more than 60 percent in Mauritania. Cash crops also suffered severely. Ground nut harvests in Niger and Senegal plummeted. Mali and Chad harvested between one and two-thirds of their normal cotton crop (1). It is much more difficult to measure the impact of the drought upon food production, because food is grown almost solely for local consumption. There is, however, no question that cereals production also declined substantially. During the period when suffering was at its greatest and international aid at its highest, from 1972 to 1974, over one million tons of cereals were delivered to the Sahelian states by the external donor community (2).

While the economic consequences of the drought were great, the cost in human terms was even greater. As many as 100,000 persons may have died. Literally millions of people were forced to change their place of habitation and between 8 and 10 million persons were directly affected. This substantial temporary displacement resulted in creating considerable pressures on other populations, especially in areas to the south of the Sahel.

On the positive side, local response to the impact of the drought showed the resilience of the Sahelian population. Acreage of cereal production increased significantly while that allotted to other crops declined (3). Cattle herders, rather than retain their herds,

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them die, rapidly responded by selling off a large proportion of their animals while retaining only those required for subsistence. The relationship between pastoralist and sedentarized farmer was also reinforced and, in many instances, pastoral nomads became semi-sedentary and turned to farming (4).

The political consequences of the drought were also profound. The Governments of Niger and Chad were overthrown, primarily because they could not respond effectively to the needs of their hungry populations. Perhaps more importantly in the long run, an awareness of the importance of the rural populations to the ruling groups in each country was made manifest. Correspondingly, the Sahelian Ministers of Rural Development have become increasingly important. So much so that when the Interstate Commission to Combat the Effects of the Drought was established in 1973 in Ouagadougou, it was comprised of the Ministers of Rural Development from each of the Sahelian states. This Interstate Commission, known as the CILSS, became the political forum through which the Sahelian countries made their plight known to the world at large. That their appeal was effective was seen in the magnitude of the donor response (5).

The donors, despite a somewhat unsteady beginning in 1972, rapidly mobilized resources in both food and financing and coordinated their efforts through the Office of Sahelian Relief in FAO. A million tons of cereals and thousands of tons of other emergency supplies were moved through difficult circumstances into the Sahelian states themselves and were distributed where needed most; amongst the rural populations. In addition to food aid, some donors such as the European Economic Community, provided special grants to the Sahelian states in order to permit a moratorium on livestock taxes normally collected from the

pastoral herders. Emergency road and bridge repairs and other logistics requirements for the movement of cereals were actively undertaken by donors such as Canada and the U.S. and a special Sahel office was created in the Secretary General's Office of the United Nations. In all, some \$900 million was expended during the period 1972 and 1974 by the donor community for both cash and food aid in order to help prevent a calamity of major proportions from occurring in the Sahelian zone.

The Long-Term Response to the Sahelian Drought

As a result of the Sahelian drought, certain fundamental development problems were laid bare. One analysis indicated that the process of desertification was clearly accelerating as a result of increases of people and cattle (6). Perennial grasses were being replaced by annual grasses, and, in many places, deforestation was occurring at an alarming rate. Increased population pressure meant decreasing periods of fallow and a decline in soil fertility. Analyses by development planners also indicated declining per capita food production over the 15 years prior to 1974 at a rate slightly in excess of one percent annually. It became evident that if the long-term environmental decline of the Sahel was to be reversed and if the Sahel was ever to become resistant to future droughts, a sustained, concerted development effort of a considerable magnitude had to be launched.

This was done within the context of the Organization for Economic Cooperation and Development (OECD); primarily through the initiatives of France and the U.S. The result of this effort is the Club du Sahel which now comprises twelve principal bilateral donors and all of the major international development agencies (7). The Club is, in effect, an

alliance between the industrialized world and the Sahelian states. The African states are represented through their Interstate Commission to Combat the Effects of the Drought (the CILSS).

The first meeting of the Club took place in Dakar in late March 1975. This launched the planning process which is now well under way. Technical working groups have been established for the key production sectors of Agriculture, Livestock and Fisheries. Integrating technical groups have also been launched for Ecology, Human Resources Development and Health, Infrastructure and Transportation. Special technical commissions have also been formed to deal with such important questions as agricultural price policy, marketing and storage, local and recurrent project costs and criteria for the selection of programs. The originators of the Club planning methodology also saw that conventional sectoral planning would not be adequate to deal with the large number of interrelationships which had to be examined if a Sahel-wide integrated program was to be achieved. Therefore, a special unit for program integration has also been established.

The consultative and planning process has in one measure been extremely successful. The core problems of the region have been identified and the analysis for their technical solution is under way. An intense interchange among donor and recipient planners is well advanced and a clearer understanding of the priorities of the Sahelian states has emerged. Finally, a very significant mobilization of resources has already been accomplished. Over three billion dollars was pledged in the second meeting of the Club in Ottawa in May 1977. As a result, the external resources have in large measure been made available for the first several years of what will be a 15-20 year development effort (8).

### Village Emphasis

While the resources, both financial and technical, have been mobilized, there are some significant constraints to bringing about the realization of these programs. A significant problem is the absorptive capacity of the Sahelian governments to receive and properly utilize the external assistance being made available. It also presents a unique opportunity. If we assess where the absorptive capacity in the Sahel is greatest, it is at the local level. That is, at the level of the village. The long-term development program for the Sahel, therefore, is focusing on the village as a principal channel for delivery of development assistance. It is this method for administering assistance almost directly to the local level which also makes the Sahel Development Program a unique enterprise.

We must look, therefore, at the village as the delivery vehicle in greater detail. Using the village as the principal channel for development programs will give us a safeguard against some of the dangers of the macro-planning which has taken place at the national level and sometimes even outside of the Sahel itself. Planning from the top down, while useful in identifying macro constraints to development, clearly has severe limitations. Local societies can be changed and even destroyed by the development process. The impact which technological change brings about at the village is rarely well understood. And indeed the lack of local feedback and evaluation often brings about significant dislocations at the local level and can presage the doom of any large-scale development effort from the outset.

The proposed approach through the village has three primary advantages. First, it utilizes the existing, responsive, administrative structure.

Secondly, it avoids the creation of large government bureaucracy with the resulting high continuing costs for its maintenance. Thirdly, it assures sensitivity to local conditions which would be impossible if the program were primarily administered from the capital city. This is also critical to the creation of an evaluation system so essential for the success of any long-term program which includes the need for relative ease of obtaining information feedback.

#### Village and Underdevelopment in Historical Perspective

One has to be extremely careful in discussing "the village" in any universal sense since the societies of the Sahel are so varied. The history of the area from empire and dissolution to recent national reconstitution from the colonial period is extremely complex. The grouping of villages, their internal composition, the way in which they use land and indeed the way in which they are ruled and guided varies considerably from one area to the other (9). Nevertheless, villages, despite their diversity, have certain common elements of permanence. Part of this permanence is based on the ability of the village system to be flexible and to adapt to external pressures.

Unlike their colonial rule in Asia, the French and the English in West Africa chose to govern through existing institutional structures. They did so not because of any feeling of reverence towards the local cultures but rather because of the difficulties of Europeans living in West Africa on any permanent basis (10).

Lord Lugards' policy of indirect rule in Nigeria, while perhaps the most extreme and clearest example, was in some ways a model for much of colonial administration throughout West Africa. Therefore, the basic composition of the village, the role of the headman and the chief remained reasonably intact despite a whole series of external pressures brought about

by the nature of colonial rule. During the colonial period, there were many changes in responsibilities laid upon the village and, therefore, to some degree some changes in the village structure itself. Despite these pressures, the basic village unit survived extremely well as the tool for local administration.

#### Examples of Permanence and Change

Permanence and change should be seen in several instances in order to fully appreciate the special capacity of the village in this portion of West Africa.

Djoliba is a Maninke village in Mali at the edge of the Niger River's annual flood plain, originally settled about the time of the arrival of the first Englishman in North America. Djoliba has remained a functioning organization of local government ever since (11). The present chief traces his descendants back fourteen generations even though the location from whence they first came is not known. Established after the period of Empire, the village maintained its independence during the local political turmoil which existed intermittently from Empire up to the military victory of the French in 1883 and the firm establishment of colonial rule in 1888. The impact of French rule in Djoliba, which lasted 72 years up to 1960, was fairly typical. Colonial control brought peace, greater personal freedom to travel and trade-plus taxes. While the revenue from villages like Djoliba was never very great, its collection did force important changes in agricultural practices. Cash crops were introduced and peanuts became the means of revenue for Djoliba farmers. As production increased and local incomes rose,

the village also became an important consumer of French manufactures.

Following the end of World War II, the French began a substantial investment program in Mali. Included in this effort was the rice scheme for Djoliba. The project, which was physically completed just before independence, failed. It failed under French colonial administration and under an independent Mali as well. It did so because both the French and Malian planners failed to understand the dynamics of the village institutions and the relationship of those institutions to labor and agricultural production. Jones points out (12) these key relationships between clans, the internal family structure and the failure of the Malian political system as well as the French to read properly these interactions. Strongly resisted was the imposition of labor practices which did not honor the work relationship of elders to the rest of the village force.

The failure of an AID housing project at Djoliba during the same period was also related to a lack of understanding about the village structure. Even though they refused to inhabit the AID-financed housing that did not conform to their own family patterns, the residents of Djoliba were not opposed to change per se. They enthusiastically supported those Malian political programs which tied them to the Mali which was also a nation state when those programs did not run counter to traditional institutions.

The introduction of the plow to Djoliba in the mid 1960's is a powerful indication of the flexibility of the Maninke when it is in their own interest. Plows mean draft animals and a wholly

new relationship of sedentary farmers to cattle. Manuring of fields was possible thereby increasing productivity. The area farmed was theoretically tripled but in more real terms it was doubled. The use of carts for haulage became common and with the introduction of pit silos, it is now possible to begin to plow when the rains first come instead of waiting for grass to grow high for the oxen to regain their strength after the dry season.

The introduction of the plow and oxen to Djoliba may also, in time, bring about another and even more profound change. The need for very large families will diminish somewhat as the labor output by farmers increases with the use of animal traction. This factor when combined with rural health programs currently being planned which include maternal and child care gives some hope that child spacing is a reasonable prospect in the future.

Djoliba has changed and will continue to change. It has, however, remained largely intact and gives every prospect of retaining its basic characteristics into the foreseeable future.

In addition to seeing both the resistance as well as the adaptability of the people of Djoliba it might be useful to examine briefly two other groups in Mali in order to see how they have adapted to external pressures.

In late June 1975 a colloquium was held at the Institut de

Recherche en Science Humaine at the University of Niamey in Niger. The colloquium dealt with the effects of drought on the productive strategies of Sudano-Sahelian herdsmen and farmers. One of the reports presented at the Colloquium was prepared by an American researcher who had been resident in Doukolomba, Mali where AID was undertaking a livestock production activity. Grayzel reports in some detail how the Peul, while adhering to the basic herding systems with which they had been so long associated, were flexible enough to turn to the production of sorghum and millet in times of extreme adversity. (13). It should be pointed out that one 8-year old steer is worth approximately 175 dollars on the market or the equivalent of some 3.5 metric tons of millet at local prices. The possession of cattle also carries with it significant benefits for agricultural undertakings. There is the availability of large quantities of manure and hence, while neighboring Bambara agriculturalists have to rotate their fields every 7 or 9 years, many Peul have been able to use the same field for over 18 years. In addition, all the Peul use plows which are pulled by their oxen. This system actually sustained the Peul through the worst periods of the drought. Rather than changing their basic practices

the Peul in the Doukolomba area had their agricultural system reinforced. Using animal traction it was also possible for the Peul to increase the acreage under millet production in contrast to that normally undertaken. Grayzel points out in his paper that while neighboring Bambara gave up cultivating cotton and peanuts for increased millet planting, the Peul merely had to expand the acreage they already had under production. He also reports that Bozo and Somono fishermen in the area who had not before cultivated millet have over the past 5 years begun to participate in the production of this cereal.

The Peul of the Doukolomba area work a mixed farming and herding system. These activities do not take place at the same time and frequently overlap. They show, however, that such a mixed farming and herding system while dependent upon a limited, seasonal transhumance of cattle into richer grasslands is clearly a viable option under certain circumstances.

One has to be careful about generalizing, however, for I have seen south of Lake Chad a similar system that is leading to the rapid deterioration of range land. This is primarily because sufficient amounts of rich rainy season grasses are not available and therefore, rather than trekking 200 miles, as the Peul of Doukolomba do in search of new grass, the Peul in Chad are forced to work a system approximately 50 miles in extent. This system cannot sustain the numbers of cattle

being held by the Peul and some basic change in their production systems will have to be brought about if they are even to survive in their current environment.

While the Maninke and the Peul in Mali indicate two different ways of reacting to external forces, the Dogon of the Songa Plateau in Mali show how even within a highly structured social system, one with a very elaborate cosmology, external technical innovations can be absorbed. During a visit to Songa in 1974 at the height of the drought, I asked the paramount chief how much emergency grain had been made available to his village. He informed that no grain had been needed. He pointed out to a number of crypts carved in the sandstone side of a cliff in which the victims of the drought of 1916 to 1918 had been entombed. The chief said that during the current drought no one had died. None had died because during the prior thirty years, the Dogon had established an agronomic technique which gave them a millet crop even in times of extreme adversity. Their labor-intensive method has also permitted a mixed cropping of millet and onions; the onions find their way as far as the coastal cities and bring to the Dogon a very substantial return on their investment of labor and time. The intensive agriculture of the Dogon is based on the use of heavy composting and, therefore, the high degree moisture retention. This technique, introduced by a French extension agent in the early 1920s, was clearly a practice which the Dogons seized upon following their unfortunate experience during the 1916-18 drought.

We see in Dogon agriculture today a technique which has considerable applicability elsewhere in the Sahel and indeed AID and the Malian government are currently undertaking research to see what aspects of these agronomic practices can be adopted by others in the Sahel. Implicit with this analysis and research is an understanding of the Dogon social structure so we can better understand how the basic agricultural system was factored into their basic cultural system.

#### Forced Migration and New Lands Settlement

In striking contrast to the Maninke of D'joliba and the Dogon at Sanga is the history of the Office du Niger irrigation project in which thousands of Bambara and Mossi were forcibly settled by the French beginning in 1932. This project, established by the colonial regime as a public enterprise and continued by an independent Mali in the same vein, sought to make the area around Segou one of the world's principal cotton-producing regions. It was also intended to produce enough irrigated rice to supply Mali's rice-short neighbors in Senegal and the Ivory Coast (14).

By 1945 the development of much of the infrastructure for the project had been completed. More than 20,000 persons had been forcibly "colonized" and some 50,000 acres of land was under production. This is in contrast to the original objective of 570,000 acres to be established. In that year, there was produced only 22,000 tons of rice paddy on 85 per cent of the irrigated land. Cotton seed production which was to

have been the other major agricultural crop was only 1500 tons. A pause in the expansion was then called for in an attempt to increase individual yields since per capita production was extremely low, indeed even lower than traditional non-irrigated rice production. The pause was only a brief one, however, and by 1962 the Office du Niger comprising 80,000 acres of irrigated land had a population of 37,000 persons. These farmers produced 41,000 tons of rice paddy annually and 7,000 tons of cotton seed. In that year, the administration of the Office du Niger was handed over by the French to the Malians. The Malian government, under Modibo Keita, saw the Office du Niger as an example of how it could forward its socialist policies with respect to agricultural production on collectivized land. The imposition of an ideological overburden on an already shaky project further inhibited its growth and efficiency.

In addition to the many technical and managerial problems which the Office du Niger faced, perhaps the most overwhelming burden was that of the forced colonization of the farmers themselves. In the late 1940s, Mossi and Samogho from Upper Volta were settled on the project as were Bambara and Maninke from Mali. Since independence, however, forced in-migration has been halted. Despite attempts by the Government of Mali to improve the management of the project, the number of settlers has actually declined, owing to voluntary departures and the eviction of farmers who failed to pay their debts or to cultivate properly the land. In 1964, almost 3,000 persons left the Office and, in that year, the total settled population of 33,000 persons was smaller than the number reached in 1961. Some improvement in price incentives to the farmers has increased the production so that now two tons per hectare

of cotton are produced as compared with the previous average .8 tons. Nevertheless, the primary constraint to production remains labor output and the incentive to farmers. Despite the staggering investment of \$175 million since its inception, the project still produces only a small portion of what its potential might well be (15).

In fairness to the Malian government, it should be noted that the government is currently undertaking an extensive analysis of the project in order to see how it can be restructured to be made more productive. Fortunately, within that analysis is a clear understanding, albeit belatedly, of the importance of the attitude of the local farmers to the overall scheme. Inherent within this, of course, is the need for the Government of Mali to look at the whole construct of cereals price policy in order to assure that the farmer is given the proper incentive to produce -- a fair price.

#### Other Historical Constraints

Historically, the farmers of most of West Africa have supported the urban centers by their own labors. These centers, historically the seats for colonial administration and governance, have since independence continued to grow at approximately twice the rate of rural population. In addition, the city has continued to be the center for commerce, industry and general administration of the entire country. The city, therefore, has a population which tends to be reasonably educated and is certainly at the seat of power. Governments believe, therefore, that the Civil Service has to be fed at all costs. And the cost is usually at the expense of the farmer.

Grain marketing systems in the Sahel vary from country to country but they can be seen as having certain common elements. Private

marketing systems are generally held suspect and individual commercants are discouraged to the extent possible. National price marketing systems have been established which tend to provide cereals to urban consumers at a subsidized price. At the other end of the spectrum, the price to the farmer tends to be extremely low and not reflective of true demand. There was also historically considerable suspicion that the farmer "did not know enough" to respond to price incentives or to know when to sell or how to store his grain (16).

Events since the great drought have indicated the fallacies of at least some of these policies. The focus after the drought on food production has forced attention into the whole area of rural development and the need of the individual farmer. Price policy is now considered an important element in production incentives. And while there is still a very significant mistrust of the private sector's role with respect to marketing of food grains, there is at least a grudging acceptance of the fact that the Government itself cannot be the sole arbiter of national production and distribution.

Official grain prices are currently rarely respected by both producer and consumer. Prices fluctuate according to production and distribution and hence, prices sometimes find their level through supply and demand despite substantial attempts by the Government to intervene. The thrust of current policy emphasis is only now and grudgingly looking to the farmer as one of the principal arbiters of price since he has the ultimate responsibility for production.

Measured against this understanding, however, must also be seen the need for some means of national storage systems to assure against periods of drought such as the Western Sahel experienced again in 1977 and in order to assure a reasonable price to the urban consumer.

Promoting Village Development through the Sahel Development Program

Alternate management structures to the village cannot be created in the time available for Sahelian planners to initiate significant programs. For, while long-term development planning in the Sahel aims at the year 2000 as the horizon, some fundamental changes must be undertaken in the agricultural production systems of the area within the next decade. This means that large cadres of conventional civil servants cannot be trained and indeed, as noted earlier, the creation of such institutional infrastructure in the capitals is probably not even desirable. We must look at different ways for bringing about development in the rural areas. Such systems are currently being developed in the context of the Club du Sahel although they are not yet placed "on the ground" in large numbers. The implementation of the first phase of the program over the next five years will, however, begin to place extreme strains on local village systems and in that context we should look at how development programs in the Sahel can promote village development and how it can bring about change in the most constructive way possible.

In order to do this however, we must first look at the basic strategies recommended for the Sahel Development Program. (17) The overall objectives are: (1) to reduce the consequences of emergency drought situations in the future; (2) to assure region-wide self-sufficiency in staple foods (cereals and meat) while rehabilitating the basic environment of the Sahel, and finally (3) to accelerate economic and social development particularly in the rural areas.

Given this set of objectives for the development of the Sahel the following sub-strategies have been agreed to. These are: (1) development of traditional non-irrigated crops; (2) development of irrigated crops; and (3) development of animal husbandry and the achievement of a new agriculture/livestock balance.

The first phase of this program places very heavy emphasis upon developing traditional non-irrigated crops. For centuries past the Sahelians have coped with the difficult climate in their region by practicing "dryland farming". This of course is in reality seasonal farming making maximum use of the short rainy season. This traditional form of agriculture occupies most of the population and furnishes the bulk

of its food supply which is approximately five million tons of cereals produced in an average year in the Sahel from non-irrigated crops. Ninety-nine percent of those five million tons are produced by small farmers. All of the technical studies undertaken on the Sahel in this sector emphasize the necessity of developing these dryland crops using to the maximum extent possible the technology developed by the farmers over the prior centuries. We are certain, nevertheless, that significant increases in production can be brought about by improved seeds and some changes in agronomic practices. Finally, at least 25 percent increase in production can be achieved merely through the reduction of losses due to pests and birds.

The means of obtaining higher yields are well known, and most experts agree on the following:

- better soil preparation;
- use of improved varieties which are selected for high yields and if possible shorter maturation periods;
- some use of fertilizers and pesticides;
- protection from locusts and other predators;
- and improved facilities for grain storage and transport.

All of these improvements can be undertaken at the local level with the single exception of the need to improve transport throughout the Sahel. Another factor of extreme importance, already mentioned, to increasing yields is to assure the farmer a reasonable return for the investment of his labor and meager capital.

Despite these improvements, almost all reports on the Sahel note that yield increases brought about by dry-land farming will remain highly sensitive to the vagaries of weather and, therefore, the development of non-irrigated crops cannot alone provide a solution to the future problems of drought.

The long-term alternative to the reliance on existing dry-land farming is the cultivation of new lands. Some of these lands are currently being held in escrow because of the presence of the tse-tse fly along the southern Sahel. There are also lands currently underutilized which lie in the great river basin systems which traverse the Sahelian region. The Sahel is unique in the sense that five major water systems exist in its arid zone; Lake Chad, the Volta River system, the Senegal River Basin, the Gambia River and the mighty Niger; all have been virtually untapped to date. The development of these systems, however, is a very long-term undertaking requiring (1) massive inputs of capital, (2) long-term assessments of the environment impact of the damming of the rivers, and (3) the education of farm populations in utilizing new irrigation systems. Perhaps most importantly, however, is the need to bring about in-migration into these new lands in a way which does not disrupt basic social patterns. This is currently being done in Upper Volta in the Onchocerciasis Control Program which is leading to the resettlement of the White, Red and Black Volta Rivers. In this system, basic village structures are being respected and

ethnically cohesive groups are being introduced into the cleared land. With the development of these new lands, it is estimated that the Sahel could produce 18 million tons of cereal using present techniques and yields per hectare. Twenty million tons with current yields can be envisaged by 1985 and 29 millions are possible by the year 2000.

The extension of cropland can be achieved in two ways: (a) by extending the land cultivated around existing villages, and (b) by creating new farm land and establishing new villages. This, however, can only be achieved through migration, otherwise the extension of currently cultivated areas would be detrimental to soil fertility because of reduced fallow periods. We have already seen, however, how difficult migration can be if not handled with great care.

Along with the development of new lands will also be the introduction of new technologies. It is a basic premise of AID, however, that certain conditions must be fulfilled by any new technology for its adaptation by the farmer.

It must:

- be suited to local conditions;
- be economically profitable for the farmer;
- involve no more than acceptable risk levels;
- and, finally, fit in with the general cultural pattern.

Despite the macro planning being undertaken for the Sahel at this time it is fortunate that no one has suggested that the large scale introduction to very modern energy-dependent technology might be a solution compatible with the Sahel's socio-cultural tradition. (18)

While a major development effort is now going forward, the fact remains that farmers' incomes in the Sahel have actually been declining over the past decade. Annual cash incomes in Niger amongst the Hausa cereal producing farmers average only \$17. In Upper Volta and Senegal farmer cash incomes are somewhat higher but only due to the remittance from immigrant workers to members of their families remaining in Upper Volta and from groundnut cultivation in Senegal. Cash income by no means represents the farmer's real income since a large proportion is in the form of produce grown and consumed on the farm; on the other hand taxes paid have to be deducted from money income. The FAO has attempted to estimate the trend of agricultural income between 1960 and 1970 and it has drawn two conclusions: One, in all the Sahel States agricultural income is lower than the

national average and a fortiori lower than urban income. The income per farm worker is from 8 to 14 times lower than the urban worker's income and the disparity is growing. Second, the ratio between agricultural income and urban income deteriorated over the ten-year period. From 1960 to 1970, overall agricultural production increased slowly and prices remained static on the whole. At the same time, by the end of the decade the cost of essential inputs purchased by the farmer was increasing faster than the selling prices for crops, therefore, the value added on the farm actually decreased. Inequality between rural and urban dwellers which was already considerable in 1960 worsened during the subsequent 10-year period.

This trend has continued beyond 1970. The Center for Research in Economic Development (CRED) at the University of Michigan has examined trends in agricultural cash incomes between 1970 and 1974. In nominal values these incomes declined during the period except in Mali and in Upper Volta. Further, the uncertainty about price trends was such that in these two countries it was impossible to decide whether the trend of real income was upward or downward. The general conclusion reached by CRED was that the cash incomes of African producers has dropped between 1970 and 1974.

#### The Integration of Rural Development

The obvious means to effect this declining situation, particularly in light of the prospects for substantial aid which now is very real, is the development of a major rural support effort. The development and large-scale adoption of new cultivation techniques demands more

than a technical research effort for the rural communities of the Sahel, i.e., the villages. Past experience such as that at Djoliba has amply demonstrated this fact by the failure of many projects and it was not possible to break through the primary constraints by merely strengthening general rural support services. On the other hand, if the various technical and financial constraints were the subject of coherent measures insuring that the farmer was not thwarted by other bottlenecks, we would probably see more optimistic behavior on his part in favor of adopting new techniques. One way of assuring this is by introducing these techniques through systems which are his own.

An excellent example of how this can be done can be seen through the basic rural health strategy developed by the Club du Sahel and now in the process of being accepted by all the Sahelian states themselves (19). The underlying premise of the village-based health delivery system is that it is organized by and for local residents. It is supported by a back-up health infrastructure which provides those services which are not possible at the local level. However, by basing the principal systems at the local level, it offers the most effective and efficient way to promote and to protect community health for the majority of the people dispersed in rural areas.

Indigenous systems of health care exist in almost every Sahelian community; these systems could well be integrated into low-cost technologies and simple primary care methods. Local healers and practitioners, including traditional midwives, are effective to the extent they are because these local providers enjoy the confidence of the community.

It is possible to train village practitioners and selected village residents to enhance their skills in prevention and to provide simple diagnoses and treatment of common health problems and, thus, to facilitate their effective intervention in the health status of the community. At the local level, the common disease patterns of infants and young children--respiratory infections, diarrhea, malaria, and malnutrition--are the major killers and can be effectively managed at the village level, along with a wide variety of prevalent infectious and parasitic diseases. Village health workers, as they continue to serve their communities, can expand the scope of their knowledge and problem-solving skills.

The implementation of the village-based system can take place in a phased incremental way allowing resources to be allocated as they become available.

The closeness of such a community health system to local residents creates an incentive and an opportunity for the citizens to contribute to the successful development of the system.

The use of village health workers in the development and collection of health and vital statistics offers an effective mechanism by which to develop a health information system.

Birth spacing services are most appropriate when provided within the context of maternal and child health services that effectively reach the village level, and where the community itself has made an informed choice regarding these services. The estimated 80-90 per cent of the population that do not have access to the existing health systems in the Sahel countries can be reached.

The expected operating expense of this system is justified on the basis of the benefits anticipated from the equitable distribution of resources for basic health services to rural populations. The capital investment outlay is minimal relative to existing expenditure patterns.

The existing health infrastructure in the Sahelian countries can provide the basis of technical and logistical support for a village-based strategy. Successful pilot efforts have already been undertaken. (20)

- a. The Maradi ten-year village based regional experience in Niger has strongly influenced a fundamental health service reform in Niger--currently reflected in the current three-year plan.
- b. Village based projects, using existing health infrastructures, are being implemented in Mali and Senegal

and perhaps in other Sahelian countries.

- c. The successful experience of other countries which have undertaken health service reforms with scarce resources strongly favor this approach (China, Tanzania, Sri Lanka, the Kerala State of India).
- d. The health services technologies appropriate and applicable to any particular Sahel village would require country- and possible area-specific definitions and adaptations to fit localized customs, patterns, and resources.

#### Demographic and Health Planning

Planning of health and social services, as well as other sectoral planning, requires reliable data concerning population growth and distribution combined with an accurate assessment of health and disease patterns. Unless national censuses, surveys, and epidemiologic studies in the Sahel take special account of the following three factors, considerable uncertainty will remain concerning purported future demographic patterns:

- a. Migration: nomadism, rural settlement, and also rural-to-urban population shifts.
- b. Isolated rural populations.
- c. Changing fertility and age-specific mortality rates.

Further, an understanding of small-area variations in local demographic and disease patterns is essential to the planning, implementation, and evaluation of health and other projects.

It is important that these data be used in all development programs. This can only be done by enhancing the understanding of relationships between population and Sahelian development objectives and by expanding the capability of planning institutions to incorporate these population dimensions into their development programs.

The health risks to Sahelian mothers and children can be significantly reduced by the spacing of births. This has long been recognized in the Sahel and accomplished by tradition methods of abstinence, contraception, and prolonged breast-feeding. There is evidence that urbanization and other modernizing forces are eroding these traditions. The lengthening of birth intervals by modern child spacing measures (combined with improved child and maternal nutrition) markedly increases the survival chances of infants and young children, and also improves maternal health.

#### Components of an Integrated Village - Based System

To make most effective use of a village based organizational structure for improving health, the preventive/community health orientation of services delivered should include components focusing on nutrition, clean water, environmental sanitation, and communicable disease control.

In general, the successful implementation of such components within the delivery mechanism of a village based system depends on

*including food production for local use.*

the effectiveness of a health education effort emphasizing the importance of each of the above components. Unless villagers are convinced of the importance of the component programs, successful implementation will be most difficult.

For each particular component, the strategy postulates a number of program premises, which are outlined below: (Of course, these components are in addition to, and complementary of, other primary health care activities.)

#### NUTRITION

Improvement in the nutritional status of the Sahelian population, particularly mothers and infants, is dependent upon:

- a. "Self-sufficiency" in a nutritional sense, i.e., having available adequate supplies of a nutritionally sound diet, preferably produced locally.
- b. Future planning and implementation of nutritional self-sufficiency through new crops, livestock, or other foods being derived from the definition of specific localized (village or regional) nutritional requirements.
- c. Ultimate achievement of a constant local availability of a nutritionally sound diet.

Significant improvement in the nutritional status of the Sahel population can be effected by a well-developed village based health structure.

- a. Changes in feeding practices of infants and children can substantially contribute to nutritional improvement

and can most effectively be accomplished within a village based system.

- b. In addition to nutritional emphasis on infants and young children, emphasis must be placed on the nutritional needs of pregnant women and lactating mothers.

After initial training and deployment of village health personnel, continuing education/skill upgrading workshops should be provided periodically at the intermediate level (i.e., at peripheral health centers and dispensaries serving in support of village health workers), and should include nutrition training. Also, at the intermediate level of the health infrastructure resources for the nutritional rehabilitation of severely malnourished children needs to be available. Stress should be placed on the health and nutrition education of the mothers of these children and the use of locally available weaning and supplementary foods.

Using the Basic Human Needs Approach

Another way of assuring local participation particularly within the village context in an investment program as massive as that proposed for the Club du Sahel is to view it within the context of a basic human needs policy. A basic human needs development policy is a fairly recent innovation and as a development tool it still is being refined and requires considerable further definition (21). There is hope, however, based on the recent conference at the Development Assistance Committee of the OECD, that the principal donors of the world are now assessing basic human needs in much more analytical terms.

The DAC Chairman's Report for 1977 (22) places very heavy emphasis upon the need for further refinement of this development philosophy. The concept, however, is a relatively simple one. First, it includes certain minimum requirements of a family for private consumption. Adequate food, shelter and clothing are obviously needed as are certain household equipment and furniture. Second, the concept includes essential services provided by and for the community at large, such as safe drinking water, sanitation, transport, health and educational facilities.

The basic needs-oriented policy implies a very high degree of participation of the people in making the decisions which affect them. Their participation interacts with two main elements

of the basic needs strategy. For example, education and good health will facilitate participation and participation in turn, will strengthen the claim for basic needs. The satisfaction of an absolute level of basic needs as so defined should be placed within a broader framework, that is, the fulfillment of basic human rights which are not only ends in themselves but contribute to the attainment of other goals. Inherent within this concept of rights is the respect for basic value systems.

In all countries employment enters into a basic needs strategy both as a means and as an end. Employment yields output. It provides income to the employed. Further it gives a person the recognition of being engaged in something worth his while. While the concept of basic needs has a universality of application it seems particularly relevant to development in the Sahel. If we look at the basic factors of human needs as already outlined we can see that many of them already exist within the village construct. This is especially so with the participation which is at the core of a basic human needs approach. Only in this way can development objectives be made responsive to local will and locally perceived requirements.

In the Sahel the basic needs objectives can be found in increasing food production and storage, improving health and

nutrition, bringing about the creation of dependable potable water and assuring the worker an adequate return for his or her labor.

By looking both at the village and at a basic needs approach, we also can perceive a great gap in development planning in the Sahel today. This weakness is not unique to this portion of Africa. It is implicit within development planning on a worldwide basis. It is simply that the role of women has been virtually ignored. Only by pushing development planning down to the village level and by forcing planners and sociologists within the planning process to assess the interrelationships of village clan and family with the role of women be properly perceived. The focus on sedentary farmers living in small extended family villages has recently been examined by Kathleen Cloud in a paper prepared for AID (23). In it she describes the sex roles in food production among sedentary farmers as follows:

#### Grain Production

The grain is usually millet or sorghum. These are most often seen as men's crops, and the husband or a group of brothers will control the field and its product. The division of labor is often:

- a. Clearing the land - done by boys and young men during the dry season. Trees and large plants are cut down and the area is burned to prepare for planting.

- b. In planting - men make holes, women plant seed -- often women are responsible for selection of seed from previous harvests to be used. Because of erratic rainfall they will sometimes plant 4 or 5 types of seed in the same plot.
- c. Weeding - This is the most labor-demanding part of the grain farming, and in most instances every available hand will be used in hoeing weeds. Young men come home from the city to help during this period. Wives will take turns staying home to cook and care for the children while the others go to the fields for the day. A man with several wives and many children has a distinct advantage in agriculture because of the labor he can call upon during the weeding and the harvest. The crops may be weeded one, two or three times. The amount of weeding has an effect on the amount of grain harvested. There is some indication that when grain reserves are high, less weeding is done -- there is not the urgent need for grain.
- d. Harvesting - Again, every available person will be used.
- e. Storage - Generally men are responsible for building the family storage sheds and supervising the grain stored in them. Women are responsible for the household storage of the grain.

- b. Threshing - This is the women's job, and it will be done just before pounding the grain into flour each day. This threshing and milling may take a woman two to three hours, and is one of the most arduous, time-consuming tasks she has to perform.

There are some exceptions to the pattern of male dominance of grain production. In addition to assisting in their husband's millet field, women from some groups will have their own grain fields where they and their children do all the work. Notable among these are some of the Hausa women. In Mali women grow corn in fairly large quantities and in some areas swamp rice is grown by women.

#### Vegetable Gardens

Women in most sedentary farm groups have but gardens where they grow vegetables for the sauces eaten with the millet as well as for trade. They may grow carrots, red peppers, onions, garlic, tomatoes, eggplant, gumbo and various kinds of beans. It is these sauces that provide the necessary additional amino acids to the millet to make a complete protein chain. In addition, they provide many necessary vitamins, minerals and fats to the diet while also providing variety in flavor and appearance.

Unfortunately, the great majority of food production projects have been designed with almost no understanding

of the basic divisions of labor as indicated in the Cloud paper. While it is not germane to this paper, the sex roles in food production among pastoralists is also poorly understood, and even worse what is known is infrequently utilized in the planning of livestock development activities. By promoting the village development through an understanding of the village dynamics the role of women can, should be, and must be factored into future Sahelian development programs.

Increasingly donors are coming to understand that rural change can only be brought about through integrated rural development programs focusing on the village. AID, the World Bank, the Canadians and most other donors now agree that Integrated Rural Development is a system of related economic, cultural and social changes which are designed to improve the material welfare of rural people in terms of minimum levels of food, clothing, shelter and vital services such as health and education. An integrated approach to rural development therefore, is nothing more than a systematic means of attempting to achieve the basic needs of the rural population. A recent assessment of an AID rural development activity in Upper Volta by Michigan State University (24) however, indicates that rural development cannot occur in the short time periods in which most donor agencies conceive and execute projects. The MSU assessment team recommended (and AID has now agreed) that projects for Rural Development be

framed within a 10-year period. The report states that:

"Only within such a period of time can social, economic, agronomic study, experimentation and application take place to begin to perceive substantial progress toward integrated development. For example, building a road may take six months while setting up a viable animal traction system may take seven or eight years. But both should be seen as integral parts of the same long term process".

Rural development in Upper Volta can be seen as an interesting harbinger of the future. Since 1965, Upper Volta has pursued a general approach to rural economic development which is essentially decentralized. This decentralization sought to bring about social development through regional development organizations called ORDs, which in effect are local development institutions. These institutions are directly responsive and responsible for a fully integrated approach to development in the rural areas of Upper Volta. The decentralization permits greater flexibility and adaptation to local conditions which vary widely across Upper Volta depending, of course, on the ethnic composition of the populations being serviced. Decentralization is also a process which permits greater local participation in determining the very scope of the ORD activities and who will be the beneficiaries of these new programs.

#### Reinforcing the Village-Based Approach

The ORD approach in Upper Volta also reveals a very important

element in supporting the village-based development system. That is, the village itself, despite the very considerable strength we have already identified, has certain very real limitations. One is that the principal families in any given village will tend to accumulate the greatest benefit from any development effort. And while most village systems are essentially egalitarian, there are, however, hierarchic structures which take a percentage "off the top" of most programs. It is, therefore, important that some external and more independent body have a role in the administration of the development process. Clearly, however, when that administration has historically been lodged in capital cities the gulf has been much too great. By placing development administration in the rural areas the government of Upper Volta has achieved, I believe, a very important balance between the village system and a management process which is sufficiently removed from the traditional village hierarchial structure in order to permit a somewhat greater degree of objectivity in the allocation of resources. In addition, a secondary administrative system external to the village permits a more independent judgement in terms of actual progress.

There are certain technical elements of development which are also outside the capacity of the village to undertake.

For example, field trials for the local adaptation of new strains of millet and sorghum must be undertaken in a reasonably controlled circumstance; one in which scientific observations can be made and fed back into an overall nationwide agricultural research system. While the demonstration plot should take place at the village level it is important that the actual management of the plots be related to some more objective external system of assessment.

Similarly in the Health area, as we have already noted, the village itself can form the absolute core for any rural health delivery system. It must, however, be backed up by institutions and structures which permit a greater degree of scientific review as well as have the capacity for terminal analysis which the village itself cannot contain.

Much of the infrastructure which is needed to tie the village to the outside world must be administered by bodies external to the village. This is clearly accepted as a reality on the part of the villagers and is seen as one of the important functions for the central government or as in the case of Upper Volta, the ORD. What is critical here is the participation of the village in selecting the optimal placement of a rural farm network system in relation to production units. Inputs of fertilizer and seed on a regular basis as well as the supply of credit and technical assistance cannot take place without a rural road system. Similarly, crops cannot be marketed in a

timely manner and central storage assured unless a basic farm to market system is in place and being maintained.

A decentralized approach to rural development focusing on the village also has distinct advantages for participation by donors. For example, in the Eastern ORD of Upper Volta, AID and the FAO are the principal donors. Here, where AID will be involved for at least a decade, it is possible to develop an in-depth knowledge of the Gurmanchi society with which the AID technical personnel are dealing. Ethno-specific data can be developed over a long period of time and, therefore, reasonably verified. Similarly, other donors such as the French working in the Sahel ORD in northern Upper Volta have an ability to focus their attention on the Peul and to understand in detail the nature of both the pastoral nomads of the area as well as those Peul who are becoming semi-sedentarized. The correlation, then, of this information by a national social research center is, therefore, also of extreme importance. Here, then, support for national and regional social research institutions becomes an important element of any assistance strategy.

In this regard, the Institute of the Sahel, established in Bamako this past year will become an increasingly important institution. The primary functions of the Institute are three-fold. It will serve as the basic coordinator and dissemination

center for research information concerning the social sciences as well as the hard sciences. Secondly, it will train Sahelian researchers in research techniques and in the management of research systems. Thirdly, it will become the locus of a great deal of information currently scattered throughout the Sahel and indeed throughout the developed world. Much of the information which currently resides outside of Africa will find

a home at the Institute. In the longer term it is hoped that the Institute will build a sensitivity on the part of national planners to the social systems which are functioning in their respective countries. And that by training researchers and social scientists the Institute can increase the degree of sensitivity on the part of national leaders in the Sahel concerning the importance of their local institution.

#### The Donor Community's Ability to Respond to Village-Based Activities

There is a very real limitation on the part of the donor community to support and sustain large numbers of activities such as those we have looked at in the eastern ORD of Upper Volta. Problems in recruiting adequate numbers of technical personnel are striking. Of over 100 technical positions in the Sahel established by AID over the course of the last year more than 40 per cent remain unfilled. Problems of finding American technicians with both French capacity and a desire to live in difficult rural

circumstances is a major constraint. While the Peace Corps has a major role in the implementation of many of these AID programs, there is frequently needed a degree of technical expertise greater than that possessed by volunteers.

While social scientists in AID field posts are now readily accepted, the problem is in finding properly trained sociologists and anthropologists who are prepared to work in the area on a full time basis. For them this usually means taking up residency in the Sahel for a minimum of two years. Contrary to popular beliefs, this is not necessarily a lifestyle which is amenable to most American academics. This is especially so since many of them feel that two or four years outside of their academic system will work to the detriment of their future career opportunities. One way of countering this problem is a recent attempt by AID to bring into its foreign development service a number of young social scientists who are prepared to consider AID on a career basis so that they will apply their training to development problems of the Third World on a long-term basis.

The social science community on the whole, however, has a much larger and substantive role to play in the development of assistance strategies than has been the case heretofore. The social scientist has historically been an examiner of local systems in a static sense. In many ways, this has permitted the creation of a very valuable critical analysis of local institutions. The time has come, however, for the addition of certain further responsibilities. These responsibilities relate first of all to the people being assessed. It is no longer adequate for social scientists to study local cultures in isolation. These cultures should be analyzed in such a way as to permit

the findings to be made available to a much larger audience; particularly that audience which is charged in helping to bring about change in rural areas. Hence, the very nature of studies and reporting being undertaken by social scientists should be seen as an evolving process.

Social scientists also have a responsibility to the countries in which they work. It is a responsibility to pursue with perhaps greater diligence than has heretofore been the case the analysis of principal policy constraints which impinge upon local change, which either inhibit it or bring about change in such a way as to be destructive to the basic fabric of the indigenous society. Key in this process is a better understanding on the part of the social scientists of the decision factors of any local system being examined. Here then, social scientists must become increasingly attuned to how economic as well as cultural decisions are arrived at. Only in this way can those persons charged with macro planning be made sensitive to such fundamental decisions as to how and when a farmer will sell the product of his labors or under what circumstances cattle will be moved into a marketing system.

The social scientists must also be prepared to do battle if need be on a much more continuing basis with the hard scientists. Glenn Johnson, in a paper presented at the annual meeting of the Canadian Agricultural Economic Society in August 1977 (25), came forward with the following conclusions:

1. Social scientists and particularly agricultural economists have not contributed successfully to food and nutritional appraisals.

2. Social scientists and particularly agricultural economists have not successfully made the case for needed social science research on food and nutrition.
3. The failure of social scientists has not been due to their being excluded from food and nutrition appraisals and research priority setting exercises. Instead, it appears to be due to a deep-seated philosophical orientation of natural and social scientists.
4. Some of the constraining philosophical orientations are shared by natural scientists and by some social scientists. Shared constraining philosophies include positivism and conditional normativism (a la Myrdal). Among the social scientists who often share positivistic orientations for the natural scientists are some production economists, econometricians and some policy analysts.

There is much truth in what Johnson is saying - the need for social scientists to be prepared to expose their ideas to a much more critical assessment by those who are natural scientists, planners and even politicians.

The social scientist has an increasing responsibility to the world in which he is operating. That responsibility encompasses the need to assess existing data in a problem context: a context that is somewhat alien to much of the analysis which has been conducted; especially with respect to sociology and ethnography. Along with this increased responsibility, however, has evolved an enormous opportunity for an understanding in a much larger arena by persons who had heretofore been insensitive to the subtleties of social science disciplines.

There is also a responsibility with respect to the ultimate recipients of the vast amount of development aid currently being mobilized in areas such as the Sahel. It is a responsibility to the very individuals who benefit from that aid. Based on the analysis, the findings and the data developed by social scientists -- planners and politicians -- local administrators and headmen and the families of 100,000 villages, all will be impacted upon in a way which was thought impossible a mere decade ago. Social scientists, therefore, have a unique opportunity as well as a profound duty if the village is to continue as the primary arena for human existence and growth in the Sahel.

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