

108

RURAL WATER-SUPPLY IN TANZANIA: IS "POLITICS" OR
"TECHNIQUE" IN COMMAND?¹

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In building up the country—we unlike the modern revisionists who onesidedly stress the material factor, mechanization and modernization—pay chief attention to the revolutionization of man's thinking and, through this command, quick and promote the work of mechanization and modernization.

(Mao Tse-Tung)

1. Introduction

Nobody can deny that the building of better rural water supplies greatly improves the living conditions of the peasants. The aims of such supplies are an important policy issue; who should get them first, how important are rural water supplies in relation to other development items, and what standards should be applied, such as water quality, distance from the house, etc. The aims very much depend on the country's overall policy for development. Both Tanzania and Kenya give rural supplies high priority, but while Kenya emphasizes ecological zones with a high growth potential² (WHO: 1972), Tanzania gives first priority to ujamaa villages, which in practice means relatively poorer areas, such as Dodoma (Tanzania: 1969, p. 40).

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109

Nearly all previous research on rural water supplies has been concerned with the aims of the programme, and how far they are being met in practice.³ A different, but related, question is how these supplies are brought about, which is usually considered to be a technical or administrative problem and not related to broad policy matters. The task is one, the argument goes, of implementing the given aims in the most efficient manner. Attention is focused on things like technical expertise, budgeting and accounting, manpower requirements, and inter-personal relations in the Water Ministry (see Minister of Water Development: 1971 and 1973, and Hyden: 1973). An examination of how the process of implementation relates to the national policy of socialism and self-reliance is usually considered superfluous, or even detrimental to the progress of the programme.

This paper attempts to analyze the process of implementation of the rural water-supply⁴ programme on the Tanzanian mainland. The aims of the programme are discussed only to the extent that they relate to the process, even though some features, such as the large rural-urban difference in the supply standards, merit discussion. In its broad outline, the aims of the rural water-supply programme are closely linked to the formation of ujamaa villages and to improving the lot of the peasants in the poorer areas, and are therefore in accordance with the socialist aspirations of the country.

Tanzania is in a state of transition. The point of departure is colonial rule which introduced major

changes into pre-colonial African society, leading to its underdevelopment.⁵ Where this transition will lead is as yet uncertain. It will either lead to a socialist state, free from the clutches of international monopoly capitalism, based on the dignity and strength of the masses of people, and with the working class firmly in power. Or it will lead to a progressive integration as a neo-colony into the international capitalist system, accompanied by a sharpening of class divisions at home. As President Nyerere himself has said, there is no other choice (Nyerere, 1973). According to Shivji, Tanzania appears to be in a

...latent but definite class struggle. On the one hand there is the economic and political bureaucracy (objectively backed by the international bourgeoisie, the country being still in the neo-colonial framework), and on the other are the workers and peasants as represented in their most vocal and conscious elements largely small groups of intelligentsia, including a few enlightened leaders (1973a, p. 22).

Rodney further clarified that,

It is not a question of revolutionary forces against the petty bourgeoisie but a struggle within that social stratum which is called the petty bourgeoisie and which includes the economic and political bureaucracy, whose actions are most relevant to the question of disengagement from the imperialist economy (1973a, p. 66).

A detailed discussion of underdevelopment and the current state in Tanzania is outside the scope of this paper. The political economy of Africa,

primarily outlined by Baran, Shivji and Rodney, is rather taken as a base from which the rural water-development programme in Tanzania is examined. Of particular interest is the role that the different strata of society that are involved play: do they further the socialist revolution or underdevelopment and continuing dependence? Such an examination will necessarily have a number of shortcomings.

First, classes are based on production relations, and an enquiry into their role must, therefore, include the main socio-economic features of that society. To look at one part alone, such as the relationship between government technical staff (experts) and peasants in the process of developing water supplies, could lead to false conclusions. The discussion on this paper partly avoids this difficulty by moving from general principles of class, capitalism, and underdevelopment as related to Tanzania to the particular situation of the rural water-development scene, rather than vice versa.

Second, classes and class boundaries are not always clearly defined, nor is the relationship of the classes to one another. This is particularly true in countries like Tanzania, where a large part of the economy is nationalized. But as Shivji has said, "by nationalizing, a country does not break from the imperialist economy and, therefore, does not cease to be a neo-colony" (1973a, p. 11). The discussion will, therefore, concentrate on the relationship between two main strata inter-acting with each other

112
in the rural water-supply field: the government experts and the peasants. There is also a short section on the role of the kulaks. The role of substrata within the technical staff, such as local engineers, expatriate engineers, technicians and fundis is only touched upon, but should nevertheless be dealt with in the future. The relationship of the Tanzanian water programme to international monopoly capitalism is, however, discussed at some length.

Third, conclusive empirical evidence is hard to find for such a study. Little quantitative information that is reliable can be presented; most of the evidence is qualitative and consists of selected case studies. The claim that they are representative of the whole rural water development scene can, therefore, not be empirically demonstrated. The conclusions are nevertheless valid since they are based on rather clear patterns which emerged in the course of the enquiry, and which fit into an internally consistent and scientific general theory of underdevelopment.⁶ The brief historical review of government water supplies in rural Tanzania also serves to support the discussion of the present situation.

Fourth, to single out the Water Ministry and with it Swedish aid for this analysis could imply that there is something unique about these two institutions in regard to the Tanzania class struggle. But they are not unique. One should expect the relations between the social strata to be similar for all government and parastatal bodies since they are rooted in the

113
general phenomenon of underdevelopment on the fringe of international monopoly capitalism.

It will be shown in the following sections that the process of implementation of the rural water-supply programme conforms in its broad outline to the neo-colonial dependency model. No major forces working toward disengagement and the liberation of the productive capacities of the masses could be found. In particular it will be shown that:

1. The staff of the Water Ministry tends to have a technocratic and bureaucratic attitude, putting primary emphasis on the establishment of technically sound structures, rather than close co-operation with the peasants.
2. The peasants' participation in the creation of a scheme is very limited. Projects are designed, constructed, and maintained by the engineers and technicians of the water department. Some consultation with the peasants (mostly with the local leaders) usually takes place at the planning stage, but the staff maintains control over all phases of the scheme, from early planning to maintenance. Self-help, where it has taken place in the past, was nearly always limited to a contribution of free labour under the supervision of the water department staff.
3. The peasants are fully aware of their water needs. They have little confidence in their own ability to improve their condition and expect the government to take the initiative.

It is the task of the village leaders to negotiate with the government staff for the required services. Schemes are often offered by the government staff as an incentive or reward for compliance with other government programmes, particularly forming ujamaa villages.

4. The large external component of the rural water programme, in the form of funds, personnel, equipment, and consulting work, tends to reinforce the technocratic attitude of the local staff, while retarding the build-up of the country's internal capacity to undertake the needed works.

5. This mode of operation of the water programme has historical roots in the colonial period, where rural water supplies were provided or sponsored by the colonial administration mainly to (a) supply colonial settlements and farms, (b) encourage the introduction of cash crops (including the commercialization of cattle rearing), and (c) reward and pacify "co-operative" segments of the African population. Although the aims changed with independence, the methods of implementation have basically remained the same.

6. This has some further implications, notably the choice of technique for the schemes, which might well be different from current practice if the water programme—along with the entire national development programme—was based on enhancing

the productive capacity of the masses, with the government controlled by the working class and free from international monopoly capitalism. The present emphasis on technical performance and economic efficiency would then give way to considerations of maximum participation by the peasants, opportunities to learn skills, and local production of the required materials.

2. Brief History of Rural Water Supply

(a) The Colonial Period

Public expenditure on water supplies started around 1930, and the Water Development Division was established in 1946. The total expenditure on rural water supply and irrigation has risen sharply over the years, starting with shs 2 million in 1946 and amounting to shs 15 million in 1960 (Water Development: 1968, p. 4). At present the planned construction expenditure for rural supplies is about shs 45 million annually, with an additional amount of some shs 30 million for research and project preparation.⁷

The early concern of the colonial administration was mainly with water rights for Europeans. The Germans drafted a water ordinance, which however was not enacted until 1923, during British rule. Water Boards were established to regulate the sharing of water between "alienated" and "customary" land. Attention was primarily given to four areas in the country: Kilimanjaro-Nyeru, Lushoto-Tanga, Kilosa-Morogoro, and Mbeya-Njombe-Iringa.

In 1934, a report (Teale and Gillman) on the Kilimanjaro and Meru area expressed concern about the increasing alienation of land and water withdrawals. It described the predicament of the African farmers on the southern slope of Kilimanjaro and Meru. Checked by the forest reserve uphill and faced with increasing alienation of land by European downhill, they not only experienced an acute shortage of land for cultivation, but were also losing grazing land for their livestock at the foot of the mountain. The estates were cultivating only a small portion of the alienated land, yet they continuously applied for additional water rights. The report, therefore, recommended a survey of the land and better utilization of alienated land holdings.

On water use, the report expressed concern about large withdrawals in the area which might jeopardize the future water supply for Tanga. It recommended that a hydrographic survey be carried out and in the meantime no new water rights be granted.

The hydrographic survey was completed in 1939 and made it quite clear who was to benefit from the water on the slopes of Kilimanjaro and Meru. A detailed survey of all the rivers, furrows, and water users was undertaken "to make it possible to institute proper control of the use of water and to see that the available water is distributed in the most beneficial manner, to avoid unnecessary waste" (Water Executive: 1939, p.2). It recommended to (a) prohibit irrigation on the steeper slopes (i.e. largely in the zones of

African cultivation), (b) restrict the water use by Africans from large furrows, and (c) allow the European farmers to satisfy their demand and to pass on the excess, if there was any, to the African users. Thus the aim of water control in this area was simply to restrict the use of water by African cultivators so that enough water would reach the zone of European settlement to satisfy the water demand created by increased land alienation.

The list of major investigations carried out in Northern Province in 1939 throws more light on the aims of water supply at that time (Water Executive: 1939, pp. 10-12):

1. Irrigation for agricultural experiment plots,
2. Test drilling in Masailand (all unsuccessful),
3. Irrigation survey for King's African Rifles, Moshi (not constructed),
4. Survey of irrigation for a settlement project, and
5. Repair of a furrow on the Kikafu River, Moshi.

The first two were entirely carried out by the Water Executive. For the fifth only an inspection was done and an estimate for the cost of cement and tools made (shs 1,000), after which the chief of the district was instructed to have the people who used the furrow raise the money, provide stones, sand, as well as all necessary labour !

The following projects were carried out in Northern Province in 1940 (Water Executive: 1940, Appendix):

1. Several dams for cattle Masailand,
2. Water supply for a labour camp of 1,000 men,
3. Water supply for a stock route at the request of the Food Controller, and
4. Water Supply for the Moshi Cantonment of the K.A.R.

These projects, and others carried out in subsequent years, suggest that in this period, the rural water programme had essentially four aims:

1. to supply minor government settlements, such as bomas, prisons; labour camps, and schools,
2. to supply European farmers and other colonial outposts, such as missions,
3. to encourage the introduction of cash crops (including the commercialization of cattle rearing) in certain selected areas for export, or as food for the labourers on the plantations (Iliffe: 1971, p. 15) and the Europeans, and
4. as reward and pacification of the African population, particularly the chiefs who co-operated with the colonial authorities.

The first two aims need no elaboration. The third falls within the general policy of the colonial administration—first German and then British—to integrate the African farmer into the international capitalist system in order to exploit the country's resources for the benefit of Europe. The approach depended on the ecological conditions. Cash crops were introduced, sometimes by force (Rodney: 1972,

p. 180, and Iliffe: 1971, p. 20), in relatively well-watered areas with good soils. Cattle rearing was encouraged in dry areas where already a lot of cattle existed, because cattle can be taxed and sold. Areas which could neither commercialize their agriculture nor raise cattle became sources of labour for the plantations (Iliffe: 1971, pp. 12-18). Water supply to Africans was one of the instruments to implement this policy, evident from early emphasis on Masailand for cattle, Moshi and Bukoba for cash crops, and the related activities of agricultural experiment stations, ginneries, coffee pulping mills, etc. (Water Development: 1946 and 1947). The first rural water supply project ever mentioned in a water report was built in Bukoba, and it specifically stated that coffee was grown in the area as a cash crop (Water Development: 1946, pp. 4-5).

The fourth aim is not so well documented, but its validity should be obvious in the context of colonial rule. A specific reference to that aspect of water supplies was made in an Annual Report as late as 1958:

Water supplies, like all beneficial services, are their own best ambassadors, and the benefits of a recently-installed supply are soon broadcast and lead to demands from other areas (Water Development: 1958, p. 8).

It should also be mentioned here that until 1955, irrigation was of no particular concern. From then on it gained rapidly in importance with the stated purpose of increasing agricultural output

120

(Water Development: 1955), but obviously connected to the drive for cash crop production. The heavy emphasis on Dodoma in the first years also suggests that it was meant to soften the impact of periodic famine in dry areas. There was a bad drought in Dodoma in the three years preceding 1955, with the severity of the last year being unprecedented for 30 years (Patton: 1971, pp. 4-5).

How did the colonial government make sure that only those water supplies were built which fulfilled these aims? Simply by controlling the planning and construction of the scheme and only approving those which served its interests. The materials and skills required for building a water supply are such that the project can in most cases not be carried out by the peasants without some aid from the government. There was no need to apply force as was done in the pursuit of other colonial aims; only minor improvements in the water supply could be carried out by the peasants themselves. Even delegating certain decisions to the "Native Authorities"⁸ did not change that pattern since these local governments were made to serve as agents for the colonial administration. Self-help was at times encouraged, but only as a cost-saving device. While the 1947 Annual Report talks of the necessity "to educate the native to build his own conservation works" (Water Development: 1947, p. 5), it regrets at the same time the shortage of European supervisors: "The difficulty of securing competent supervision locally and the non-arrival of Inspectors of Works from the United Kingdom delayed work on a number of projects"

121

(p. 4). No wonder there was a poor turnout for this kind of self-help!

Another illustration of the colonial policy on water is provided by an early irrigation project planned for Turiani in Morogoro. The people of that place did not want an irrigation scheme and, in fact, threatened to leave the area altogether if the construction was started. The project was not built, but the government concluded that "A considerable amount of prejudice has to be overcome in persuading the African villager to accept the concepts of modern irrigation practice" (Water Development: 1955, p. 7).

In summary, the aim of the rural water supply programme during colonial times was to serve directly or indirectly the colonizers. It was essential for that purpose for the colonial government to maintain control over the scheme from the planning to the implementation stage. This was in line with the desire of the colonizers to extract from the colonies either under direct control of Europeans, such as in plantations and mines, or indirectly from the African peasant and herdsmen through trade, taxes, and labour. The highly technical nature of most water-supply schemes made it easy for the colonial administration to maintain control over its allocation.

Technical expertise was the main weapon of the water engineers and technicians; the physical structure of the scheme was the vehicle to achieve certain aims. The underlying politics was that of

122

capitalist exploitation of the colonies, ultimately backed by the police and army (see Rodney: 1973b).

(b) After Independence

Independence changed the country's policy, not only through freedom from colonial rule, but also through the advancement of socialist aims. President Nyerere warned against certain attitudes which had been introduced during colonial rule and would lead to exploitation.

Our first step, therefore, must be to re-educate ourselves; to regain our former attitude of mind. In our traditional African society we were individuals within a community. We took care of the community and the community took care of us. We neither needed nor wished to exploit our fellow men (Nyerere: 1962, p.7).

But the early socialist policy left room for many ambiguities (Nyerere: 1968, p. 1), which were dealt with in the Arusha Declaration of February 1967.

Although when we talk of exploitation we usually think of capitalists, we should not forget that there are many fish in the sea. They eat each other. The large ones eat the small ones, and small ones eat those who are even smaller...If we are not careful we might get to the position where the real exploitation in Tanzania is that of the town dwellers exploiting the peasants (p.28).

It spelled out in clear terms the conditions for development:

How can we depend on foreign governments and companies for the major part of our development without giving to those governments and countries great part of our freedom to act as we please? The truth

123

1 is that we cannot". (p.25) From now on we shall stand upright and walk forward on our feet rather than look at this problem upside down. Industries will come and money will come but their foundation is the people and their hard work, especially in AGRICULTURE. This is the meaning of self-reliance (p.33).

The principles of the Arusha Declaration were elaborated in subsequent speeches and articles by President Nyerere. He expanded on the foundation of Tanzania's socialism, the danger of class differentiation in rural areas, on ujamaa villages, the role of the party, the government staff, local leaders and the peasants, and other topics. Rural life, he maintained, has to be based on people living in ujamaa villages under their own control and based on their own efforts.⁹

For an ujamaa village, as outlined in this paper, is both a socialist, and a self-reliant community, It will be using local resources and traditional knowledge, and working up from these to the simple improvements which are possible when people work together...When the government and other national institutions come in, they will do so to supplement the activities of the members and assist them to help themselves (1967, p. 176; emphasis added).

Four years after the Arusha Declaration, in February 1971, the party reiterated certain fundamental principles of Tanzania's national policy in the TANU Guidelines. Among a variety of issues, it dealt with the relationship between the people and the experts.

The duty of our Party is not to urge the people to implement plans which have been decided upon by a few experts and leaders. The duty of our Party is to ensure that the leaders and experts implement the plans that have been

agreed upon by the people themselves. When the people's decision requires information which is only available to the leaders and the experts, it will be the duty of leaders and experts to make such information available to the people. But it is not correct for leaders and experts to usurp the people's right to decide on an issue just because they have the expertise (p. 7).

In rural water supply we see that the aims of the programme underwent a fundamental change with independence. Heavy emphasis was placed in the first few years on self-help and nation building. A considerable number of small rural water supply projects were built by the Local Authorities, with the survey and exploratory work done by the Water Development and Irrigation Division (WD & ID).

With the trend for more work to be done on self-help basis as National Building projects, the Division is frequently called in for assistance in the siting and design of wells, small hand-built dams and other minor works which involve a considerable utilization of manpower (Water Development: 1963, p.6).

Most of the projects were carried out at the request of the Local Authorities who were expected to pay for 25 per cent of the cost, with the Central Government providing the remaining 75 per cent. One consequence of this division of the financial contribution was that wealthier District Councils, such as that of Kilimanjaro District, were able to fund many more schemes than poorer ones. The Local Authority contribution was, therefore, abolished in 1965 to "enable government to spread the development of

supplies more evenly over the country" (Water Development 1965, p. 9).

The reported shortage of government funds for construction in previous years was eased with the beginning of Swedish aid in 1966. Greater emphasis was placed in the following years on planning and financing (and borehole construction), and no further reference to self-help was made in the WD&ID annual reports—the Arusha Declaration notwithstanding.

The question of self-help was again raised in 1970 by a firm of management consultants, Rimer and Associates, in connection with a recommended reduction in construction costs. They cited a WD&ID estimate that the labour component amounted in the average to 27 per cent of total construction cost, excluding overheads, and suggested that nearly all of this could be saved by utilizing self-help labour¹⁰ (1970, Vol. II, Appendix 4).

What took place in water development after independence was, therefore, an initial upsurge of a self-help spirit and drive to build a more prosperous independent Tanzania, followed by an increasing tendency to have all the various phases of a scheme carried out by the Central Government. Self-help was re-emphasized later on a much smaller scale as a means to save government expenditure. Thus we see that although the aims of water supply had undergone a change with independence, the means of planning and building them had not. Water was one of the services that the government provided to selected rural communi-

ties, primarily centered around settlement schemes and later ujamaa villages. Cliffe concluded that in the resettlement of people into ujamaa villages "the promise of services has in fact been the main incentive used" (Cliffe: 1973, p. 202).

3. The Present Programme and Self-Help

The size of the programme has vastly expanded since independence as a direct consequence of Tanzania's heavy emphasis on rural development through ujamaa. An initial target of 40 years was set by which time every Tanzanian should be supplied with adequate water, and that was shortened in 1971 to 20 years. The annual expenditure on rural water-supply construction has risen from shs 2.4 million in 1960/61 to shs 20 million in 1970/71. At the present rate of construction about 270,000 people are being newly supplied with water per year (Water Development and Power: 1971 and 1973). To reach the 20-year target in 1992¹¹ the rate will have to be brought within a few years to a level of one million people newly-added per year, which corresponds to an annual construction expenditure of at least shs 70 million.¹²

The second Five-Year Plan specifies that "the highest priority will go to low cost projects which provide benefits to maximum numbers of people..." (Vol. I, p. 40). Additional guiding principles are:

- (i) "Development of ujamaa villages;
- (ii) Areas of acute scarcity of water;
- (iii) Areas of population concentration;

- (iv) Promotion of productive activities" (Vol. I, p. 40).

The plan also mentions self-help: "Top priority is to be given to low cost method for providing rural water. All possible self-help will be mobilized" (Vol. IV, p. 50). But the amount of government-sponsored self-help¹³ actually used in rural water-supply construction has been small, and occurred mainly under one of the following circumstances.

1. Wealthier areas were able to get some projects done by self-help (labour and/or money contribution) up and above the financial allocation from the Central Government (e.g. in Kilimanjaro Region).
2. Schemes built with the help of some government departments and other national or foreign organizations but with very little, if any, assistance from the Water Ministry (formerly WD&ID). An example is Lushoto District, where Maendeleo and LIDEP (Lushoto Integrated Development Project) collaborated with the peasants on a good number of self-help schemes.
3. One region has been able to introduce self-help labour as a regular part of all its rural schemes. Just why this region was able to do it is not quite clear,¹⁴ but two necessary conditions were fulfilled there: a firm policy that all water supply construction (and that of other amenities, such as schools, dispensaries,

122
etc) is to be done by self-help labour, and the ability of the regional water department to co-ordinate self-help labour with its own contribution of surveying, planning, supply of materials, and supervision of construction.

4. Certain schemes, notably those in Kondoa District involving trench-digging, have been sponsored by the national leadership. A great deal of enthusiasm was generated, but the effect of these selected schemes on the construction of other water projects appears to be small. This is likely to change, however, with a recent policy directive on self-labour.

Mainly to reduce the staggering expenditure needed for the big drive to build water supplies, a directive was issued by the Prime Minister's Office in July 1973, making it mandatory for all unskilled labour required for a scheme to be contributed by the villagers themselves. According to estimates of some regional water engineers, the average cost-saving that could be obtained if all unskilled work done by self-help would under the present mode of operation of the programme only be around fifteen per cent for gravity pipeline schemes and eight per cent for pumped pipeline schemes.¹⁵

What has inhibited the use of self-help labour so far? In the early years of the drive to establish ujamaa villages, services such as water supply were offered to the peasants as an incentive for moving into

124
a village. As the villagers see it, the government promised them water supply. In 1968-69 the people in Eastern Handeni were promised water supply by the District and Regional authorities if they formed ujamaa villages. Until now they don't have this supply and mention the unkept promise at very possible occasion. (Plans are now underway to build a large nationally-sponsored scheme with self-help labour). Peasants in Rufiji District were promised a supply in 1968 by the national leadership if they moved their villages out of the floodplain to higher ground. Most of these schemes were accordingly built by the government between 1970 and 1972. The feeling of the villages there is that this was part of the "bargain" and the question of self-help, therefore, never arose.

At the present, water supplies are still promised as an incentive to comply with government programmes, particularly the formation of nucleated villages, but to a lesser extent than before. The government staff now tend to be less explicit in their promises and more realistic, stressing the availability of certain government assistance to ujamaa villages as a supplement to their own efforts. This slight shift in emphasis most probably stems from the two-sided realization that the government has not been able to fulfill all the promises that were made—and being severely criticized for it (as for example in Rufiji)—but also that too much "aid" from the government could be detrimental to a beginning ujamaa village by killing the initiative of the people and fostering a dependency relationship (Cliffe: 1973,

p. 203, Rald: 1970, and von Freyhold: 1973a). But the client relationship between government staff and peasants still dominates, in water supply as well as in other "services"; under the dominant ideology of the state, that is the ideology of the bureaucratic bourgeoisie as opposed to proletarian ideology, the client relationship will necessarily continue to be the principal mode of interaction. There is consequently no room for genuine self-help by the peasants.

An argument can perhaps be made that under special circumstances, the construction of a village water supply should be done by the government without a self-help contribution of the villagers. In national operations, such as Dodoma and Kigoma, the peasants might not be able to contribute self-help labour because their time is fully taken up with constructing new houses, community building, clearing new land, etc. But even then the paid labourers would in all likelihood be hired locally by the water department staff to build the scheme, so that the same villagers who were too busy for self-help would then find the time for wage labour. If on the other hand some assistance to the village is required, it should be given in a different form and not in a way that deprives them of the control over their environment and a chance to gain the ability and confidence for improving their condition.

4. The Roles: Experts, Kulaks, and Peasants

The basic reason for the insignificant role that self-help has played in rural water supply development must be sought in the present stratification of Tanzania society, a brief discussion of which is contained in the first section of this paper, what are the main strata in rural Tanzania? Leaving aside the vital role of the international bourgeoisie, the contradiction on the national level is between the petty bourgeoisie and the working class. The most prominent segment of the petty bourgeoisie, according to Shivji (1973b, pp. 57-59), is the "bureaucratic bourgeoisie", which holds the state power. Another important segment of the petty bourgeoisie is the kulaks (prosperous farmers) who have emerged in rural Tanzania to a greater or lesser extent, depending on the area.¹⁶

Accordingly, three broad groups of participants in the development of rural water supplies can be distinguished: (i) government staff, which includes the bureaucratic bourgeoisie as well as the upper, middle, and lower level salariat,¹⁷ (ii) kulaks, and (iii) peasants. One could further distinguish (for operational reasons but not for the class analysis) a division of functions in the government staff relating to water development, between technical and non-technical (i.e. primarily political and administrative) tasks. The former category can be termed "government technical staff", or more loosely "experts".

The different roles that these three groups play—experts, kulaks, and peasant—in the process of implementing the rural water supply programme, and how they relate to the ideologies of the contending classes and further their class interests, are discussed below. The empirical evidence presented here is taken from a study on the impact of rural water supplies, jointly conducted by the author and M. Mujwahuzi with the assistance of students from the University of Dar es Salaam.¹⁸

(a) Experts

By this category is meant the government technical staff in general, in the field of agriculture, roads, housing, water, etc. It comprises primarily members of the upper and middle salariat (Shivji: 1973b, p. 82). In the water field this includes engineers, technicians, foremen, and regularly employed craftsmen 'fundis'. Although by no means unified in their subjective relationship, these divisions have a common objective interest in the class ideology of the petty bourgeoisie, of which they are a part. Their petty-bourgeois class interest, which sets them apart from the peasants, is centered around a regular cash income, access to (urban) amenities, participation in decision-making, access to education, etc.¹⁹ They occupy posts in a large hierarchical organization—the state—based on Weber's "legal-rational" mode. Each member has to legitimize the occupancy of a place in the hierarchy primarily by how successful he is in performing the tasks allotted

to him. The experts see their function primarily in terms of physical accomplishments: acreage under tea cultivation increased, Sender: 1973, p. 30), a certain number of villages provided with water supplies, a road built without labour cost (Thoden Van Valzen: 1973, pp. 157-158), and getting a certain number of ujamaa villages established (Cliffe: 1973, pp. 202-203). It is commonly believed that they achieve these things because of their specialized knowledge.

This is also the case for rural water supply. The progress reports on water supply talk about so many boreholes drilled, so many people supplied with water, so many kilometres of pipes laid, so many projects designed, etc. No mention is made of the process of how this was accomplished and other results aside from the structure. One never reads, for example, that the engineers have decided to spend more time with the peasants so that they would get better acquainted with their problems, or that so many plumbers in the village were trained in the course of construction, or that as a result of suggestions from the villagers a different, cheaper design for a particular item was adopted. Thus the role performance of the experts fosters a dependency relationship with the peasants and legitimizes the existence of the government bureaucracy.

Most of the quotes used as illustrations below are remarks made by water engineers in the regions (but not necessarily the Regional Water Engineers) and at headquarters in Dar es Salaam. No distinction

134
 was made between the response of expatriate and Tanzanian staff for the following reasons. First, no clear difference between these two groups was evident from the study. Second, if distinctions between different groups of staff were made, the expatriates might have to be further subdivided, say, into Indian and European staff. Third, only very broad categorization is permissible for this subject, otherwise no meaningful reference to the general model of Tanzanian neo-colonial underdevelopment, discussed in the first section, would be possible.

The dominant aspect of the expert's role performance is to provide technical expertise. "They don't know" and "they don't understand" are frequently used phrases in relation to the peasants. "There were no problems encountered with the villagers (during construction). They seemed to be well organized under their own group leadership. Our experts were there to ensure that they followed instructions", was the comment of one engineer. Indeed the "need for close supervision" was often mentioned: "People have a tendency not to turn up for work when they are needed, and then they don't dig (the trench) deep enough. They think that covering the pipe with earth is sufficient. That makes it quite difficult for us."

Another manifestation of this technocratic attitude is the tendency to look for a technical answer to any problem that arises. Case I: During the study, the researchers passed a place where people were taking water home for domestic use from a cattle

135
 trough, although there was a tap only 30 metres away. When this was brought to the notice of an engineer in the regional office, his response was, "we have provided them with a tap, but they prefer to take water from the trough; it is easier for them". The truth of the matter, however, was that the pressure in the pipeline was so low for most of the day that even though water reached the trough, none came out at the tap. It is as if the engineer's immediate reaction was to absolve himself of any responsibility, claiming that he had done all that could be expected of him—to provide the tap.

Reference is also sometimes made to high professional standards. Asked about the performance of some schemes which were built by self-help without the assistance of the Water Ministry (then WD&ID), one engineer lamented that the designs were "not done in a professional way". The pipe diameter was sometimes too small, he maintained, and the walls of the storage tank crooked. When challenged on the need for the storage tank to look nice as long as it served its purpose, he retorted, "but after all, there is something like professional pride"! Another engineer even referred to the supposed high standards of the trade in relationship to the non-technical staff in the regional administration: "I have to convince many technically illiterate persons".

The pre-occupation with technical matters at the expense of other, more people-centred (or political) problems might also be at the bottom of the unequal

136
rate of progress made in the different phases of designing, building and maintaining a scheme. In many regions, surveys and designs are one to two years ahead of implementation, and poor maintenance is also a problem. One technician's response to criticism about the disregard for peoples' wishes in preparing the design was, "How can we hope to meet the 20-year target if we take all the wishes of the villagers into account?"

Case 2: Another example is a water scheme that was being built in a remote part of the country. The first plans for this piped water gravity scheme to serve people and livestock were made in 1961 and the planned location of the pipe marked with pegs on the ground, but it was not built at that time. The original plans were recently revived and a team of surveyors sent there to put new pegs on the ground to mark the future location of the pipeline. The team asked the peasants to show them any of the old pegs that were left from 1961. The people told them at that time that the location of water outlets shown by the old pegs was not good and pointed out better ones. When the team left, the peasants found that the surveyor had put the new pegs close to the old ones, ignoring their suggestions without even informing them. When the foreman later arrived to supervise the construction (done by self-help labour), he referred to the drawings as his instructions and said "This is what I am authorized to do. I cannot make changes without the approval of the engineer. If you want to have something changed, you will have to see the people in charge at the office."

137
At the regional water office, the engineers and technicians were completely unaware of these discussions which had taken place at the project site. Neither of the field teams had reported anything. But when the researchers pointed out the discrepancy between what the peasants wanted and what the field teams planned to do the response was no different. Taking out the drawing, the engineer said, "This is how it is going to be. I don't care what is on the ground at the place now. We will see to it that the correct plans are being followed. Don't worry about it." He was referring to the 1961 drawing! Not only were the wishes of the peasants ignored at every level, but it did not seem to occur to anybody that a plan that was a good one twelve years ago might not be the best today. When the researchers looked into the matter at the site, they found that the peasants were right; the new locations were far better, with little, if any length of pipeline required in addition to what was provided in the plan.

An aspect of the role of the experts that is also evident from the example of the gravity scheme is an insistence on procedure, a narrow definition of ones job, and a rigid chain of command. The surveyors and the foreman did not report the peoples' suggestions to the office, and the engineer did not try to find out the old plan would serve the people best. A narrow view of the job reduces the risk of conflict with other members of the organization, while at the same time enhancing the importance and status of each post in the hierarchy, and ultimately the organization as a

136
whole. Plans prepared and approved at a distant office, authorization given to someone, being in charge of equipment serve as the insign of power to the experts in their dealings with the peasants.

The gap between them and the peasants created by the staff's narrow definition of their role is widened at times by misconceptions and misunderstandings. They range from simplistic social theories, such as, "People in places like Arusha and Moshi have a better appreciation of water because they are educationally more advanced", to a seemingly deliberate distortion by the staff of the people's behaviour, as shown by the following example.

Case 3: A group of researchers arrived at a water point, accompanied by staff from the water department. The peasants who assembled started complaining immediately that there was not enough water coming through the pipe. The technician dismissed their complaints as routine requests for more water to be made available during peak demand time—usually early morning and late afternoon. He also mentioned that people there had a tendency to tamper with the pipe (one such incident had in fact recently occurred at that site) and so it was their own fault if there was not enough water. The party was about to leave when one villager urged a visit some distance up the hill where a large quantity of water was spilling from a tank. It was then found that the pipe was partly blocked, presumably by some object which had fallen into the tank, resulting in a large overflow.

179
(b) Kulaks

The commercialization of agriculture in the colonial period had progressed far enough in many areas of Tanzania to create a class of kulaks (wealthy peasants), explicitly encouraged in the years preceding independence by the colonial government (Illife: 1971, pp. 37-41, and Cliffe: 1973, p. 37). The extent of rural class differentiation varies from area to area, but its existence has been documented in a number of case studies.²⁰ Kulaks have a privileged position mainly through a disproportionately large command over some or all of the following (i) land holding, (ii) hired labour, (iii) service facilities or trading (e.g. a shop, bar, flour mill, tractor, lorry) (iv) access to funds. To exercise this control they tend to occupy local leadership positions, which give them greater power over land, employment, funds,²¹ and access to the government staff. Holding local leadership positions also enables them to make sure that the ujamaa village programme stops short of collectivization and is not guided by a proletarian ideology.

It is in the interest of the government staff to have kulaks as local leaders for a variety of reasons. Kulaks are often the most "progressive" and "modernized" peasants through their more advanced and more privileged position in the cash economy. Most of them are in a better position than the poor peasants to show results in terms of the targets set by the government. And they provide the government

staff at times with favours ranging from entertainment and presents to support in a dispute (Thoden van Velzen: 1973, pp. 167-168). In many areas it is the traditional leaders who occupy the local TANU positions (Hill: 1971, Angwazi and Ndulu: 1973).

One might expect that the peasants are opposed to having the kulaks as their leaders, but this is only partly true. For the peasants they form a buffer to the government staff and act as agents to obtain the various services that the government staff can offer (von Freyhold: 1973b, pp. 14-15). Besides, a poor peasant can hardly survive as a leader since the kulaks often control some vital aspects of village life and generally enjoy the support of the government staff.

This seemingly ambivalent position of the kulaks, which leads many people to argue that they are just another group of peasants who happen to exercise a larger control over the means of production and distribution, can however be clarified by analyzing their objective class interest.

In the Tanzanian context kulaks are part of the petty bourgeoisie, although in relation to the bureaucratic bourgeoisie they do not constitute a strong force (Shivji: 1973, p. 46). Shivji even suggests that "there is evidence for important contradictions at the time of independence between the emerging 'bureaucratic bourgeoisie' and the kulaks" (1973b, p. 46). We can therefore, observe that in the pursuit of their objective class interest

the kulaks on certain issues form a temporary alliance with the bureaucratic bourgeoisie, as represented by the local government staff, and on other issues ally with the peasants.

This phenomenon is important when analyzing the kulaks' role in the field of water supplies for domestic use (but not necessarily for irrigation), where no major divergence of interests exists between the kulaks and the peasants. The nature of communal water supplies is such that no privileged group can enjoy a considerably larger share of the benefits than the rest. Minor opportunities for special privileges no doubt exist, but no significant inequality in the use of the water is possible, and most of them would be derived through the process of obtaining the scheme rather than the apportionment of its benefits.

Privileges include the location of a tap in closer proximity to a kulak's house, light or no manual work if the scheme is being built by self-help labour, control over the selection of who works on the scheme (particularly when the labour is paid), and a general boost to a kulak's position when he was the one who successfully negotiated with the government staff for the much-desired water supply. To what extent the kulaks can avail themselves of these possibilities varies from place to place, but with the possible exception of control over who gets employment, none would be in serious conflict with the peasants' short-term interests.

It appears therefore that for the purpose of obtaining a water supply scheme from the government, the kulaks' subjective interest is with the peasants, resulting in a temporary alliance with them on that issue. As is suggested below, the kulaks then tend to act as spokesmen for the peasants in the negotiations with the government staff.

It has not been possible in this study²² to clearly distinguish between kulaks and local leaders because it requires a thorough acquaintance with the local scene to know who are the kulaks and how their class position manifests itself. The short time spent on each scheme and the methods used of collecting data through individual and group interviews did not yield reliable information on stratification.

A distinction could, however, be made in the study between villagers who occupy a leadership position and those who do not. A comparison between those two groups in relation to water supply shows some marked differences in the role played during the process of establishing a scheme.

One noticeable difference between leaders and non-leaders was the amount of knowledge they have of what has taken place and to what extent they identify with the project and defend what was done and how it was done. This is hardly surprising, but nevertheless reveals the character of the decision-making process on the village or ward level. The leaders usually made some technical

suggestion when asked by the researchers about how the scheme could have been better designed and built, while the non-leaders frequently said that this was a matter for the experts to decide. Those who are not in a leadership position often said that they either were not involved in regular discussions or did not care about what was going on. One might expect that the lack of involvement and the lack of interest go hand in hand (See also Angwazi and Ndulu: 1973, pp.9, 17, 18).

To what extent the local leaders interviewed in the study are also the kulaks is not quite clear. The connection was obvious in some cases, but not in others. Several studies particularly those by Thoden van Velzen (1973, pp. 162-164) and Sender (1973, pp. 14-17) have shown that more often than not the leadership posts and other official functions are held by the kulaks.

(c) Peasants

Preliminary results from the study of schemes which were built by self-help labour show a considerable variation in the peasants' expressed views on the scheme. There was some agreement, however on the following:

- (i) They have benefited greatly from the new supply through improved water quality, better reliability of the scheme to deliver enough water everyday, and distance from the house to the tap. There were frequent complaints, however, that the reliability, although much improved, was still inadequate.

(ii) There were some general meetings in planning stage of the scheme which most peasants attended. It appears that the purpose of these meetings was more to arouse the peasants to some action or to confirm their support of the leaders and the leaders' ideas than a genuine discussion out of which a decision would emerge. More often than not, the local leaders were consulted by the water department staff on a few technical matters, such as what source to use, but the villagers were of the opinion that this advice was usually ignored. Interesting enough, visits by the water department staff to the villages are rarely mentioned.

(iii) There was an enthusiastic response to the call for work, but the initially high attendance on the construction site gradually diminished on most schemes, and the progress on some was delayed because of it. No clear explanation of this could be obtained from the peasants, except for pressing labour demands at certain times for other work mostly on the fields.

(iv) A certain deference to authority or expertise was sometimes in evidence. People would be "grateful to the government" and would want to "let the experts decide". One response to a question about whether the communal outlet should have been built differently was, "The Government is the one to know, and it has

experts who are the ones to make the plans rather than asking people for suggestions." On the other hand, demands on the government were sometimes stated in no unclear terms: "We asked the government to give us water."—"The government delayed this work."

(v) The local leaders figure prominently in the planning and construction process. "The Diwani told us that the government had agreed (to finance the scheme)."—"The leaders announced what days we should work on the project." The response of the villagers generally contained a strong support for the local leadership.

The following conclusions could be drawn about the role that the peasants play in regard to water supplies. They are aware of their needs,²³ but have little confidence in their own abilities. They tend to look towards the government for solutions and seem to expect their leaders to negotiate for them. When they are given something that fulfils such as a basic need as a water scheme they accept it without much question about the details of where the taps will be, whether there is a place to wash clothes, who will operate the scheme, etc. They are even willing to some extent to comply with conditions attached to the granting of a project, like their contribution of self-help labour, which however has its limits as exempled by two villages which used the old water supply (for one village this was a polluted river) rather than shift to a new location, planned by the

146
 Government, where water taps had been installed. The peasants seem on the surface to accept the authority of the government without much question, but occasionally display a keen awareness of the contradictions between themselves and the government staff.

4. The External Component

In the first section of this paper a model of neo-colonial underdevelopment in Tanzania was postulated and subsequently the role of the different social strata examined in the field of rural water supply.

To complete the picture it remains to examine the international aspects of the Tanzanian water supply programme. This component should not be treated only as a by-product of the national scene, but as an integral part of it. The dominance of a neo-colony's economy by international capitalism requires the presence of a national petty bourgeoisie (or national bourgeoisie in the case of state capitalism), and the national petty bourgeoisie, in turn, can only pursue its distinct class interest with the support of international bourgeoisie (Shivji: 1973a, p. 34).

When examining the external aspects of the rural water supply programme, we immediately notice two things. One is the large size of this component and the other the almost total absence of socialist countries. Apart from a small contribution of personnel from Eastern Europe²⁴ and a recent donation from the People's Republic of China, all foreign connections are with the capitalist world.

147
 The foreign component of rural water development mainly consists of (a) funding, (b) procurement of materials; and (d) foreign consultants.

(a) Funding: At present approximately 75 per cent of the rural water supply development budget is covered by Swedish aid, (it was 80 per cent previously), which can again be broken down into soft loans for three-quarters of the contribution and grants for the remainder. Some additional support was received from other "friendly" governments, often to finance planning studies carried out by an agency of the donor country. It is envisaged that water master plans will be prepared by separate teams for each of the regions in the country, each plan to be sponsored by a different foreign government. Agreements have already been signed for several regions.

(b) Personnel: A sizeable proportion of the senior officers in the Water Ministry, including those in the regions, are expatriates.²⁵ With the arrival of 40 Indian engineers, they numbered 220 in mid-1973. Swedish and Indian personnel constitute about one-third each, and the remainder are from Great Britain, Holland, Denmark, Bulgaria, Egypt, and some other countries (Hyden: 1973, p. 11). In spite of this large foreign contingent, the officials of the Ministry often point to the shortage of qualified manpower as the crucial bottleneck in the acceleration of water supply development (Minister for Water Development: 1971 and 1973). McKinsey Consultants (1973) estimated that in the regions alone only 70 per cent of the

required posts are filled, ¹⁴⁸ and not all of them with qualified personnel. As a partial remedy an additional 60 Indian engineers are expected to be engaged in the near future.

One consequence of the presence of such a large foreign contingent is that it lends support to the technocratic attitude of the water staff. Foreigners are not part of the social and political fabric of the country (even though a few might try to be) and are thereby limited in their role to the "offering to a skill". Furthermore, with a few exceptions, the expatriates are products of capitalist countries (India is in a transition from feudalism to capitalism) and are equipped with a class interest and a super-structure which is in fundamental contradiction to socialist development. Some individuals, no doubt, have a progressive political outlook and are willing to learn, but they receive no encouragement: technical and administrative competence, and an ability to get along with one's colleagues seems all that is required (see Hyden: 1973).

(c) Procurement of Materials. Past and present Swedish loan agreements are modelled after those of international lending agencies, such as the World Bank. It does, therefore, not restrict any portion of the loan to purchase from Sweden. It does, however, stipulate that materials must be bought by international tender and the order given to the lowest bidder. For those few items which are being manufactured in Tanzania, the local manufacturer is usually the lowest bidder,

but not always. The last bulk order for plastic pipes went to a British firm, although there are two factories in Dar es Salaam making plastic pipes. (A small supplementary order to local firms is, however, stipulated in the aid agreement). This has dismayed many, including some Swedish aid officials, and efforts to bolster local production of plastic pipes—and later to start producing steel pipes—are under-way.

However, the net effect of these arrangements might well be a retardation of local manufacturing of these materials and a bias in the choice of technique for the design of the water schemes. (The latter is discussed in the next section). The requirement to shop in the international market deprives local industry of the protection and the urgency that it needs to get started. It is the present practice to establish new industries usually in partnership with and under the management of foreign capitalist firms which are well-established in their field. These foreign firms are primarily interested in selling their products to Tanzania, preferably straight from the capitalist country, and which is no longer possible through a satellite factory in Tanzania. The impact of this on the country's development is largely negative (Shivji: 1973c, Thomas: 1972, and Coulson: 1972a and b).

Another consequence of this ordering procedure has recently come to light with the sudden shortage of various raw materials on the interna-

tional market. Tanzania has difficulty getting PVC (poly-vinyl chloride), one of two alternative materials usually used to make plastic pipes. There is also a problem with steel. Access to vital raw materials such as these has become a new instrument of monopoly capitalism to dictate the terms of trade and control the establishment of industry in the underdeveloped countries. A company which has a supply of a certain raw material, such as steel, guaranteed for a number of years is in a strong position to obtain an advantageous agreement for partnership with an underdeveloped country.

(d) Foreign Consultants: Perhaps the only direct return to Sweden, apart from the employment of its nationals, is the engagement of consulting firms, many of them Swedish, for part of the planning and project preparation work.²⁸ The nationality of the firms again is not specified in the aid agreement, nor is this the avowed intention of Swedish aid, but this fact can hardly be termed a coincidence. The national origin of a consulting firm is, however, irrelevant in this context, because those factors which come to play in the firm's involvement with Tanzania, contributing to its underdevelopment are not only a Swedish phenomenon, but one that applies to all advanced capitalist countries. They stem from the primary objective of the firms to make a profit, and the consequent socio-economic super-structure that is brought to bear on the engineering, management, or other problems which they are supposed to solve. Nor is it suggested here that the Swedish

government gives aid to Tanzania in order to find work for its consulting firms.

The objections to employing consulting firms for various water development studies in Tanzania could be summarized as follows: (i) The firm's employees bring to bear a capitalist framework on their analysis because of their personal background and the profit-making aim of the firm. (ii) They are likely to further the interests of international monopoly capitalism in an indirect way (e.g. capital-intensive equipment) or sometimes directly via business arrangements with other companies or financial conglomerates. (iii) They often do a poor job in an attempt to expend the minimum effort permissible under the contract, such as copying other researchers' data for their attractive-looking reports. (iv) The firm takes a narrow view of its task, doing nothing to increase the potential of their clients which would enable them to independently solve similar problems in the future, unless this is specifically written into the contract. (v) The belief that consulting firms can offer superior knowledge and ability as compared to the Tanzanian staff leads to further dependency, because they are often called upon to perform tasks that only a local senior staff member can do, such as evaluate the report of a previously engaged consulting firm.

Swedish aid: It has been shown that nearly all the aid (specially in financing) comes from the Swedish government through Swedish International

132
Development Assistance (SIDA). The question has to be asked, therefore, what interest the Swedish government has in providing this aid. To answer this would require a detailed analysis of Swedish capitalism's role abroad and at home, which is outside the scope of this paper. The motivation for giving such large-scale aid with little direct return is obviously a mixed one and partly reflects the presence of powerful progressive elements in Sweden. It would be a mistake, however, to neglect the role of Swedish imperialism.

From 1960 to 1965 Swedish capital export increased by 80 per cent. Between 1965 and 1970 it doubled. The number of employed at Swedish companies abroad increased four times quicker than (that in) Sweden during the 1960's. Of all Swedish investments abroad 15 concerns account for half the capital invested. Eight of these have more people employed abroad than in Sweden. Most of the capital goes to EEC countries. But the proportion to the so-called underdeveloped countries is the one most rapidly increasing. In 1970 more than 21 per cent of all Swedish investment abroad went to these countries.

Of Swedish investments in underdeveloped countries the largest proportion goes to Africa. In 1965 the total market value of Swedish interests in Africa was estimated to be about six billion dollars. Most of this was located in South Africa. Other countries subject to Swedish imperialism are Liberia, Ethiopia, Tunisia and Zambia. It is the explicit Swedish government policy to promote and facilitate private Swedish investments abroad.

...In 1965, for instance, almost 10 per cent of all foreign investments in Portugal were Swedish. In 1971 there were around 60 companies in Portugal fully or partly owned by Swedes. (Swedish Imperialism: 1972; emphasis added).

The argument that Sweden gives aid to Tanzania because the later is a socialist country is debatable.

The case of CADU, an experiment to "develop" peasant farming in Ethiopia through a Swedish aid project (see Nekby: 1971) illustrates how Swedish aid adapts to the socio-economic conditions of the recipient country, thereby supporting the status quo.

To summarize, the considerable foreign involvement in the rural water supply programme on the one hand supports to a certain extent the class interest of the government staff involved, and on the other retards the development of the country's capability to pursue the programme entirely on its own in the near future under the command of a proletarian ideology. The external component also lends support to the technocratic approach by placing primary emphasis on things like financing, organizational efficiency, job qualifications, design criteria, etc., rather than on political mobilization, creativity of the masses, learning from the peasants, and ideological training of the cadres. By attempting to separate technical from political considerations, the rural water supply programme is meant to pursue some of the aims characteristic of a socialist country with the basic mode of operation of a capitalist country. This is clearly a contradiction which will result in the non-attainment of these goals, unless a fundamental change is brought about.

6. Other Implications: Choice of Technique and the Static Approach

Two other implications of the prevailing mode of operation in rural water supply development should

be mentioned. One is the choice of technique and the other is the static approach of translating the broad aim of providing adequate supplies to the villagers into a programme to merely construct schemes according to a set of engineering specifications. A detailed analysis of these two aspects is outside the scope of this paper. They are discussed here briefly to show how they relate to the general model of under-development.

(a) Choice of Technique

Is technology not neutral? Would the Chinese not always use the same techniques as the Italians? Definitely not. While the choice of technique²⁷ depends on the technological level reached by a society, it is also related to the society's socio-economic system. Indian capitalists produce cloth in urban centres on machines modelled after present-day British technology, while thousands of handloom weavers in the villages still engage in their family trade. There are numerous examples of different techniques employed to do similar things in Tanzania; road building (Muller: 1973), railway construction, textile manufacture (Shivji: 1973c, p. 18), and bread baking in Dar es Salaam (Nationalist: 1971). And there is a more fundamental difference between these alternatives than the proportion of labour and equipment employed. To present the choice exclusively in terms of capital-intensive versus labour-intensive techniques has meaning only under capitalist production (Wuyts: 1973). In a socialist context the emphasis would be more on surplus

generation, workers' control over production, learning skills, and self-confidence of the labouring masses.²⁸

Suppose rural water development was carried out by self-help (and not only self-help labour, see page 13), where the peasants would take the initiative, where the power of decision-making about their village would be primarily in their own hands, where the government's role would be one of assisting the peasants in their own efforts, and where the country was disengaged from the international capitalist web (but still be relatively poor). What would characterize the water supply technique in such a context?

The low level of productive forces would require that the small surplus generated in the country should not be spent primarily on services, but on expanding and rationalizing production. As much of the resources as possible should, therefore, be generated on the spot, primarily in the forms of labour and local materials. At this stage the technique should be labour-intensive.² The technique should also be simple to understand and build, so that the masses could do a good part on their own without the help of government experts. And it should give ample scope for learning through practice and for improvement by the people themselves.

The technique presently chosen for rural water supplies in Tanzania meets hardly any of these characteristics, which is not surprising since Tanzania has not attained the production relations characteristic of scientific socialism. To a water engineer or technician, a good scheme is one that has been planned

to the last detail by the experts and made of robust and well-tested materials. Technical excellence takes precedence over people's participation. The materials which are known to be most reliable to the foreign (and usually also to the national) experts are those used either in the past or the present in the advanced capitalist countries. Machines used for construction are also more controllable than people, and with the growing alienation and militancy of the low-level government staff, there has been some tendency towards acquiring more sophisticated construction equipment, such as powerful drilling rigs.

Although some consideration is given to the labour component in the choice of technique for the purpose of cost saving for the government, the need for simplicity and learning opportunities for the villagers seems to be totally ignored. As was discussed above, the experts consider design decisions and the contribution of skilled labour in construction their prerogative, and only allow the villagers to participate as supervised unskilled labourers.

It is risky to suggest concrete examples of alternative technique which might be applicable in the East African environment, but are at present neglected. Some experts would immediately dismiss them as impractical or unworkable. But this is precisely what has prevented the introduction of any major innovation, with the possible exception of plastic pipes, which came also from the capitalist world. Ideas for innovations which originate locally should be encouraged, whether they come from the

masses or the experts, and then put to the test. Not only will some useful alternatives emerge in this way, but the process of experimentation will itself be a learning experience.

Two designs which appear to the author to have some potential are a plastic rainwater catchment tank and a more systematic collection and storage of rainwater from rooftops. The first has been developed in the Sudan and later in Botswana by the Intermediate Technology Development group of London (1969). It consists of a large hole dug in the ground, lined with an ingenious arrangement of plastic sheets, with the walls formed by hundreds of thin plastic bags filled with a weak cement-earth mixture and stacked like bricks. It has a cover, a silt trap, and is meant to collect surface run-off water from rainstorms. It can be built by the peasants with minimum technical advice and with simple (but also not really cheap) materials. People can easily learn how to build it by doing, and the knowledge can then be passed from village to village.

In Africa water has been collected from rooftops for a long time, but has only become viable as an adequate source for domestic use with the introduction of the tin roof. There are often several new buildings with tin roofs in a village which, when equipped with a proper water collection and storage system, might provide a very good source of water. In areas with high rainfall it can cover all the domestic water needs throughout the year, in areas with less rainfall

it might be able to provide only for cooking and drinking purpose, while people would bathe, wash clothes and vessels, and water cattle at an old source of poorer quality. Again these installations would be planned, built, and maintained by the villagers themselves with very little assistance from the government. Only systematic experimentation (which has not been done in East Africa) could show if and under what circumstances these designs are appropriate for Tanzania.

(b) The Static Approach

Another implication of the prevailing mode of rural water development is the static approach to the provision of water supplies and a narrow definition of what is to be accomplished. The clearly stated aim is to provide "within the next 20 years all Tanzanians living in rural areas with adequate, readily accessible, clean, and wholesome water throughout the year" (Minister of Water Development: 1971, p.1). This has been translated by the Ministry into a set of design criteria such as a standard of 35 litres to be delivered per capita per day, a maximum distance from the house to the water tap of one mile, the storage tank to have a capacity equivalent to one day's supply, etc.,³⁰ and the schemes are built to these specifications. No systematic attempt is, however, made to find out to what extent the desired benefits of improved health, etc. are realized in practice. Erecting a physical structure is deemed sufficient. It almost seems as if the experts disclaim responsibility for what happens to the water once it leaves the tap.

Occasional impact studies done outside the Water Ministry³¹ showed that for some of the water-supply standards there was a discrepancy between aims and reality. This is most evident in the field of health where the water that is supplied by the scheme is often contaminated, and even if it comes out of the tap perfectly clean it can have acquired a hazardous concentration of pathogenic³² organisms by the time a person actually consumes it (Kreysler, 1969). The reason for this is simply that people continue with their old water-use habits after a new scheme is built: water is filled into a carrying container, taken home, put into a storage container, drawn from that with some sort of ladle, and consumed. There are several places in that chain where the water can be re-contaminated, with the storage container possibly acting as an incubator for the micro-organisms.

Several things could be done for a remedy: (i) public education about water and health,³³ (ii) a different design for the storage container, (iii) more frequent taps (even to the extent of house connections, see White, Bradley, and White: 1972, pp. 215-216), and perhaps some others. To develop a strategy of improvement, the alternatives have to be thoroughly investigated and the best single measure or combination chosen.

7. Conclusion

We can now return to the question posed in the title of the paper, is "politics" or "technique" in command? Hinton explains the difference:

...¹⁶⁰"technique in command" is not some alternative way to build socialism but a way of building capitalism. And since in the modern world the capitalist road is truly barred to any underdeveloped nation by the overwhelming power of the already developed imperialist states who will not allow any new capitalist centres to develop but only satellite economies, this bourgeois road can only lead back to semi-colonial, semi-feudal status for China or any other developing nation (1972, p. 45).

Building socialism means that proletarian ideology guides all spheres of activity. It means the advances in production must be based on the political consciousness of a revolutionary process to build socialism, with the masses firmly in power. To rely on advances in production to bring about socialism means in fact building capitalism. A one-sided emphasis on productive methods neglects class struggle and political consciousness, and fails to establish socialist production relations. Instead of engaging in class struggle and attacking the neo-colonial dependency relationship with the international bourgeoisie, one-sided emphasis on the development of the productive forces will sharpen the class division and more firmly integrate the underdeveloped country into the international system of monopoly capitalism.

In Tanzania there is a tendency for such services as water supply for rural areas to be used by the government as economic incentives for increasing production. The underlying ideology of this process of rural development is that of the bureaucratic bourgeoisie, which holds the state power. In the limited context

¹⁶¹of the programme of providing water supplies, the dominant ideology is that of the "experts". They emphasize the importance of the physical structure of a scheme, detailed engineering plans, rigid adherence to procedures and job responsibilities, and the efficiency of their organization. They control the entire process of the creation of a scheme from planning up to maintenance. The role of the peasants, if they are involved at all, is limited to some technical consultation (but the decision is made by the experts) and the contribution of unpaid labour under the supervision of the experts.

For building socialism in Tanzania this mode of operation has to be changed, not only in the field of water, but in all spheres. It is the role of the progressive elements who are willing to defend the proletarian ideology to lead the struggle for the socialist transformation. But this struggle can only be based on a thorough understanding of the existing reality. We conclude with Hinton:

Socialism is not simply a question of modern techniques and large-scale production; it involves the radical transformation of every kind of human relationship, of human motivation, of human consciousness; it involves the release of the enthusiasm, the energy, and the creativity of the masses and the development to the fullest the capacity of each individual. Efficient modern mechanized production alone will not lead to socialism. Only revolution can do that (1972, p. 45).

1. "Politics in command" and "technique in command" were two contending approaches to Chinese development in the 1960s, the first held by Mao Tse-tung and the second by Liu Shao-ch'i. The struggle between these two lines was the main issue of the Cultural Revolution (Hinton: 1972, ch. 3).
2. Small, relatively well-watered, portions of the country, usually with a high population density.
3. See for example, Warner (1973 a and b), White, Drandley and White (1973), WHO (1972), Heijnen and Conyers (1971), Rimer (1970), and Westman and Hedkvist (1972).
4. Rural water supplies also include small urban centres. By water supplies is meant the satisfaction of human domestic needs (cooking, washing, etc.) and minor productive activities (livestock watering, house building, etc.), but not irrigation.
5. For a world perspective on underdevelopment, see Baran (1957), Frank (1966) and Fanon (1961). The case of Africa as a whole is well documented by Rodney (1972), and the Tanzanian experience by Shivji (1973a and b).
6. Besides the authors already mentioned see also 1968 and 1969, Magdoff, 1969, Nkrumah, 1970, and Cox, 1969.

7. Source: Ministry of Water Development and Power, water development budget 1972-73 and 1973-1974.
8. During the colonial period and for a few years after independence, the majority of projects of the Water Development Department were built at the request and with at least partial financing of the "Native Authorities" (later called Local Authorities).
9. This of course must be carefully distinguished from a process of creating groups living together for the purpose of greater agricultural production and ultimately integration into the world market system (Shivji: 1973b, p. 99).
10. A distinction is made here between "self-help" and "self-help labour". The latter is used in the sense of "free labour" where the peasants work on construction similar to labours engaged by the water department, except that they receive no pay. It is, therefore, not different from "alienated labour" in the sense that **the people have no control over the outcome** of their work and only perform unskilled tasks under the supervision of government technicians.
11. One year's grace was added for the dislocation caused by decentralization.
12. Source: Ministry of Water Development and Power, Plan Review, April 1972 (mimeo).

13. Self-help is an old concept in Africa, where until the establishment of a "modern" government by the colonizers the only help was self-help. A fair amount of communal self-help not organized by the government is still taking place, but is not considerable in the context of this paper.
14. A study is underway by the author and M. Mujwahuzi. See also the forthcoming report (1974). Some other regions use self-help labour for part of their projects, but no detailed information has so far been gathered by the researchers, nor is it available at Maji headquarters, Dar es Salaam.
15. Oral communication.
16. For the history of the class see Iliffe (1971, pp. 37-41) and for its effects on the ujamaa village programme Cliffe (1973) and Shivji (1973b, pp. 97-101).
17. For details see Shivji (1973b, p. 82).
18. See the forthcoming report by Tschannerl and Mujwahuzi (1974).
19. Adapted from Shivji's criteria for sub-dividing the petty bourgeoisie (1973b, p. 83).
20. See especially Thoden Van Velzen (1973), Awiti (1972, von Freyhold (1937b), and Sender (1973).
21. Misuse of village funds is not uncommon. See, for example, Sender (1973), pp. 19-22.
22. That is, the study on the impact of rural water supplies by the author and M. Mujwahuzi, currently in progress.
23. Almost all the people interviewed know that there is a connection between health and water quality, although some have an incorrect notion of what this relationship is.
24. The handful of personnel from socialist countries working in the Water Ministry are, unlike their colleagues from capitalist countries, not backed by other aid, which partly explains why their role performance is no different from that of their colleagues.
25. Here no distinction can be made between the Ministry's four main functions: rural water supply, urban water supply, irrigation and flood control, and power. But rural water supply is by far the largest of the four: Nearly $\frac{5}{2}$ of the development budget for 1972/73 and 1973/74 was for rural supplies (Source: Estimates of Public Development Expenditure, July 1972—June 1973).
26. About one-seventh of all planning, survey and project preparation work, including that in the regions, is done by consultants (Source: Ministry of Water Development, mimeo, February 1973).
27. In a general sense derived as the level of sophistication of the equipment and organization employed in production.
28. See Ngombale-Mwiru (1973, p. 54) on the importance of allowing the working people in Tanzania to regain self-confidence.

29. Baran (1957, pp. 445-488) however, warns against an automatic option for labour-intensive techniques in underdeveloped countries. The choice must be made from case to case and not only be based on considerations of economic efficiency.
30. Source: Ministry of Water Development and Power, Plan Review, April 1972.
31. Mainly done by BRALUP (Bureau of Resource Assessment and Land Use Planning, University of Dar es Salaam), LIDEP (Lushoto Integrated Development Project), WHO, and a study team under the leadership of G. White and D. Bradley.
32. Meaning "disease-causing".
33. The Mtu ni Afya campaign contained a small section on water. From a preliminary appraisal it appears that people have benefited from the programme, and in some cases have undertaken improvement projects (see also Hall, 1973).

167
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The Arusha Declaration is a declaration of intent; no more than that. It states the goals toward which TANU will be leading the people of Tanzania, and it indicates the direction of development. Neither on the 5th February, nor on any day since, has Tanzania suddenly become a socialist state, a self-reliant state, or a developed state...The Declaration is the beginning, not the end, of a very long and probably extremely hard struggle.

Nyerere (1967)²

1. Introduction

...there is unanimity that a basic education must prepare an individual for the world of work by imbuing him with positive attitudes and values towards work and at least the foundations upon which practical skills, relevant to his or her environment, may be built.³

The Dag Hammarskjold Foundation Seminar on Education held in Dar es Salaam in 1974 brought together several of the most internationally known "progressive" education reformers of African education. Confusing the objective basis for attitudes to work in relations of production and blaming them on the education system, the report of the Seminar expressed concern about the fact that the "people look down upon manual labour as being inferior to white-collar work".⁴ It noted that the education system in underdeveloped countries had not

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