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THE FORMULATION OF AN INDUSTRIAL STRATEGY FOR TANZANIA

By

Justinian RWEYEMAMU *

INTRODUCTION: SOME THEORITICAL CONTROVERSIES CONSIDERED

Any strategy – global or sectoral – must be related in a *fundamental* way to the goals of society. It must seek to embody society's conception of the development process.

Tanzania has already defined her development strategy. The Arusha declaration and the Mwongozo perceive the development process as pivoted around *man* – his growth, his health, his security, his dignity and therefore his overall well-being *(1)*. It is built around the pillars of self-reliance and socialism. As such, development is seen not only as a process of accumulation, i.e. of augmenting the output capability of Tanzanian economy but also as a transformation of the institutional structure of our society. Tanzania's development therefore requires the introduction of activities that are *basic needs oriented* (food, habitat, health, education, communication and transport) *(2)*, favouring indigenous and innovative processes which take into cognisance environmental potentials and limits.

This strategy has been conceived in the light of the analysis of Tanzania's post-colonial society which is characterized by underdevelopment *(3)*. On the one hand, the economy which we have inherited is a *dependent* one and its structure is therefore deformed. It is unable to generate self-sustaining development and to create an economic system that displays a reasonable symmetry between the structure of production and the structure of consumption. On the other hand, attempts at modernizing it (often confused with transformation) have proved abortive as the industrialization pattern which has been carried out (the so-called *(4)* import substituting industrialization strategy – ISI) appear to have implied merely an adoption of more sophisticated patterns of consumption (both private and public) *without* the corresponding process of capital accumulation and technical progress. In effect, the techniques embodied in the equipment imported were not related to the level of capital accumulated but to the demand profile of the modernized sector of the society. It is this particular orientation of technical progress and its lack of organic connection with the level of capital previously accumulated that gives the specific character to underdevelopment in relation to the formulation of an industrial strategy *(5)*.

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The economic rationale of the ISI strategy was, of course, the theory of general economic equilibrium à la Walras. If all activities are equally important then it does not matter how they are sequenced, provided they are justified by a specified rate of return. It will be argued that the theory ignores, by implication, the fact that the productive structure of an industrial economy consists, of necessity, of a category of industries which are *basic* in the Sraffa sense, i.e. industries whose outputs are used either directly or indirectly in the production of *all* other outputs in the economic system *(6)*.

Moreover, as has been observed, the process of transplanting consumption patterns, generated by the system of international division of labour imposed by the countries leading the process of industrialization, has given rise to economic systems such as that of Tanzania where technical progress is first assimilated at the level of the demand for consumption goods. As such these economies *may continue to be dependent even in the absence of foreign direct investment (7)*. Nationalization of the major means of production does not, therefore, signal an end to dependence in this context.

The conclusion to be drawn from the foregoing is that ISI as was relied upon in the past plans *permanently reinforces dependence* and is incompatible with Tanzania's development strategy. This is because the introduction of new products or processes from the centre will *always* require more sophisticated techniques and higher levels of accumulation than can be sustained by Tanzania type economies *(8)*.

Perhaps if we turn our attention to the rudiments of the nature of a productive process we may be able to delineate the elements of an industrial strategy that is consistent with Tanzania's objectives – self-reliance and orientation towards basic human needs.

To begin with, we may note that productive processes (i.e. flows) of an economic character are essentially *continuous* over time. This is especially true of industrial systems. Such continuity is, however, assured *only* if the necessary stock of resources are themselves continually replenished to make up for the wear and tear which production involves. On the one hand, the level of such production processes is determined by the time utilization profile of these stocks which is greatly enhanced by the principle of division of labour and specialization. Obviously such utilization assumes sufficient effective demand, freedom to start production processes at any time and flexibility of the social order to vary the working day appropriately *(9)*. It also assumes that appropriate stocks are available and replenishable in the physical as well as the financial sense *(10)*.

On the other hand, the manner of such replenishment differs significantly for the different stocks (labour, natural resources and capital) as does its effect on the configuration of the production flow. Thus labour supply is largely determined by non-economic factors, the Malthusian doctrine notwithstanding, and natural resources are ultimately determined by external natural factors. This is, however, not the case with stocks of produced fixed and working capital. For these become available in the *form of outputs of the production flow itself* and therefore affect its structure considerably.

It may be useful to recapitulate the significance of the above argument. Let us assume that our major food is bread. This sustains labour power, a basic commodity and is *ex-definitione (11)* also basic. Assume further that this bread is continually being produced through the replenishment of stocks of cereal seeds, labour and equipment goods. These latter are required *both* in the production of the raw materials (e.g. ploughs, machines for producing seeds, fertilizers, insecticides, etc.) *and* for producing the final consumer goods (flour mills, baking ovens, etc.). While labour and raw materials can for our present purpose be taken as data, *the equipment goods must themselves be continually reproduced* in order to replenish them as they wear off over time. In other words, another production flow must be established so as to maintain the production of additional cereal and bread.

It will be apparent by simple inspection that the second production flow, i.e. the flow of equipment goods involves us in an infinite regression. This is because the equipment goods mentioned above, viz. ploughs, machines for producing seed wheat, fertilizers, etc., must themselves be produced by means of other equipment goods, e.g. extractive machinery, steel mills, etc. These must also be produced by still other equipment goods and so on... *ad infinitum...* . And yet this chain of the apparent infinite regression appears to be broken by industrial economies as production continually flows ! In the case of Tanzania a partial solution is, of course, *continuous* importation *(12)*.

As Adolphe Lowe has suggested, the theoretical solution to this puzzle is the existence of a group of industrial activities in the field of equipment goods *capable both of producing other equipment goods and also of reproducing themselves (13)*. These are the engineering industries which are the progenitors of *all* other machinery and also of themselves. In other words, for the physical maintenance of an industrial regime of production (and by implication of a *growing* agriculture/livestock economy) *(14)* engineering industries play the same strategic role as seed for cereal grains plays in agriculture and the reproductive system plays in the maintenance of organic life.

Thus in sum our search for an industrial strategy for Tanzania-type economies leads us to the conclusion that a necessary though not sufficient condition for autonomous industrialization is the establishment of engineering industries. For these are the only activities that embody technical progress and which can, therefore, sustain industrialization on a sequential basis.

THE CONTENT AND MEANING OF THE PROPOSED STRATEGY

Although much has been written on the «need» for an industrial strategy for Tanzania-type economies, there has hardly been any meaningful discussion of the content of such a strategy *(15)*. In my view, an industrial strategy must be defined by at least *four* elements. First it must identify a list of *industrial activities* (appropriately disaggregated) that must be undertaken, together with a rationale for their selection. Secondly, within the activities chosen, an industrial strategy must specify the criteria for *choice of techniques*. Thirdly, it must specify the *institutions* and *organizational* framework in which such a strategy must be undertaken. And finally an industrial strategy must include an algorithm of *sequencing* the various activities

over the entire planning horizon. Needless to mention that the choice of an appropriate planning time horizon is a political one implying definite relations between aggregate consumption and aggregate investment. Let us examine these aspects seriatum.

CHOICE OF APPROPRIATE ACTIVITIES

To begin with the choice of a set of industrial activities to be included in an industrial strategy depends upon our conception of the development process. For those who perceive development as an accumulation process, industrial activities are delineated by maximizing industrial growth. With limited resources, i.e. with a specified budget constraint, a ranking of industrial opportunities is undertaken using social cost benefit criteria. Only those activities which show relatively high rates of return up to the point the budget constraint become binding are selected as appropriate activities in the strategy. If, however, development is also seen as a transformation of the institutional structure of society, the flaw of the above criterion becomes evident. For the above procedure is valid only in non-dependent economies, where the production structure is not greatly constrained by the replenishment of physical capital. In such economies the core of production, i.e. basic goods, have already been established. But in underdeveloped economies such a structure does not exist. It has to be established. The criterion for choice of activities in the context of Tanzanian-type economies, therefore, takes its point of departure from consideration of establishing basic goods production.

Of course, a necessary precondition for this delineation given our development goal is *knowledge of our existing resources* (natural as well as human). Although natural resources are generated by the combination of some natural object with science and technology – there being no natural resource in an absolute sense – this precondition in Tanzania is fulfilled only to a very limited extent. Our mineral surveys and explorations are woefully incomplete. It is only recently that an inventory of our animal, fishery and forest resources is being undertaken. Even in the agricultural sector, soil surveys have been undertaken only in a few areas. *One major recommendation of the industrial strategy is therefore that sufficient resources must be channelled in completing the country's inventory of exploitable resources.*

Given the resources of the economy as are presently known and our budget constraint, the industrial strategy based on the above premises in the next five years should concentrate on: engineering industries (metal working), chemical industries, food industries, textiles, non-metallic mineral produce industries and paper industries. It remains to justify the choice of the above set of activities in the light of the above discussion. To begin with the selection procedure must be guided by Tanzania's basic needs at the present conjuncture (food, habitat, health, education, communication and transport) and the available known resources. The satisfaction of the basic needs requires at least in an indirect way most of the above activities *appropriately defined.* The output of engineering industries is required in the production of machinery which is subsequently used in the reproduction of *all* our basic needs.

Consider food for example. Tanzania's food consists essentially of cereal grains, root crops, bananas, meat, fish, vegetables and fruits. The reproduction of each of these foods on a marketable level requires use of machines: agricultural implements, machinery to produce fertilizers, seeds, insecticides, fishnets, slaughter house, etc... The same is true of housing where machinery is involved in basic construction and furniture making. Health, education and communication also use machinery both in construction and in the provision of such basic inputs as hospital-ware, books, communication equipment, transport equipment, etc... It is only pertinent to mention here that a remarkable feature of engineering industries is the similarity of the processes they perform. Furthermore, engineering industries are recommended for introduction now since they anticipate the iron and steel industry to be firmly established in the next plan.

Wood industries, apart from their use in construction (a capital-augmenting activity) and furniture making, act as import substitutes and/or complements to the engineering industry *(16).* The importance of food industries, textiles and non-metals need no further justification. However, there are a number of important interrelations. The processing of cotton seed yields edible oils. Chemical industries have extremely high linkages in an industrial system and are used in the production of basic goods in various ways: e.g. pharmaceuticals, fertilizers, preservatives, paints,etc... The basic problem here is the locus of a chemical industry. It is suggested that the natural gas at Songo Songo and Kilwa Salt may form a useful starting point of a chemical complex. The paper industry is recommended not only to meet our education and communication objective *(17)* but also to anticipate world demand and thus broaden the export base as we have an adequate resource base.

It is necessary to disaggregate the above industrial categories into specific activities in order to observe the sense of the proposed strategy. This is because the same activities can be used to generate non-basic goods. But it is this flexibility in their utilization which must be seen as a positive factor for their development. *When linked vectorally,* the above activities, appropriately disaggregated, form the core of the basic industrial strategy. No doubt some of these activities will require «import substitution» in the sense that outputs of these activities will be produced domestically rather than continually being imported. But the raison d'être for their import substitution will be conformity with the basic industrial strategy. They will not be import substituted only because they were previously imported and the level of imports has attained a threshold. In the same way some of the activities in the basic industrial strategy may be exported. But their exportation will be an extension of the domestic market. The strategy is therefore *not* biased against export industries. It is not an autarkist strategy. Moreover, a basic industrial strategy is directed towards a more optimal use of domestic resources and is particularly geared in our circumstances to enhance the agricultural sector. Of course, some of our resources were developed for maintaining lopsided development. However, even for such resources, some further uses to integrate the economy while allowing for exports can and indeed must be found. This is, for example, the case with cotton as pointed out above. Whereas we used to export all our raw cotton (lint as well as seed)

while importing cotton textiles and edible oils, now cotton seed is our major source of cooking oil and related products, products which also have a large potential export market. The same is true of cotton textiles. In the case of the sisal and cachewnut industry new uses to integrate our economy while providing export opportunities are presently being investigated.

CHOICE OF TECHNIQUES

A second element of an industrial strategy relates to choice of technique of the activities so delineated. Unfortunately, the received literature has defined choice of technique more by its probable impact on the environment or on the use of natural resources than by its adequacy to the real socio-economic conditions and priorities of the recipient human group. When choice of technique has been formulated in terms of capital-labour relations, the discussion has not always distinguished the nature of «capital» under reference. Capital is normally assumed to be a homogeneous factor, expressed in money terms and disembodied from the labour that was required to produce it. On this basis neoclassical analysis concluded that the appropriate technologies for underdeveloped countries must be labour-intensive. The economic rationale was that since static efficiency requires the equilibrium of marginal rates of factor substitution with the (implicit) wage-rental ratios, and to the extent that wage-rental ratios were assumed to be low in the underdeveloped countries, more labour-intensive techniques has to be adopted *(18)*. However, even casual observation revealed that the techniques adopted by the underdeveloped countries tended to be more capital-intensive. Consequently a number of «arguments» were presented to explain the contrast between theoretical expectation and reality.

One view invokes completely rigid technology in the face of which differences in relative factor prices would be irrelevant *(19)*. Another view holds that factor prices are unduly distorted in underdeveloped countries. Among the reasons adduced in support of this are overvalued exchange rates, generous investment allowances and other policy pressures which artificially reduce the price of capital. Furthermore it is claimed that minimum wage legislation and pressures resulting from the establishment and growth of labour unions distort factor price ratios in favour of capital relative to labour. Still another view contends that the underdeveloped countries must expect to get factor inappropriate techniques insofar as their factor endowments are different from the developed countries and they fail to establish their own capital goods industries.

Despite the research that has been undertaken on this question it has not been possible to test the above hypotheses satisfactorily because meaningful testing is inordinately demanding in its data requirements. Full information would include specification of factor proportions of all known technologies at different levels of output, market sizes in all relevant countries, the technical possibilities of factor substitution in all relevant industries – as they have been, as they are and as they are expected to be. Obviously most of this data is unavailable. Nevertheless it is useful to examine the above arguments in greater detail in order to at least take stock of our existing body of knowledge on the subject before we proceed.

In the first instance it is reasonable to claim that despite the differences in factor endowments, technological rigidity *is not a sufficient explanation for inappropriate technological choices for the underdeveloped countries.* This is for a number of reasons. To begin with, *even* if one held a fixed coefficients view of production functions within each industry, one would still expect the underdeveloped countries to concentrate on those activities which call for much labour and little capital. Secondly, there is sufficient evidence to indicate that within some industries at least considerable choice among technically efficient alternatives is possible *(20).*

If technology is generally flexible and the opportunity costs of labour and capital differ significantly between the developed and underdeveloped countries (à la Emmanuel Arghiri) *(21),* then the similarity of production techniques may be explained by deviations in the underdeveloped countries of actual factor prices from their true opportunity cost and/or by a failure on the part of decision takers to give full weight to prices in the factor markets. There is no doubt that factor prices deviate from their true opportunity costs. Nor can it be denied that the policies of underdeveloped countries have the effect of cheapening artificially the price of capital relative to labour. However, it cannot be asserted that factor price distortions are the *cause* of inappropriate technology choice unless it is established that decision takers are sensitive to variations in factor prices.

A number of attempts have been made to estimate the elasticity of capital-labour substitution for developing countries and the results from four relevant studies are shown in Table I. With the exception of the time series estimates for Argentina, the figures shown are all impressively high indicating a reasonable sensitivity to factor price changes. If these are generally representative of underdeveloped countries' industry they would tend to offer strong support for those who believe that the deviations between the actual and true factor prices is the major cause of the disappointingly poor rate of growth of the industrial alabour force in developing countries.

TABLE I

Elasticity of Capital – Labour Substitution in Developing Countries

Author	Country/Countries	Elasticity
Reyaolds and Gregory	Puerto Rico	1.0
Brikkson	Argentina, Brazil, Colombia Costa Rica, Mexico	0.7
Harris and Todaro	Kenya	0.8
Katz	Argentina	1.0 a 0.3 b

Source: C. St. J. O'Herlihy, «Capital Labour Substitution and the Developing Countries», *Oxford Bulletin of Statistics,* P.273, Vol. 34 No.3, August 1972.

Notes: a – «cross section».
b -- «time series».

Yet a number of studies do suggest that extra economic considerations, e.g. risk avoidance, appeal to «modernity», established procedures and familiar techniques explain the existence of inappropriate technology in the underdeveloped countries *(22)*. It has been suggested that the basis of such decisions is the pattern of ownership and control.

It should also be noted that there is another school of thought, again based on neoclassical assumptions which arrives at a contrary conclusion, namely that the underdeveloped countries should use more capital-intensive techniques. The argument is based on the choice of techniques' influence on income distribution and the size of the investible surplus, and hence its effect on growth of income and employment. More specifically, it is argued that since capital intensive techniques imply a smaller share of wages in output, they will yield a larger investible surplus and a faster rate of growth of employment *(23)*.

Thus the problem of choice of techniques in the context of a development strategy of accumulation does not yield unambiguous criteria. It is reasonable to state also that it does not lead to useful policy options for the periphery. This is because the main object of choice is said to revolve around the question of whether technology should be transferred in a capital intensive form which corresponds to advanced technologies in the highly industrialized countries, in a labour intensive form which in the advanced countries is archaic and in the underdeveloped countries not available, or in some variant of intermediate technology which treads the golden mean uncommitment. But it should be obvious that these niceties of efficient resource allocation are meaningless if they are not placed in the framework of *dependent* economies. For in this context the key question is *not* the level of capital intensity at which a process is introduced, but its ***adaptability as a carrier of self-generating institutional and technological change.*** The choice therefore takes its place not from capital – labour relations as such but from the level of technical sophistication that can be institutionally supported and that will act as a catalyst for further institutional diversification and integration. The relevant issues for consideration under choice of techniques in Tanzania type economies can thus be briefly summarized. ***First,*** does the technology to be introduced stimulate new skills, new capabilities, new organization? In other words, does it contribute to institutional building? ***Secondly,*** does it lead towards technological autonomy or a perpetuation of dependency, especially on mother companies in foreign countries? ***Thirdly,*** does it contribute towards technological integration? ***Fourthly,*** is it compatible with reasonable resource management at national level? ***Fifthly,*** does it help to tie together universities and research institutes with producing enterprises?

I submit that the above are the considerations that have a direct bearing on the question of technological autonomy versus dependency which determines the destiny of a country within the broader world political economic system. They include an examination of institutional differentiation and integration at the macrosocial level as well as the relationships of world technological, economic and political power centres.

Several implications can be drawn from the above analysis. One is that choice of techniques cannot be made independently of the choice of activities that must be undertaken in order to transform the economies of the underdeveloped countries. For technologies are invariably embodied in capital goods. There is often moreover, a close relationship between technology producers and users which facilitate the flow of knowledge between them thus enchancing the embodiment of technical progress in capital goods. Secondly, a level of technology which takes off from what the institutional supporting structure of the country is capable of handling in its present stage will in all probability lead to genuine local autonomy in sophisticated production methods within a *shorter* period of time than one that starts too high and for that reason remains static *(24)*.

I must be emphasized that the present parastatal system appears to thwart the effects of the above described technological choice. This is because the «successful» parastatal is one which manages to establish a project on the ground. The management of such a parastatal therefore tend to support projects that are «turnkey», i.e. projects that perpetuate dependency. A necessary implication of the above analysis is that parastatal performance will have to be evaluated with this new view of choice of techniques in mind.

Finally we are now in a position to dispose of some of the policy issues conventional wisdom relates to choice of techniques. Firstly, small scale enterprises, though not necessarily labour intensive are an important carrier of transfer of technology. The Japanese parent subcontract system and the subordinate affiliation system suggest how this can be achieved *(25)*. Secondly, the employment and dispersion effects of technological choice may sometimes be subordinated to choice of activities.

INSTITUTIONAL FRAMEWORK

A third element of an industrial strategy is the specification of institutions and organizational framework in which such a strategy must be undertaken. The key institution accompanying the industrial strategy recommended must be concerned with the formulation and implementation of *technology policy*. As will be recalled, technological progress is expressed through the improvements in the production of existing goods and services or through the creation of new goods and services. Technology policy must therefore be aimed at providing the entreprises with the necessary capacity to understand better the principles of technology they are using to master its application and introduce modifications which make it more suitable for their specific operating condition.

In view of what has been said in the preceeding pages, it will be readily apparent that the aims of technology policy must be the following:

a) Creation of an indigenous technological capacity, especially one aimed at producing basic goods;

b) Regulation of the process of importation of foreign technology thus reinforcing the bargaining power of technology buyers by developing the capacity to identify, select and incorporate technology;

c) Promotion of the interconnections between indigenous technological activities and productive processes;

d) Increasing the technological absorption capacity by disaggregating the technology package and developing a capacity for engineering design and consultancy; and

e) Fostering the demand for local technology *(26).*

These aims of technology policy must be incorporated into appropriate policy instruments that would orient technological behaviour. The need for specifying policy instruments cannot be overemphasized. Despite the fact that Tanzania's industrial sector is largely in public hands, we have not as a nation acquired even minimal technological capacity in most industries. Even in a sector such as textiles, where we have over fifteen years experience and a holding parastatal, we still commission outside consultancies to carry out preinvestment studies, order machinery and equipment, instal plants and often carry out maintenance.

There are at least *two* policy instruments which must be considered for immediate adoption. First is the *disaggregation* of the technology package to be incorporated into the productive processes. Disaggregation is recommended because it leads to a better identification of the components of technical knowledge and their degree of complexity; allowing the enterprise to master the technology it imports. The disaggregation often occurs at two levels. First is the separation of the investment projects into each of its components (e.g. civil works installations, machinery and equipment, technical personnel, licenses, etc.), and secondly a technical disaggregation as such where each of the package components is examined from the engineering point of view between those components which are specific and inherent to the design and those that are generally common to different processes or products. Disaggregation can serve different aims of technology policy. It strengthens the bargaining power of buyers and helps to regulate the imports of technology. It allows the identification of those components of imported technology which could be produced locally, thus generating a demand for technological activities and it also permits users to have a greater understanding of the characteristics of imported technology, thus facilitating its adoption.

Certainly the process of disaggregation cannot take place in vacuo. It requires an institutional framework. The firm establishment of Tanzania Industrial Studies and Consultancy Organization (TISCO) for carrying out preinvestment studies, and offering various technical consultancies for industry will be a major step in implementing our technology policy. To be effective, it must not only be competently staffed from the very beginning but it must be in a position to deal with the entire project cycle. It must be able to examine the projects with a view to identifying alternative inputs, processes, designs and outputs. It must also establish an information system that will orient the demand for technology towards local sources, and assist in the training of professionals for the genration of technology. Another important institution that must be created is the development of a capacity for *engineering design.* So far, most of our engineering graduates can cope with tinkering with existing designs but are generally ill-equipped to transform them or to create new designs. The faculty of Engineering must seriously consider the establishment of an institute in engineering design.

A second policy instrument is the use of the leverage of financing institutions in influencing enterprises to use local technology and/or local raw materials. The use of this instrument requires the explicit incorporation of criteria related to technological development in the evaluation of requests for finance. These criteria should be extended to the implementation and project execution phase. The Tanzanian Investment Bank must design criteria to be applied to all requests for its financing that will ensure that the broad policies of indigenous technology development are implemented.

Turning now to the question of *industrial organization* it must be stated that it is contigent upon ownership and control. The major goal must be effective participation of workers in the enterprise. An elementary level of participation in which workers are fully informed about management thinking and workers' representatives express their views to management, who take these views into account in decision-making should be achieved in all firms. At another level workers could be given such facilities and amenities as to enable them to care and feel empathy with the destiny of the enterprise. A deeper involvement of the workers, empowering them to make decisions in certain areas can also be achieved provided it is selectively done. This is possible for example, in industries where a relatively high degree of personal skill is required and where that skill often leads to on-the-job decision-making in cooperation with management. In large integrated plants, workers participation may be initially limited. Of course, the ultimate form *(27)* of participation is ownership by the workers as in Yugoslavia. This can easily be achieved in small-scale industries initially and if required, must be planned for large industries as well.

SEQUENCING

The final element of an industrial strategy relates to sequencing. This requires balancing of three main factors. First basic needs of consumers must be met. In many cases this will also provide a basis for structural change but there may be conflicts of consumers choice. Secondly, there is likely to be a limit to the degree to which disruption of the economy can be tolerated. For obviously this strategy is not being proposed on a *tabula rasa.* While such activities as cashew processing and diamond cutting do not fit the essential aims of the strategy, they are an important element of the present economic structure. It may be necessary, especially in this difficult period of foreign exchange constraint, to continue and even expand some of these activities which will not, in the long run be given an important place in the industrial structure. Thirdly, there are numerous technical considerations which play a part in determining the sequence in which the selected industries can be developed. For example, although the iron and steel industry to be developed on the basis of Tanzanian ore and coal resources is to be developed in the next plan period (1981–1986), it will be essential to develop user industries (i.e. forward linkages) in engineering and metals transformation now, to provide a base for the efficient production of steel.

SOME CONCLUDING REMARKS

Modern economic growth, i.e. long-term rise in capacity to supply increasingly diverse economic goods to a country's population, this growing capacity based on advancing technology and the institutional and ideological adjustment that it demands has been enormously facilitated by greater division of labour and specialization of tasks. This has in turn been characterized by the development of a hierarchical structure between labour and management and between the various layers of labour as well as that of management. It has also been characterized by uneven development and fetishicm of commodities and has consequently ignored the mobilization of ***human*** resources.

Tanzania seeks a different development strategy. As pointed out the goals of the Tanzanian society embrace the concept of self-reliance at all levels of the development process. On the decision-making level this implies a will to build up and use a capacity for autonomous decision-making and its implementation at all levels of the development process. And, on the production level, self-reliance requires the development of an indigenous capacity to generate and put into use these elements of technical knowledge which an autonomous decision-making process has selected for indigenous supply. It is within this framework that an appropriate industrial strategy – such as that suggested here – can implemented.

NOTES

(1) J.K. Nyerere, *Freedom and Socialism* (Nairobi and London: Oxford University Press, 1968) and J.K. Nyerere, *Freedom and Development* (Dar-es-Salaam, Oxford University Press, 1973).

(2) For a fuller discussion, see *What Now? Another Development* (Dag Hammars-Kjold Foundation, Uppsala, 1975), *Employment Growth and Basic Needs* (International Labour Organization, Geneva, 1976) and R.H. Green, «Basic Human Needs, Collective Self-Reliance and Development Strategy» in *Self-Reliance and Solidarity in the Quest for International Justice* (Ecumenical Centre-Bossey, Celigny, Switzerland, 1976).

(3) See J.K. Nyerere, *Ibid;* for a historical framework of Tanzania's development, see J.F. Rweyemamu, *Underdevelopment and Industrialization in Tanzania* (Nairobi, Oxford University Press, 1973).

(4) I say so-called because ISI does not provide any general principle upon which a country can apply when choosing its optimal activities.

(5) Celso Furtado, «Underdevelopment and Dependence: The Fundamental Connection», (University of Cambridge, Centre of Latin American Studies, Working Paper No. 17, 1973).

(6) Pierro Sraffa, *Production of Commodities by Means of Commodities,* (London: Cambridge University Press, 1960). Basic industries appear on the last row of a triangularized matrix of the combined current and capital input-output tables of a mature economy. See especially, Leontieff, W. and Ann Carter, «The position of Metal Working in the Structure of an Industrializing Economy», (Harvard Economic Research Project, August, 1966, mimeo) and Simpson and Tsukui, «The Fundamental Structure of Input-Output Tables; An International Comparison», *The Review of Economics and Statistics* (November 1965).

(7) The argument that direct foreign investment reinforces dependence is provided by J.F. Rweyemamu, *op. cit.*, chapter 3.

(8) The necessary level of capital accumulation might be obtained either through increased exploitation, i.e. increased concentration of income distribution or reducing consumption by taxation or state enterprise pricing to augment public sector investment, or through a more intense absorption of technical progress by the multinational branches. It will be apparent that these modes of increasing capital accumulation are at variance with Tanzania's development goals.

(9) For a succint analysis of this problem of minimizing «fund idleness» as he calls it, see the useful article of Nicholas Georgescu-Roegen, «The Economics of Production», *American Economic Review*, Vol. 60, 1970.

(10) This is another facet of the general equilibrium «illusion». All stocks are assumed to be exogenous (including capital stock), without any indication of the manner of their replenishment. While in a mature economy the replenishment of capital stock may be taken for granted, this is not the case in an underdeveloped one where the lack of indigenous physical capability of replenishing capital is precisely one of its distinguishing features. In this context, moreover, the so-called Cambridge controversy about capital is not much ado about nothing. For it is precisely this «physical» stock which cannot be aggregated to serve the purposes of neoclassical analysis.

(11) Bread is basic in Sraffa's sense because it enters (through being a wage good) into the production of all other goods. Any basic consumption good (wage good) is to some degree a basic good in the Sraffa system; any good vital to producing goods and services essential to meeting basic human needs is basic good to some basic human needs analysts (e.g. Green, *op. cit.*).

(12) Continuous importation is a «partial» solution in more than one sense as the results of such a production system does not enable the economy to «lead» technologically in any industrial sector. It enables the economy to produce only «mature commodities» in the sense of Hirsch. See especially S. Hirsch, *Location of Industry and International Competitiveness* (London: Oxford University Press, 1967).

(13) Adolphe Lowe, *On Economic Knowledge: Toward a Science of Political Economics* (New York: Harper Torchbooks, 1970).

(14) J.F. Rweyemamu, «A Neglected Relation Between Agriculture and Industry», paper presented to IDEP Conference, Tananarive, July 1975.

(15) A partial exception is the useful work of Clive Thomas, *Dependency and Transformation* (New York: Monthly Review Press, 1974).

(16) The substitutability of wood for iron in tool making especially in the agricultural sector is clearly illustrated by the success of «village technology». See the useful article of G. McPherson and D. Jackson, «Village Technology for Rural Development», *International Labour Review*, Vol. III, No. 2, February 1975 (Geneva), pp. 97–118

(17) Given the ambitions plans in primary and adult education, the paper requirement to sustain these programmes cannot be underestimated, even with appropriate substitutions of paper for slates, etc.

(18) D. Turnham and J. Yaeger, *The Employment Problem in Less Developed Countries: A Review* (OECD Development Centre, Paris, 1969). Werner Baer and Michael Herve, «Employment and Industrialization in Developing Countries», *Quarterly Journal of Economics,* Vol. LXX, No. 1 (February 1960), and Frances Stewart and Paul Streeten, «Conflicts Between Output and Employment Objectives in Developing Countries», *Oxford Economic Papers,* Vol. 23, No. 2 (July 1971).

(19) R.S. Eckaus, «The Factor Proportions Problem in Underdeveloped Areas», The The American Economic Review (September 1955).

(20) R. Hall Mason, *The Transfer of Technology and the Factor Proportions Problem: The Philippines and Mexico;* UNITAR Research Reports, No. 10, New York.

(21) Emmanuel Arghiri, *Unequal Exchange. A Study of the Imperialism of Trade* (New York: Monthly Review Press, 1972).

(22) Louis T. Wells, Jr. «Economic Man and Engineering Man: Choice of Technology in a Low Wage Country», Background Paper, Ford Foundation Seminar on Technology and Employment; New Delhi, March 21–24, 1973; John W. Thomas, «The Choice of Technology in Developing Countries; The Case of Irrigation Tuberwelles in Bangladesh», (mimeo).

(23) Walter Galenson and H. Leibenstein, «Investment Criteria, Productivity and Economic Development», *Quarterly Journal of Economics* (August 1955), *A.K. Sen, Choice of Techniques: An Aspect of the Theory of Planned Economic Development* (Oxford, Basic Blackwell, 1960). See G. Arrighi, «International Corporations, Labour Aristocracies and Economic Development in Tropical Africa» (University College, Dar-es-Salaam, 1967, mimeo).

(24) Technological development can therefore be taken as *sequential* and *cummulative.*

(25) See Masaru Saito, «Diffusion Mechanism of Technology and Industrial Transformation: Case of Small Scale Industries in Japan», OECD, Paris, 1973.

(26) See the useful paper of Francisco R. Sagasti, «A Framework for the Formulation and Implementation of Technology Policies: A Case Study of ITINTEC IN PERU» presented to the Interamerican Forum on Technological Development, Austin, Texas, February 24–27, 1975.

(27) This form is ultimate in two senses. It requires very great changes in production relations. Equally it requires more equal levels of productive forces (including capital) available to groups of workers if it is not to lead to sharp inequality along enterprise lines.

RESUME

J. F. RWEYEMAMU s'est penché dans son article sur les problèmes que pose la formulation d'une stratégie pour l'industrialisation de la Tanzanie. Cette stratégie doit, pour être efficace, être basée sur la Déclaration d'Arusha de 1967 qui a mis en relief l'importance des aspirations profondes de la société Tanzanienne et sa conception du processus de développement. Cette stratégie doit non seulement faciliter le processus d'accumulation du capital mais elle doit aussi et surtout opérer une transformation de la structure institutionnelle de la société Tanzanienne avec l'introduction d'activités axées sur les besoins essentiels et qui favorisent en même temps des processus indigènes et innovateurs. L'efficacité de toute formulation pour une industrialisation de la Tanzanie repose selon l'auteur sur la précision et l'exactitude des réponses apportées aux questions suivantes :

Quel contenu et quel sens donner à cette stratégie ?
Quelle technologie faut-il adopter ?
Quelle technique faut-il utiliser pour un meilleur rendement ?
Dans quel cadre institutionnel faut-il mener cette stratégie ?
Quels rapports faut-il établir entre ces différents éléments ?

Les réponses proposées par l'auteur sont les suivantes :

Dans le cadre du choix des activités industrielles à mener, il pense qu'il faut opter pour une stratégie qui repose essentiellement sur l'industrie mécanique, les industries chimiques, les industries alimentaires et les industries textiles, les industries de production de minerais non-métalliques et les industries du papier puisqu'il s'agit avant tout de satisfaire les besoins fondamentaux des Tanzaniens. Les techniques à utiliser dans ces activités doivent non seulement tenir compte du niveau de sophistification technique que l'institution en place peut supporter mais aussi jouer un rôle catalyseur dans le processus de diversification institutionnelle et d'intégration.

Après avoir rappelé l'importance d'une définition claire et précise de la politique technologique et de ses buts, l'auteur insiste sur le fait qu'en ce qui concerne la Tanzanie, cette politique doit être basée sur deux points essentiels : une politique de désagrégation du paquet technologique à incorporer dans les processus de production et une politique de «pilotage» des institutions financières qui permette d'inciter les entreprises à utiliser plus de technologie et de matières premières locales. Tout cela doit avoir lieu dans un cadre institutionnel qui garantit une participation effective des ouvriers dans la gestion des entreprises.

Quant aux rapports à établir entre les différents éléments, ils nécessitent un équilibre entre trois facteurs : la satisfaction des besoins fondamentaux des consommateurs, le degré de rupture à admettre par rapport à certaines activités qui existent déjà et quelques autres considérations techniques.

En conclusion, l'auteur fait remarquer que la stratégie choisie par la Tanzanie de baser son industrialisation sur l'auto-suffisance dans tous les domaines implique :

a) une volonté de construire et d'utiliser le pouvoir de prise de décision autonome
b) le développement d'une capacité indigène à créer pour les utilisateurs des éléments de connaissances technologiques.

THE FORMULATION OF AN INDUSTRIAL STRATEGY FOR TANZANIA

By

Justinian RWEYEMAMU *

INTRODUCTION: SOME THEORITICAL CONTROVERSIES CONSIDERED

Any strategy – global or sectoral – must be related in a *fundamental* way to the goals of society. It must seek to embody society's conception of the development process.

Tanzania has already defined her development strategy. The Arusha declaration and the Mwongozo perceive the development process as pivoted around *man* – his growth, his health, his security, his dignity and therefore his overall well-being *(1)*. It is built around the pillars of self-reliance and socialism. As such, development is seen not only as a process of accumulation, i.e. of augmenting the output capability of Tanzanian economy but also as a transformation of the institutional structure of our society. Tanzania's development therefore requires the introduction of activities that are *basic needs oriented* (food, habitat, health, education, communication and transport) *(2)*, favouring indigenous and innovative processes which take into cognisance environmental potentials and limits.

This strategy has been conceived in the light of the analysis of Tanzania's post-colonial society which is characterized by underdevelopment *(3)*. On the one hand, the economy which we have inherited is a *dependent* one and its structure is therefore deformed. It is unable to generate self-sustaining development and to create an economic system that displays a reasonable symmetry between the structure of production and the structure of consumption. On the other hand, attempts at modernizing it (often confused with transformation) have proved abortive as the industrialization pattern which has been carried out (the so-called *(4)* import substituting industrialization strategy – ISI) appear to have implied merely an adoption of more sophisticated patterns of consumption (both private and public) *without* the corresponding process of capital accumulation and technical progress. In effect, the techniques embodied in the equipment imported were not related to the level of capital accumulated but to the demand profile of the modernized sector of the society. It is this particular orientation of technical progress and its lack of organic connection with the level of capital previously accumulated that gives the specific character to underdevelopment in relation to the formulation of an industrial strategy *(5)*.

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The economic rationale of the ISI strategy was, of course, the theory of general economic equilibrium à la Walras. If all activities are equally important then it does not matter how they are sequenced, provided they are justified by a specified rate of return. It will be argued that the theory ignores, by implication, the fact that the productive structure of an industrial economy consists, of necessity, of a category of industries which are *basic* in the Sraffa sense, i.e. industries whose outputs are used either directly or indirectly in the production of *all* other outputs in the economic system *(6)*.

Moreover, as has been observed, the process of transplanting consumption patterns, generated by the system of international division of labour imposed by the countries leading the process of industrialization, has given rise to economic systems such as that of Tanzania where technical progress is first assimilated at the level of the demand for consumption goods. As such these economies *may continue to be dependent even in the absence of foreign direct investment (7)*. Nationalization of the major means of production does not, therefore, signal an end to dependence in this context.

The conclusion to be drawn from the foregoing is that ISI as was relied upon in the past plans *permanently reinforces dependence* and is incompatible with Tanzania's development strategy. This is because the introduction of new products or processes from the centre will *always* require more sophisticated techniques and higher levels of accumulation than can be sustained by Tanzania type economies *(8)*.

Perhaps if we turn our attention to the rudiments of the nature of a productive process we may be able to delineate the elements of an industrial strategy that is consistent with Tanzania's objectives – self-reliance and orientation towards basic human needs.

To begin with, we may note that productive processes (i.e. flows) of an economic character are essentially *continuous* over time. This is especially true of industrial systems. Such continuity is, however, assured *only* if the necessary stock of resources are themselves continually replenished to make up for the wear and tear which production involves. On the one hand, the level of such production processes is determined by the time utilization profile of these stocks which is greatly enhanced by the principle of division of labour and specialization. Obviously such utilization assumes sufficient effective demand, freedom to start production processes at any time and flexibility of the social order to vary the working day appropriately *(9)*. It also assumes that appropriate stocks are available and replenishable in the physical as well as the financial sense *(10)*.

On the other hand, the manner of such replenishment differs significantly for the different stocks (labour, natural resources and capital) as does its effect on the configuration of the production flow. Thus labour supply is largely determined by non-economic factors, the Malthusian doctrine notwithstanding, and natural resources are ultimately determined by external natural factors. This is, however, not the case with stocks of produced fixed and working capital. For these become available in the *form of outputs of the production flow itself* and therefore affect its structure considerably.

It may be useful to recapitulate the significance of the above argument. Let us assume that our major food is bread. This sustains labour power, a basic commodity and is *ex-definitione (11)* also basic. Assume further that this bread is continually being produced through the replenishment of stocks of cereal seeds, labour and equipment goods. These latter are required *both* in the production of the raw materials (e.g. ploughs, machines for producing seeds, fertilizers, insecticides, etc.) *and* for producing the final consumer goods (flour mills, baking ovens, etc.). While labour and raw materials can for our present purpose be taken as data, *the equipment goods must themselves be continually reproduced* in order to replenish them as they wear off over time. In other words, another production flow must be established so as to maintain the production of additional cereal and bread.

It will be apparent by simple inspection that the second production flow, i.e. the flow of equipment goods involves us in an infinite regression. This is because the equipment goods mentioned above, viz. ploughs, machines for producing seed wheat, fertilizers, etc., must themselves be produced by means of other equipment goods, e.g. extractive machinery, steel mills, etc. These must also be produced by still other equipment goods and so on... *ad infinitum...* . And yet this chain of the apparent infinite regression appears to be broken by industrial economies as production continually flows ! In the case of Tanzania a partial solution is, of course, *continuous* importation *(12)*.

As Adolphe Lowe has suggested, the theoretical solution to this puzzle is the existence of a group of industrial activities in the field of equipment goods *capable both of producing other equipment goods and also of reproducing themselves (13)*. These are the engineering industries which are the progenitors of *all* other machinery and also of themselves. In other words, for the physical maintenance of an industrial regime of production (and by implication of a *growing* agriculture/livestock economy) *(14)* engineering industries play the same strategic role as seed for cereal grains plays in agriculture and the reproductive system plays in the maintenance of organic life.

Thus in sum our search for an industrial strategy for Tanzania-type economies leads us to the conclusion that a necessary though not sufficient condition for autonomous industrialization is the establishment of engineering industries. For these are the only activities that embody technical progress and which can, therefore, sustain industrialization on a sequential basis.

THE CONTENT AND MEANING OF THE PROPOSED STRATEGY

Although much has been written on the «need» for an industrial strategy for Tanzania-type economies, there has hardly been any meaningful discussion of the content of such a strategy *(15)*. In my view, an industrial strategy must be defined by at least *four* elements. First it must identify a list of *industrial activities* (appropriately disaggregated) that must be undertaken, together with a rationale for their selection. Secondly, within the activities chosen, an industrial strategy must specify the criteria for *choice of techniques*. Thirdly, it must specify the *institutions* and *organizational* framework in which such a strategy must be undertaken. And finally an industrial strategy must include an algorithm of *sequencing* the various activities

over the entire planning horizon. Needless to mention that the choice of an appropriate planning time horizon is a political one implying definite relations between aggregate consumption and aggregate investment. Let us examine these aspects seriatum.

CHOICE OF APPROPRIATE ACTIVITIES

To begin with the choice of a set of industrial activities to be included in an industrial strategy depends upon our conception of the development process. For those who perceive development as an accumulation process, industrial activities are delineated by maximizing industrial growth. With limited resources, i.e. with a specified budget constraint, a ranking of industrial opportunities is undertaken using social cost benefit criteria. Only those activities which show relatively high rates of return up to the point the budget constraint become binding are selected as appropriate activities in the strategy. If, however, development is also seen as a transformation of the institutional structure of society, the flaw of the above criterion becomes evident. For the above procedure is valid only in non-dependent economies, where the production structure is not greatly constrained by the replenishment of physical capital. In such economies the core of production, i.e. basic goods, have already been established. But in underdeveloped economies such a structure does not exist. It has to be established. The criterion for choice of activities in the context of Tanzanian-type economies, therefore, takes its point of departure from consideration of establishing basic goods production.

Of course, a necessary precondition for this delineation given our development goal is *knowledge of our existing resources* (natural as well as human). Although natural resources are generated by the combination of some natural object with science and technology – there being no natural resource in an absolute sense – this precondition in Tanzania is fulfilled only to a very limited extent. Our mineral surveys and explorations are woefully incomplete. It is only recently that an inventory of our animal, fishery and forest resources is being undertaken. Even in the agricultural sector, soil surveys have been undertaken only in a few areas. *One major recommendation of the industrial strategy is therefore that sufficient resources must be channelled in completing the country's inventory of exploitable resources.*

Given the resources of the economy as are presently known and our budget constraint, the industrial strategy based on the above premises in the next five years should concentrate on: engineering industries (metal working), chemical industries, food industries, textiles, non-metallic mineral produce industries and paper industries. It remains to justify the choice of the above set of activities in the light of the above discussion. To begin with the selection procedure must be guided by Tanzania's basic needs at the present conjuncture (food, habitat, health, education, communication and transport) and the available known resources. The satisfaction of the basic needs requires at least in an indirect way most of the above activities *appropriately defined.* The output of engineering industries is required in the production of machinery which is subsequently used in the reproduction of *all* our basic needs.

Consider food for example. Tanzania's food consists essentially of cereal grains, root crops, bananas, meat, fish, vegetables and fruits. The reproduction of each of these foods on a marketable level requires use of machines: agricultural implements, machinery to produce fertilizers, seeds, insecticides, fishnets, slaughter house, etc... The same is true of housing where machinery is involved in basic construction and furniture making. Health, education and communication also use machinery both in construction and in the provision of such basic inputs as hospital-ware, books, communication equipment, transport equipment, etc... It is only pertinent to mention here that a remarkable feature of engineering industries is the similarity of the processes they perform. Furthermore, engineering industries are recommended for introduction now since they anticipate the iron and steel industry to be firmly established in the next plan.

Wood industries, apart from their use in construction (a capital-augmenting activity) and furniture making, act as import substitutes and/or complements to the engineering industry *(16).* The importance of food industries, textiles and non-metals need no further justification. However, there are a number of important interrelations. The processing of cotton seed yields edible oils. Chemical industries have extremely high linkages in an industrial system and are used in the production of basic goods in various ways: e.g. pharmaceuticals, fertilizers, preservatives, paints,etc... The basic problem here is the locus of a chemical industry. It is suggested that the natural gas at Songo Songo and Kilwa Salt may form a useful starting point of a chemical complex. The paper industry is recommended not only to meet our education and communication objective *(17)* but also to anticipate world demand and thus broaden the export base as we have an adequate resource base.

It is necessary to disaggregate the above industrial categories into specific activities in order to observe the sense of the proposed strategy. This is because the same activities can be used to generate non-basic goods. But it is this flexibility in their utilization which must be seen as a positive factor for their development. *When linked vectorally,* the above activities, appropriately disaggregated, form the core of the basic industrial strategy. No doubt some of these activities will require «import substitution» in the sense that outputs of these activities will be produced domestically rather than continually being imported. But the raison d'être for their import substitution will be conformity with the basic industrial strategy. They will not be import substituted only because they were previously imported and the level of imports has attained a threshold. In the same way some of the activities in the basic industrial strategy may be exported. But their exportation will be an extension of the domestic market. The strategy is therefore *not* biased against export industries. It is not an autarkist strategy. Moreover, a basic industrial strategy is directed towards a more optimal use of domestic resources and is particularly geared in our circumstances to enhance the agricultural sector. Of course, some of our resources were developed for maintaining lopsided development. However, even for such resources, some further uses to integrate the economy while allowing for exports can and indeed must be found. This is, for example, the case with cotton as pointed out above. Whereas we used to export all our raw cotton (lint as well as seed)

while importing cotton textiles and edible oils, now cotton seed is our major source of cooking oil and related products, products which also have a large potential export market. The same is true of cotton textiles. In the case of the sisal and cachewnut industry new uses to integrate our economy while providing export opportunities are presently being investigated.

CHOICE OF TECHNIQUES

A second element of an industrial strategy relates to choice of technique of the activities so delineated. Unfortunately, the received literature has defined choice of technique more by its probable impact on the environment or on the use of natural resources than by its adequacy to the real socio-economic conditions and priorities of the recipient human group. When choice of technique has been formulated in terms of capital-labour relations, the discussion has not always distinguished the nature of «capital» under reference. Capital is normally assumed to be a homogeneous factor, expressed in money terms and disembodied from the labour that was required to produce it. On this basis neoclassical analysis concluded that the appropriate technologies for underdeveloped countries must be labour-intensive. The economic rationale was that since static efficiency requires the equilibrium of marginal rates of factor substitution with the (implicit) wage-rental ratios, and to the extent that wage-rental ratios were assumed to be low in the underdeveloped countries, more labour-intensive techniques has to be adopted *(18)*. However, even casual observation revealed that the techniques adopted by the underdeveloped countries tended to be more capital-intensive. Consequently a number of «arguments» were presented to explain the contrast between theoretical expectation and reality.

One view invokes completely rigid technology in the face of which differences in relative factor prices would be irrelevant *(19)*. Another view holds that factor prices are unduly distorted in underdeveloped countries. Among the reasons adduced in support of this are overvalued exchange rates, generous investment allowances and other policy pressures which artificially reduce the price of capital. Furthermore it is claimed that minimum wage legislation and pressures resulting from the establishment and growth of labour unions distort factor price ratios in favour of capital relative to labour. Still another view contends that the underdeveloped countries must expect to get factor inappropriate techniques insofar as their factor endowments are different from the developed countries and they fail to establish their own capital goods industries.

Despite the research that has been undertaken on this question it has not been possible to test the above hypotheses satisfactorily because meaningful testing is inordinately demanding in its data requirements. Full information would include specification of factor proportions of all known technologies at different levels of output, market sizes in all relevant countries, the technical possibilities of factor substitution in all relevant industries – as they have been, as they are and as they are expected to be. Obviously most of this data is unavailable. Nevertheless it is useful to examine the above arguments in greater detail in order to at least take stock of our existing body of knowledge on the subject before we proceed.

In the first instance it is reasonable to claim that despite the differences in factor endowments, technological rigidity *is not a sufficient explanation for inappropriate technological choices for the underdeveloped countries.* This is for a number of reasons. To begin with, *even* if one held a fixed coefficients view of production functions within each industry, one would still expect the underdeveloped countries to concentrate on those activities which call for much labour and little capital. Secondly, there is sufficient evidence to indicate that within some industries at least considerable choice among technically efficient alternatives is possible *(20).*

If technology is generally flexible and the opportunity costs of labour and capital differ significantly between the developed and underdeveloped countries (à la Emmanuel Arghiri) *(21),* then the similarity of production techniques may be explained by deviations in the underdeveloped countries of actual factor prices from their true opportunity cost and/or by a failure on the part of decision takers to give full weight to prices in the factor markets. There is no doubt that factor prices deviate from their true opportunity costs. Nor can it be denied that the policies of underdeveloped countries have the effect of cheapening artificially the price of capital relative to labour. However, it cannot be asserted that factor price distortions are the *cause* of inappropriate technology choice unless it is established that decision takers are sensitive to variations in factor prices.

A number of attempts have been made to estimate the elasticity of capital-labour substitution for developing countries and the results from four relevant studies are shown in Table I. With the exception of the time series estimates for Argentina, the figures shown are all impressively high indicating a reasonable sensitivity to factor price changes. If these are generally representative of underdeveloped countries' industry they would tend to offer strong support for those who believe that the deviations between the actual and true factor prices is the major cause of the disappointingly poor rate of growth of the industrial alabour force in developing countries.

TABLE I

Elasticity of Capital – Labour Substitution in Developing Countries

Author	Country/Countries	Elasticity
Reyaolds and Gregory	Puerto Rico	1.0
Brikkson	Argentina, Brazil, Colombia Costa Rica, Mexico	0.7
Harris and Todaro	Kenya	0.8
Katz	Argentina	1.0 a 0.3 b

Source: C. St. J. O'Herlihy, «Capital Labour Substitution and the Developing Countries», *Oxford Bulletin of Statistics,* P.273, Vol. 34 No.3, August 1972.

Notes: a – «cross section».
b -- «time series».

Yet a number of studies do suggest that extra economic considerations, e.g. risk avoidance, appeal to «modernity», established procedures and familiar techniques explain the existence of inappropriate technology in the underdeveloped countries *(22)*. It has been suggested that the basis of such decisions is the pattern of ownership and control.

It should also be noted that there is another school of thought, again based on neoclassical assumptions which arrives at a contrary conclusion, namely that the underdeveloped countries should use more capital-intensive techniques. The argument is based on the choice of techniques' influence on income distribution and the size of the investible surplus, and hence its effect on growth of income and employment. More specifically, it is argued that since capital intensive techniques imply a smaller share of wages in output, they will yield a larger investible surplus and a faster rate of growth of employment *(23)*.

Thus the problem of choice of techniques in the context of a development strategy of accumulation does not yield unambiguous criteria. It is reasonable to state also that it does not lead to useful policy options for the periphery. This is because the main object of choice is said to revolve around the question of whether technology should be transferred in a capital intensive form which corresponds to advanced technologies in the highly industrialized countries, in a labour intensive form which in the advanced countries is archaic and in the underdeveloped countries not available, or in some variant of intermediate technology which treads the golden mean uncommitment. But it should be obvious that these niceties of efficient resource allocation are meaningless if they are not placed in the framework of *dependent* economies. For in this context the key question is *not* the level of capital intensity at which a process is introduced, but its ***adaptability as a carrier of self-generating institutional and technological change.*** The choice therefore takes its place not from capital – labour relations as such but from the level of technical sophistication that can be institutionally supported and that will act as a catalyst for further institutional diversification and integration. The relevant issues for consideration under choice of techniques in Tanzania type economies can thus be briefly summarized. ***First,*** does the technology to be introduced stimulate new skills, new capabilities, new organization? In other words, does it contribute to institutional building? ***Secondly,*** does it lead towards technological autonomy or a perpetuation of dependency, especially on mother companies in foreign countries? ***Thirdly,*** does it contribute towards technological integration? ***Fourthly,*** is it compatible with reasonable resource management at national level? ***Fifthly,*** does it help to tie together universities and research institutes with producing enterprises?

I submit that the above are the considerations that have a direct bearing on the question of technological autonomy versus dependency which determines the destiny of a country within the broader world political economic system. They include an examination of institutional differentiation and integration at the macrosocial level as well as the relationships of world technological, economic and political power centres.

Several implications can be drawn from the above analysis. One is that choice of techniques cannot be made independently of the choice of activities that must be undertaken in order to transform the economies of the underdeveloped countries. For technologies are invariably embodied in capital goods. There is often moreover, a close relationship between technology producers and users which facilitate the flow of knowledge between them thus enchancing the embodiment of technical progress in capital goods. Secondly, a level of technology which takes off from what the institutional supporting structure of the country is capable of handling in its present stage will in all probability lead to genuine local autonomy in sophisticated production methods within a *shorter* period of time than one that starts too high and for that reason remains static *(24)*.

I must be emphasized that the present parastatal system appears to thwart the effects of the above described technological choice. This is because the «successful» parastatal is one which manages to establish a project on the ground. The management of such a parastatal therefore tend to support projects that are «turnkey», i.e. projects that perpetuate dependency. A necessary implication of the above analysis is that parastatal performance will have to be evaluated with this new view of choice of techniques in mind.

Finally we are now in a position to dispose of some of the policy issues conventional wisdom relates to choice of techniques. Firstly, small scale enterprises, though not necessarily labour intensive are an important carrier of transfer of technology. The Japanese parent subcontract system and the subordinate affiliation system suggest how this can be achieved *(25)*. Secondly, the employment and dispersion effects of technological choice may sometimes be subordinated to choice of activities.

INSTITUTIONAL FRAMEWORK

A third element of an industrial strategy is the specification of institutions and organizational framework in which such a strategy must be undertaken. The key institution accompanying the industrial strategy recommended must be concerned with the formulation and implementation of *technology policy*. As will be recalled, technological progress is expressed through the improvements in the production of existing goods and services or through the creation of new goods and services. Technology policy must therefore be aimed at providing the entreprises with the necessary capacity to understand better the principles of technology they are using to master its application and introduce modifications which make it more suitable for their specific operating condition.

In view of what has been said in the preceeding pages, it will be readily apparent that the aims of technology policy must be the following:

a) Creation of an indigenous technological capacity, especially one aimed at producing basic goods;

b) Regulation of the process of importation of foreign technology thus reinforcing the bargaining power of technology buyers by developing the capacity to identify, select and incorporate technology;

c) Promotion of the interconnections between indigenous technological activities and productive processes;

d) Increasing the technological absorption capacity by disaggregating the technology package and developing a capacity for engineering design and consultancy; and

e) Fostering the demand for local technology *(26).*

These aims of technology policy must be incorporated into appropriate policy instruments that would orient technological behaviour. The need for specifying policy instruments cannot be overemphasized. Despite the fact that Tanzania's industrial sector is largely in public hands, we have not as a nation acquired even minimal technological capacity in most industries. Even in a sector such as textiles, where we have over fifteen years experience and a holding parastatal, we still commission outside consultancies to carry out preinvestment studies, order machinery and equipment, instal plants and often carry out maintenance.

There are at least *two* policy instruments which must be considered for immediate adoption. First is the *disaggregation* of the technology package to be incorporated into the productive processes. Disaggregation is recommended because it leads to a better identification of the components of technical knowledge and their degree of complexity; allowing the enterprise to master the technology it imports. The disaggregation often occurs at two levels. First is the separation of the investment projects into each of its components (e.g. civil works installations, machinery and equipment, technical personnel, licenses, etc.), and secondly a technical disaggregation as such where each of the package components is examined from the engineering point of view between those components which are specific and inherent to the design and those that are generally common to different processes or products. Disaggregation can serve different aims of technology policy. It strengthens the bargaining power of buyers and helps to regulate the imports of technology. It allows the identification of those components of imported technology which could be produced locally, thus generating a demand for technological activities and it also permits users to have a greater understanding of the characteristics of imported technology, thus facilitating its adoption.

Certainly the process of disaggregation cannot take place in vacuo. It requires an institutional framework. The firm establishment of Tanzania Industrial Studies and Consultancy Organization (TISCO) for carrying out preinvestment studies, and offering various technical consultancies for industry will be a major step in implementing our technology policy. To be effective, it must not only be competently staffed from the very beginning but it must be in a position to deal with the entire project cycle. It must be able to examine the projects with a view to identifying alternative inputs, processes, designs and outputs. It must also establish an information system that will orient the demand for technology towards local sources, and assist in the training of professionals for the genration of technology. Another important institution that must be created is the development of a capacity for *engineering design.* So far, most of our engineering graduates can cope with tinkering with existing designs but are generally ill-equipped to transform them or to create new designs. The faculty of Engineering must seriously consider the establishment of an institute in engineering design.

A second policy instrument is the use of the leverage of financing institutions in influencing enterprises to use local technology and/or local raw materials. The use of this instrument requires the explicit incorporation of criteria related to technological development in the evaluation of requests for finance. These criteria should be extended to the implementation and project execution phase. The Tanzanian Investment Bank must design criteria to be applied to all requests for its financing that will ensure that the broad policies of indigenous technology development are implemented.

Turning now to the question of *industrial organization* it must be stated that it is contigent upon ownership and control. The major goal must be effective participation of workers in the enterprise. An elementary level of participation in which workers are fully informed about management thinking and workers' representatives express their views to management, who take these views into account in decision-making should be achieved in all firms. At another level workers could be given such facilities and amenities as to enable them to care and feel empathy with the destiny of the enterprise. A deeper involvement of the workers, empowering them to make decisions in certain areas can also be achieved provided it is selectively done. This is possible for example, in industries where a relatively high degree of personal skill is required and where that skill often leads to on-the-job decision-making in cooperation with management. In large integrated plants, workers participation may be initially limited. Of course, the ultimate form *(27)* of participation is ownership by the workers as in Yugoslavia. This can easily be achieved in small-scale industries initially and if required, must be planned for large industries as well.

SEQUENCING

The final element of an industrial strategy relates to sequencing. This requires balancing of three main factors. First basic needs of consumers must be met. In many cases this will also provide a basis for structural change but there may be conflicts of consumers choice. Secondly, there is likely to be a limit to the degree to which disruption of the economy can be tolerated. For obviously this strategy is not being proposed on a *tabula rasa.* While such activities as cashew processing and diamond cutting do not fit the essential aims of the strategy, they are an important element of the present economic structure. It may be necessary, especially in this difficult period of foreign exchange constraint, to continue and even expand some of these activities which will not, in the long run be given an important place in the industrial structure. Thirdly, there are numerous technical considerations which play a part in determining the sequence in which the selected industries can be developed. For example, although the iron and steel industry to be developed on the basis of Tanzanian ore and coal resources is to be developed in the next plan period (1981–1986), it will be essential to develop user industries (i.e. forward linkages) in engineering and metals transformation now, to provide a base for the efficient production of steel.

SOME CONCLUDING REMARKS

Modern economic growth, i.e. long-term rise in capacity to supply increasingly diverse economic goods to a country's population, this growing capacity based on advancing technology and the institutional and ideological adjustment that it demands has been enormously facilitated by greater division of labour and specialization of tasks. This has in turn been characterized by the development of a hierarchical structure between labour and management and between the various layers of labour as well as that of management. It has also been characterized by uneven development and fetishicm of commodities and has consequently ignored the mobilization of ***human*** resources.

Tanzania seeks a different development strategy. As pointed out the goals of the Tanzanian society embrace the concept of self-reliance at all levels of the development process. On the decision-making level this implies a will to build up and use a capacity for autonomous decision-making and its implementation at all levels of the development process. And, on the production level, self-reliance requires the development of an indigenous capacity to generate and put into use these elements of technical knowledge which an autonomous decision-making process has selected for indigenous supply. It is within this framework that an appropriate industrial strategy – such as that suggested here – can implemented.

NOTES

(1) J.K. Nyerere, *Freedom and Socialism* (Nairobi and London: Oxford University Press, 1968) and J.K. Nyerere, *Freedom and Development* (Dar-es-Salaam, Oxford University Press, 1973).

(2) For a fuller discussion, see *What Now? Another Development* (Dag Hammars-Kjold Foundation, Uppsala, 1975), *Employment Growth and Basic Needs* (International Labour Organization, Geneva, 1976) and R.H. Green, «Basic Human Needs, Collective Self-Reliance and Development Strategy» in *Self-Reliance and Solidarity in the Quest for International Justice* (Ecumenical Centre-Bossey, Celigny, Switzerland, 1976).

(3) See J.K. Nyerere, *Ibid;* for a historical framework of Tanzania's development, see J.F. Rweyemamu, *Underdevelopment and Industrialization in Tanzania* (Nairobi, Oxford University Press, 1973).

(4) I say so-called because ISI does not provide any general principle upon which a country can apply when choosing its optimal activities.

(5) Celso Furtado, «Underdevelopment and Dependence: The Fundamental Connection», (University of Cambridge, Centre of Latin American Studies, Working Paper No. 17, 1973).

(6) Pierro Sraffa, *Production of Commodities by Means of Commodities,* (London: Cambridge University Press, 1960). Basic industries appear on the last row of a triangularized matrix of the combined current and capital input-output tables of a mature economy. See especially, Leontieff, W. and Ann Carter, «The position of Metal Working in the Structure of an Industrializing Economy», (Harvard Economic Research Project, August, 1966, mimeo) and Simpson and Tsukui, «The Fundamental Structure of Input-Output Tables; An International Comparison», *The Review of Economics and Statistics* (November 1965).

(7) The argument that direct foreign investment reinforces dependence is provided by J.F. Rweyemamu, *op. cit.*, chapter 3.

(8) The necessary level of capital accumulation might be obtained either through increased exploitation, i.e. increased concentration of income distribution or reducing consumption by taxation or state enterprise pricing to augment public sector investment, or through a more intense absorption of technical progress by the multinational branches. It will be apparent that these modes of increasing capital accumulation are at variance with Tanzania's development goals.

(9) For a succint analysis of this problem of minimizing «fund idleness» as he calls it, see the useful article of Nicholas Georgescu-Roegen, «The Economics of Production», *American Economic Review*, Vol. 60, 1970.

(10) This is another facet of the general equilibrium «illusion». All stocks are assumed to be exogenous (including capital stock), without any indication of the manner of their replenishment. While in a mature economy the replenishment of capital stock may be taken for granted, this is not the case in an underdeveloped one where the lack of indigenous physical capability of replenishing capital is precisely one of its distinguishing features. In this context, moreover, the so-called Cambridge controversy about capital is not much ado about nothing. For it is precisely this «physical» stock which cannot be aggregated to serve the purposes of neoclassical analysis.

(11) Bread is basic in Sraffa's sense because it enters (through being a wage good) into the production of all other goods. Any basic consumption good (wage good) is to some degree a basic good in the Sraffa system; any good vital to producing goods and services essential to meeting basic human needs is basic good to some basic human needs analysts (e.g. Green, *op. cit.*).

(12) Continuous importation is a «partial» solution in more than one sense as the results of such a production system does not enable the economy to «lead» technologically in any industrial sector. It enables the economy to produce only «mature commodities» in the sense of Hirsch. See especially S. Hirsch, *Location of Industry and International Competitiveness* (London: Oxford University Press, 1967).

(13) Adolphe Lowe, *On Economic Knowledge: Toward a Science of Political Economics* (New York: Harper Torchbooks, 1970).

(14) J.F. Rweyemamu, «A Neglected Relation Between Agriculture and Industry», paper presented to IDEP Conference, Tananarive, July 1975.

(15) A partial exception is the useful work of Clive Thomas, *Dependency and Transformation* (New York: Monthly Review Press, 1974).

(16) The substitutability of wood for iron in tool making especially in the agricultural sector is clearly illustrated by the success of «village technology». See the useful article of G. McPherson and D. Jackson, «Village Technology for Rural Development», *International Labour Review*, Vol. III, No. 2, February 1975 (Geneva), pp. 97–118

(17) Given the ambitions plans in primary and adult education, the paper requirement to sustain these programmes cannot be underestimated, even with appropriate substitutions of paper for slates, etc.

(18) D. Turnham and J. Yaeger, *The Employment Problem in Less Developed Countries: A Review* (OECD Development Centre, Paris, 1969). Werner Baer and Michael Herve, «Employment and Industrialization in Developing Countries», *Quarterly Journal of Economics,* Vol. LXX, No. 1 (February 1960), and Frances Stewart and Paul Streeten, «Conflicts Between Output and Employment Objectives in Developing Countries», *Oxford Economic Papers,* Vol. 23, No. 2 (July 1971).

(19) R.S. Eckaus, «The Factor Proportions Problem in Underdeveloped Areas», The The American Economic Review (September 1955).

(20) R. Hall Mason, *The Transfer of Technology and the Factor Proportions Problem: The Philippines and Mexico;* UNITAR Research Reports, No. 10, New York.

(21) Emmanuel Arghiri, *Unequal Exchange. A Study of the Imperialism of Trade* (New York: Monthly Review Press, 1972).

(22) Louis T. Wells, Jr. «Economic Man and Engineering Man: Choice of Technology in a Low Wage Country», Background Paper, Ford Foundation Seminar on Technology and Employment; New Delhi, March 21–24, 1973; John W. Thomas, «The Choice of Technology in Developing Countries; The Case of Irrigation Tuberwelles in Bangladesh», (mimeo).

(23) Walter Galenson and H. Leibenstein, «Investment Criteria, Productivity and Economic Development», *Quarterly Journal of Economics* (August 1955), *A.K. Sen, Choice of Techniques: An Aspect of the Theory of Planned Economic Development* (Oxford, Basic Blackwell, 1960). See G. Arrighi, «International Corporations, Labour Aristocracies and Economic Development in Tropical Africa» (University College, Dar-es-Salaam, 1967, mimeo).

(24) Technological development can therefore be taken as *sequential* and *cummulative.*

(25) See Masaru Saito, «Diffusion Mechanism of Technology and Industrial Transformation: Case of Small Scale Industries in Japan», OECD, Paris, 1973.

(26) See the useful paper of Francisco R. Sagasti, «A Framework for the Formulation and Implementation of Technology Policies: A Case Study of ITINTEC IN PERU» presented to the Interamerican Forum on Technological Development, Austin, Texas, February 24–27, 1975.

(27) This form is ultimate in two senses. It requires very great changes in production relations. Equally it requires more equal levels of productive forces (including capital) available to groups of workers if it is not to lead to sharp inequality along enterprise lines.

RESUME

J. F. RWEYEMAMU s'est penché dans son article sur les problèmes que pose la formulation d'une stratégie pour l'industrialisation de la Tanzanie. Cette stratégie doit, pour être efficace, être basée sur la Déclaration d'Arusha de 1967 qui a mis en relief l'importance des aspirations profondes de la société Tanzanienne et sa conception du processus de développement. Cette stratégie doit non seulement faciliter le processus d'accumulation du capital mais elle doit aussi et surtout opérer une transformation de la structure institutionnelle de la société Tanzanienne avec l'introduction d'activités axées sur les besoins essentiels et qui favorisent en même temps des processus indigènes et innovateurs. L'efficacité de toute formulation pour une industrialisation de la Tanzanie repose selon l'auteur sur la précision et l'exactitude des réponses apportées aux questions suivantes :

Quel contenu et quel sens donner à cette stratégie ?
Quelle technologie faut-il adopter ?
Quelle technique faut-il utiliser pour un meilleur rendement ?
Dans quel cadre institutionnel faut-il mener cette stratégie ?
Quels rapports faut-il établir entre ces différents éléments ?

Les réponses proposées par l'auteur sont les suivantes :

Dans le cadre du choix des activités industrielles à mener, il pense qu'il faut opter pour une stratégie qui repose essentiellement sur l'industrie mécanique, les industries chimiques, les industries alimentaires et les industries textiles, les industries de production de minerais non-métalliques et les industries du papier puisqu'il s'agit avant tout de satisfaire les besoins fondamentaux des Tanzaniens. Les techniques à utiliser dans ces activités doivent non seulement tenir compte du niveau de sophistification technique que l'institution en place peut supporter mais aussi jouer un rôle catalyseur dans le processus de diversification institutionnelle et d'intégration.

Après avoir rappelé l'importance d'une définition claire et précise de la politique technologique et de ses buts, l'auteur insiste sur le fait qu'en ce qui concerne la Tanzanie, cette politique doit être basée sur deux points essentiels : une politique de désagrégation du paquet technologique à incorporer dans les processus de production et une politique de «pilotage» des institutions financières qui permette d'inciter les entreprises à utiliser plus de technologie et de matières premières locales. Tout cela doit avoir lieu dans un cadre institutionnel qui garantit une participation effective des ouvriers dans la gestion des entreprises.

Quant aux rapports à établir entre les différents éléments, ils nécessitent un équilibre entre trois facteurs : la satisfaction des besoins fondamentaux des consommateurs, le degré de rupture à admettre par rapport à certaines activités qui existent déjà et quelques autres considérations techniques.

En conclusion, l'auteur fait remarquer que la stratégie choisie par la Tanzanie de baser son industrialisation sur l'auto-suffisance dans tous les domaines implique :

a) une volonté de construire et d'utiliser le pouvoir de prise de décision autonome
b) le développement d'une capacité indigène à créer pour les utilisateurs des éléments de connaissances technologiques.

THE FORMULATION OF AN INDUSTRIAL STRATEGY FOR TANZANIA

By

Justinian RWEYEMAMU *

INTRODUCTION: SOME THEORITICAL CONTROVERSIES CONSIDERED

Any strategy – global or sectoral – must be related in a *fundamental* way to the goals of society. It must seek to embody society's conception of the development process.

Tanzania has already defined her development strategy. The Arusha declaration and the Mwongozo perceive the development process as pivoted around *man* – his growth, his health, his security, his dignity and therefore his overall well-being *(1)*. It is built around the pillars of self-reliance and socialism. As such, development is seen not only as a process of accumulation, i.e. of augmenting the output capability of Tanzanian economy but also as a transformation of the institutional structure of our society. Tanzania's development therefore requires the introduction of activities that are *basic needs oriented* (food, habitat, health, education, communication and transport) *(2)*, favouring indigenous and innovative processes which take into cognisance environmental potentials and limits.

This strategy has been conceived in the light of the analysis of Tanzania's post-colonial society which is characterized by underdevelopment *(3)*. On the one hand, the economy which we have inherited is a *dependent* one and its structure is therefore deformed. It is unable to generate self-sustaining development and to create an economic system that displays a reasonable symmetry between the structure of production and the structure of consumption. On the other hand, attempts at modernizing it (often confused with transformation) have proved abortive as the industrialization pattern which has been carried out (the so-called *(4)* import substituting industrialization strategy – ISI) appear to have implied merely an adoption of more sophisticated patterns of consumption (both private and public) *without* the corresponding process of capital accumulation and technical progress. In effect, the techniques embodied in the equipment imported were not related to the level of capital accumulated but to the demand profile of the modernized sector of the society. It is this particular orientation of technical progress and its lack of organic connection with the level of capital previously accumulated that gives the specific character to underdevelopment in relation to the formulation of an industrial strategy *(5)*.

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The economic rationale of the ISI strategy was, of course, the theory of general economic equilibrium à la Walras. If all activities are equally important then it does not matter how they are sequenced, provided they are justified by a specified rate of return. It will be argued that the theory ignores, by implication, the fact that the productive structure of an industrial economy consists, of necessity, of a category of industries which are *basic* in the Sraffa sense, i.e. industries whose outputs are used either directly or indirectly in the production of *all* other outputs in the economic system *(6)*.

Moreover, as has been observed, the process of transplanting consumption patterns, generated by the system of international division of labour imposed by the countries leading the process of industrialization, has given rise to economic systems such as that of Tanzania where technical progress is first assimilated at the level of the demand for consumption goods. As such these economies *may continue to be dependent even in the absence of foreign direct investment (7)*. Nationalization of the major means of production does not, therefore, signal an end to dependence in this context.

The conclusion to be drawn from the foregoing is that ISI as was relied upon in the past plans *permanently reinforces dependence* and is incompatible with Tanzania's development strategy. This is because the introduction of new products or processes from the centre will *always* require more sophisticated techniques and higher levels of accumulation than can be sustained by Tanzania type economies *(8)*.

Perhaps if we turn our attention to the rudiments of the nature of a productive process we may be able to delineate the elements of an industrial strategy that is consistent with Tanzania's objectives – self-reliance and orientation towards basic human needs.

To begin with, we may note that productive processes (i.e. flows) of an economic character are essentially *continuous* over time. This is especially true of industrial systems. Such continuity is, however, assured *only* if the necessary stock of resources are themselves continually replenished to make up for the wear and tear which production involves. On the one hand, the level of such production processes is determined by the time utilization profile of these stocks which is greatly enhanced by the principle of division of labour and specialization. Obviously such utilization assumes sufficient effective demand, freedom to start production processes at any time and flexibility of the social order to vary the working day appropriately *(9)*. It also assumes that appropriate stocks are available and replenishable in the physical as well as the financial sense *(10)*.

On the other hand, the manner of such replenishment differs significantly for the different stocks (labour, natural resources and capital) as does its effect on the configuration of the production flow. Thus labour supply is largely determined by non-economic factors, the Malthusian doctrine notwithstanding, and natural resources are ultimately determined by external natural factors. This is, however, not the case with stocks of produced fixed and working capital. For these become available in the *form of outputs of the production flow itself* and therefore affect its structure considerably.

It may be useful to recapitulate the significance of the above argument. Let us assume that our major food is bread. This sustains labour power, a basic commodity and is *ex-definitione (11)* also basic. Assume further that this bread is continually being produced through the replenishment of stocks of cereal seeds, labour and equipment goods. These latter are required *both* in the production of the raw materials (e.g. ploughs, machines for producing seeds, fertilizers, insecticides, etc.) *and* for producing the final consumer goods (flour mills, baking ovens, etc.). While labour and raw materials can for our present purpose be taken as data, *the equipment goods must themselves be continually reproduced* in order to replenish them as they wear off over time. In other words, another production flow must be established so as to maintain the production of additional cereal and bread.

It will be apparent by simple inspection that the second production flow, i.e. the flow of equipment goods involves us in an infinite regression. This is because the equipment goods mentioned above, viz. ploughs, machines for producing seed wheat, fertilizers, etc., must themselves be produced by means of other equipment goods, e.g. extractive machinery, steel mills, etc. These must also be produced by still other equipment goods and so on... *ad infinitum...* . And yet this chain of the apparent infinite regression appears to be broken by industrial economies as production continually flows ! In the case of Tanzania a partial solution is, of course, *continuous* importation *(12)*.

As Adolphe Lowe has suggested, the theoretical solution to this puzzle is the existence of a group of industrial activities in the field of equipment goods *capable both of producing other equipment goods and also of reproducing themselves (13)*. These are the engineering industries which are the progenitors of *all* other machinery and also of themselves. In other words, for the physical maintenance of an industrial regime of production (and by implication of a *growing* agriculture/livestock economy) *(14)* engineering industries play the same strategic role as seed for cereal grains plays in agriculture and the reproductive system plays in the maintenance of organic life.

Thus in sum our search for an industrial strategy for Tanzania-type economies leads us to the conclusion that a necessary though not sufficient condition for autonomous industrialization is the establishment of engineering industries. For these are the only activities that embody technical progress and which can, therefore, sustain industrialization on a sequential basis.

THE CONTENT AND MEANING OF THE PROPOSED STRATEGY

Although much has been written on the «need» for an industrial strategy for Tanzania-type economies, there has hardly been any meaningful discussion of the content of such a strategy *(15)*. In my view, an industrial strategy must be defined by at least *four* elements. First it must identify a list of *industrial activities* (appropriately disaggregated) that must be undertaken, together with a rationale for their selection. Secondly, within the activities chosen, an industrial strategy must specify the criteria for *choice of techniques*. Thirdly, it must specify the *institutions* and *organizational* framework in which such a strategy must be undertaken. And finally an industrial strategy must include an algorithm of *sequencing* the various activities

over the entire planning horizon. Needless to mention that the choice of an appropriate planning time horizon is a political one implying definite relations between aggregate consumption and aggregate investment. Let us examine these aspects seriatum.

CHOICE OF APPROPRIATE ACTIVITIES

To begin with the choice of a set of industrial activities to be included in an industrial strategy depends upon our conception of the development process. For those who perceive development as an accumulation process, industrial activities are delineated by maximizing industrial growth. With limited resources, i.e. with a specified budget constraint, a ranking of industrial opportunities is undertaken using social cost benefit criteria. Only those activities which show relatively high rates of return up to the point the budget constraint become binding are selected as appropriate activities in the strategy. If, however, development is also seen as a transformation of the institutional structure of society, the flaw of the above criterion becomes evident. For the above procedure is valid only in non-dependent economies, where the production structure is not greatly constrained by the replenishment of physical capital. In such economies the core of production, i.e. basic goods, have already been established. But in underdeveloped economies such a structure does not exist. It has to be established. The criterion for choice of activities in the context of Tanzanian-type economies, therefore, takes its point of departure from consideration of establishing basic goods production.

Of course, a necessary precondition for this delineation given our development goal is *knowledge of our existing resources* (natural as well as human). Although natural resources are generated by the combination of some natural object with science and technology – there being no natural resource in an absolute sense – this precondition in Tanzania is fulfilled only to a very limited extent. Our mineral surveys and explorations are woefully incomplete. It is only recently that an inventory of our animal, fishery and forest resources is being undertaken. Even in the agricultural sector, soil surveys have been undertaken only in a few areas. *One major recommendation of the industrial strategy is therefore that sufficient resources must be channelled in completing the country's inventory of exploitable resources.*

Given the resources of the economy as are presently known and our budget constraint, the industrial strategy based on the above premises in the next five years should concentrate on: engineering industries (metal working), chemical industries, food industries, textiles, non-metallic mineral produce industries and paper industries. It remains to justify the choice of the above set of activities in the light of the above discussion. To begin with the selection procedure must be guided by Tanzania's basic needs at the present conjuncture (food, habitat, health, education, communication and transport) and the available known resources. The satisfaction of the basic needs requires at least in an indirect way most of the above activities *appropriately defined.* The output of engineering industries is required in the production of machinery which is subsequently used in the reproduction of *all* our basic needs.

Consider food for example. Tanzania's food consists essentially of cereal grains, root crops, bananas, meat, fish, vegetables and fruits. The reproduction of each of these foods on a marketable level requires use of machines: agricultural implements, machinery to produce fertilizers, seeds, insecticides, fishnets, slaughter house, etc... The same is true of housing where machinery is involved in basic construction and furniture making. Health, education and communication also use machinery both in construction and in the provision of such basic inputs as hospital-ware, books, communication equipment, transport equipment, etc... It is only pertinent to mention here that a remarkable feature of engineering industries is the similarity of the processes they perform. Furthermore, engineering industries are recommended for introduction now since they anticipate the iron and steel industry to be firmly established in the next plan.

Wood industries, apart from their use in construction (a capital-augmenting activity) and furniture making, act as import substitutes and/or complements to the engineering industry *(16).* The importance of food industries, textiles and non-metals need no further justification. However, there are a number of important interrelations. The processing of cotton seed yields edible oils. Chemical industries have extremely high linkages in an industrial system and are used in the production of basic goods in various ways: e.g. pharmaceuticals, fertilizers, preservatives, paints,etc... The basic problem here is the locus of a chemical industry. It is suggested that the natural gas at Songo Songo and Kilwa Salt may form a useful starting point of a chemical complex. The paper industry is recommended not only to meet our education and communication objective *(17)* but also to anticipate world demand and thus broaden the export base as we have an adequate resource base.

It is necessary to disaggregate the above industrial categories into specific activities in order to observe the sense of the proposed strategy. This is because the same activities can be used to generate non-basic goods. But it is this flexibility in their utilization which must be seen as a positive factor for their development. *When linked vectorally,* the above activities, appropriately disaggregated, form the core of the basic industrial strategy. No doubt some of these activities will require «import substitution» in the sense that outputs of these activities will be produced domestically rather than continually being imported. But the raison d'être for their import substitution will be conformity with the basic industrial strategy. They will not be import substituted only because they were previously imported and the level of imports has attained a threshold. In the same way some of the activities in the basic industrial strategy may be exported. But their exportation will be an extension of the domestic market. The strategy is therefore *not* biased against export industries. It is not an autarkist strategy. Moreover, a basic industrial strategy is directed towards a more optimal use of domestic resources and is particularly geared in our circumstances to enhance the agricultural sector. Of course, some of our resources were developed for maintaining lopsided development. However, even for such resources, some further uses to integrate the economy while allowing for exports can and indeed must be found. This is, for example, the case with cotton as pointed out above. Whereas we used to export all our raw cotton (lint as well as seed)

while importing cotton textiles and edible oils, now cotton seed is our major source of cooking oil and related products, products which also have a large potential export market. The same is true of cotton textiles. In the case of the sisal and cachewnut industry new uses to integrate our economy while providing export opportunities are presently being investigated.

CHOICE OF TECHNIQUES

A second element of an industrial strategy relates to choice of technique of the activities so delineated. Unfortunately, the received literature has defined choice of technique more by its probable impact on the environment or on the use of natural resources than by its adequacy to the real socio-economic conditions and priorities of the recipient human group. When choice of technique has been formulated in terms of capital-labour relations, the discussion has not always distinguished the nature of «capital» under reference. Capital is normally assumed to be a homogeneous factor, expressed in money terms and disembodied from the labour that was required to produce it. On this basis neoclassical analysis concluded that the appropriate technologies for underdeveloped countries must be labour-intensive. The economic rationale was that since static efficiency requires the equilibrium of marginal rates of factor substitution with the (implicit) wage-rental ratios, and to the extent that wage-rental ratios were assumed to be low in the underdeveloped countries, more labour-intensive techniques has to be adopted *(18)*. However, even casual observation revealed that the techniques adopted by the underdeveloped countries tended to be more capital-intensive. Consequently a number of «arguments» were presented to explain the contrast between theoretical expectation and reality.

One view invokes completely rigid technology in the face of which differences in relative factor prices would be irrelevant *(19)*. Another view holds that factor prices are unduly distorted in underdeveloped countries. Among the reasons adduced in support of this are overvalued exchange rates, generous investment allowances and other policy pressures which artificially reduce the price of capital. Furthermore it is claimed that minimum wage legislation and pressures resulting from the establishment and growth of labour unions distort factor price ratios in favour of capital relative to labour. Still another view contends that the underdeveloped countries must expect to get factor inappropriate techniques insofar as their factor endowments are different from the developed countries and they fail to establish their own capital goods industries.

Despite the research that has been undertaken on this question it has not been possible to test the above hypotheses satisfactorily because meaningful testing is inordinately demanding in its data requirements. Full information would include specification of factor proportions of all known technologies at different levels of output, market sizes in all relevant countries, the technical possibilities of factor substitution in all relevant industries – as they have been, as they are and as they are expected to be. Obviously most of this data is unavailable. Nevertheless it is useful to examine the above arguments in greater detail in order to at least take stock of our existing body of knowledge on the subject before we proceed.

In the first instance it is reasonable to claim that despite the differences in factor endowments, technological rigidity *is not a sufficient explanation for inappropriate technological choices for the underdeveloped countries.* This is for a number of reasons. To begin with, *even* if one held a fixed coefficients view of production functions within each industry, one would still expect the underdeveloped countries to concentrate on those activities which call for much labour and little capital. Secondly, there is sufficient evidence to indicate that within some industries at least considerable choice among technically efficient alternatives is possible *(20).*

If technology is generally flexible and the opportunity costs of labour and capital differ significantly between the developed and underdeveloped countries (à la Emmanuel Arghiri) *(21),* then the similarity of production techniques may be explained by deviations in the underdeveloped countries of actual factor prices from their true opportunity cost and/or by a failure on the part of decision takers to give full weight to prices in the factor markets. There is no doubt that factor prices deviate from their true opportunity costs. Nor can it be denied that the policies of underdeveloped countries have the effect of cheapening artificially the price of capital relative to labour. However, it cannot be asserted that factor price distortions are the *cause* of inappropriate technology choice unless it is established that decision takers are sensitive to variations in factor prices.

A number of attempts have been made to estimate the elasticity of capital-labour substitution for developing countries and the results from four relevant studies are shown in Table I. With the exception of the time series estimates for Argentina, the figures shown are all impressively high indicating a reasonable sensitivity to factor price changes. If these are generally representative of underdeveloped countries' industry they would tend to offer strong support for those who believe that the deviations between the actual and true factor prices is the major cause of the disappointingly poor rate of growth of the industrial alabour force in developing countries.

TABLE I

Elasticity of Capital – Labour Substitution in Developing Countries

Author	Country/Countries	Elasticity
Reyaolds and Gregory	Puerto Rico	1.0
Brikkson	Argentina, Brazil, Colombia Costa Rica, Mexico	0.7
Harris and Todaro	Kenya	0.8
Katz	Argentina	1.0 a 0.3 b

Source: C. St. J. O'Herlihy, «Capital Labour Substitution and the Developing Countries», *Oxford Bulletin of Statistics,* P.273, Vol. 34 No.3, August 1972.

Notes: a – «cross section».
b -- «time series».

Yet a number of studies do suggest that extra economic considerations, e.g. risk avoidance, appeal to «modernity», established procedures and familiar techniques explain the existence of inappropriate technology in the underdeveloped countries *(22)*. It has been suggested that the basis of such decisions is the pattern of ownership and control.

It should also be noted that there is another school of thought, again based on neoclassical assumptions which arrives at a contrary conclusion, namely that the underdeveloped countries should use more capital-intensive techniques. The argument is based on the choice of techniques' influence on income distribution and the size of the investible surplus, and hence its effect on growth of income and employment. More specifically, it is argued that since capital intensive techniques imply a smaller share of wages in output, they will yield a larger investible surplus and a faster rate of growth of employment *(23)*.

Thus the problem of choice of techniques in the context of a development strategy of accumulation does not yield unambiguous criteria. It is reasonable to state also that it does not lead to useful policy options for the periphery. This is because the main object of choice is said to revolve around the question of whether technology should be transferred in a capital intensive form which corresponds to advanced technologies in the highly industrialized countries, in a labour intensive form which in the advanced countries is archaic and in the underdeveloped countries not available, or in some variant of intermediate technology which treads the golden mean uncommitment. But it should be obvious that these niceties of efficient resource allocation are meaningless if they are not placed in the framework of *dependent* economies. For in this context the key question is *not* the level of capital intensity at which a process is introduced, but its ***adaptability as a carrier of self-generating institutional and technological change.*** The choice therefore takes its place not from capital – labour relations as such but from the level of technical sophistication that can be institutionally supported and that will act as a catalyst for further institutional diversification and integration. The relevant issues for consideration under choice of techniques in Tanzania type economies can thus be briefly summarized. ***First,*** does the technology to be introduced stimulate new skills, new capabilities, new organization? In other words, does it contribute to institutional building? ***Secondly,*** does it lead towards technological autonomy or a perpetuation of dependency, especially on mother companies in foreign countries? ***Thirdly,*** does it contribute towards technological integration? ***Fourthly,*** is it compatible with reasonable resource management at national level? ***Fifthly,*** does it help to tie together universities and research institutes with producing enterprises?

I submit that the above are the considerations that have a direct bearing on the question of technological autonomy versus dependency which determines the destiny of a country within the broader world political economic system. They include an examination of institutional differentiation and integration at the macrosocial level as well as the relationships of world technological, economic and political power centres.

Several implications can be drawn from the above analysis. One is that choice of techniques cannot be made independently of the choice of activities that must be undertaken in order to transform the economies of the underdeveloped countries. For technologies are invariably embodied in capital goods. There is often moreover, a close relationship between technology producers and users which facilitate the flow of knowledge between them thus enchancing the embodiment of technical progress in capital goods. Secondly, a level of technology which takes off from what the institutional supporting structure of the country is capable of handling in its present stage will in all probability lead to genuine local autonomy in sophisticated production methods within a *shorter* period of time than one that starts too high and for that reason remains static *(24)*.

I must be emphasized that the present parastatal system appears to thwart the effects of the above described technological choice. This is because the «successful» parastatal is one which manages to establish a project on the ground. The management of such a parastatal therefore tend to support projects that are «turnkey», i.e. projects that perpetuate dependency. A necessary implication of the above analysis is that parastatal performance will have to be evaluated with this new view of choice of techniques in mind.

Finally we are now in a position to dispose of some of the policy issues conventional wisdom relates to choice of techniques. Firstly, small scale enterprises, though not necessarily labour intensive are an important carrier of transfer of technology. The Japanese parent subcontract system and the subordinate affiliation system suggest how this can be achieved *(25)*. Secondly, the employment and dispersion effects of technological choice may sometimes be subordinated to choice of activities.

INSTITUTIONAL FRAMEWORK

A third element of an industrial strategy is the specification of institutions and organizational framework in which such a strategy must be undertaken. The key institution accompanying the industrial strategy recommended must be concerned with the formulation and implementation of *technology policy*. As will be recalled, technological progress is expressed through the improvements in the production of existing goods and services or through the creation of new goods and services. Technology policy must therefore be aimed at providing the entreprises with the necessary capacity to understand better the principles of technology they are using to master its application and introduce modifications which make it more suitable for their specific operating condition.

In view of what has been said in the preceeding pages, it will be readily apparent that the aims of technology policy must be the following:

a) Creation of an indigenous technological capacity, especially one aimed at producing basic goods;

b) Regulation of the process of importation of foreign technology thus reinforcing the bargaining power of technology buyers by developing the capacity to identify, select and incorporate technology;

c) Promotion of the interconnections between indigenous technological activities and productive processes;

d) Increasing the technological absorption capacity by disaggregating the technology package and developing a capacity for engineering design and consultancy; and

e) Fostering the demand for local technology *(26).*

These aims of technology policy must be incorporated into appropriate policy instruments that would orient technological behaviour. The need for specifying policy instruments cannot be overemphasized. Despite the fact that Tanzania's industrial sector is largely in public hands, we have not as a nation acquired even minimal technological capacity in most industries. Even in a sector such as textiles, where we have over fifteen years experience and a holding parastatal, we still commission outside consultancies to carry out preinvestment studies, order machinery and equipment, instal plants and often carry out maintenance.

There are at least *two* policy instruments which must be considered for immediate adoption. First is the *disaggregation* of the technology package to be incorporated into the productive processes. Disaggregation is recommended because it leads to a better identification of the components of technical knowledge and their degree of complexity; allowing the enterprise to master the technology it imports. The disaggregation often occurs at two levels. First is the separation of the investment projects into each of its components (e.g. civil works installations, machinery and equipment, technical personnel, licenses, etc.), and secondly a technical disaggregation as such where each of the package components is examined from the engineering point of view between those components which are specific and inherent to the design and those that are generally common to different processes or products. Disaggregation can serve different aims of technology policy. It strengthens the bargaining power of buyers and helps to regulate the imports of technology. It allows the identification of those components of imported technology which could be produced locally, thus generating a demand for technological activities and it also permits users to have a greater understanding of the characteristics of imported technology, thus facilitating its adoption.

Certainly the process of disaggregation cannot take place in vacuo. It requires an institutional framework. The firm establishment of Tanzania Industrial Studies and Consultancy Organization (TISCO) for carrying out preinvestment studies, and offering various technical consultancies for industry will be a major step in implementing our technology policy. To be effective, it must not only be competently staffed from the very beginning but it must be in a position to deal with the entire project cycle. It must be able to examine the projects with a view to identifying alternative inputs, processes, designs and outputs. It must also establish an information system that will orient the demand for technology towards local sources, and assist in the training of professionals for the genration of technology. Another important institution that must be created is the development of a capacity for *engineering design.* So far, most of our engineering graduates can cope with tinkering with existing designs but are generally ill-equipped to transform them or to create new designs. The faculty of Engineering must seriously consider the establishment of an institute in engineering design.

A second policy instrument is the use of the leverage of financing institutions in influencing enterprises to use local technology and/or local raw materials. The use of this instrument requires the explicit incorporation of criteria related to technological development in the evaluation of requests for finance. These criteria should be extended to the implementation and project execution phase. The Tanzanian Investment Bank must design criteria to be applied to all requests for its financing that will ensure that the broad policies of indigenous technology development are implemented.

Turning now to the question of *industrial organization* it must be stated that it is contigent upon ownership and control. The major goal must be effective participation of workers in the enterprise. An elementary level of participation in which workers are fully informed about management thinking and workers' representatives express their views to management, who take these views into account in decision-making should be achieved in all firms. At another level workers could be given such facilities and amenities as to enable them to care and feel empathy with the destiny of the enterprise. A deeper involvement of the workers, empowering them to make decisions in certain areas can also be achieved provided it is selectively done. This is possible for example, in industries where a relatively high degree of personal skill is required and where that skill often leads to on-the-job decision-making in cooperation with management. In large integrated plants, workers participation may be initially limited. Of course, the ultimate form *(27)* of participation is ownership by the workers as in Yugoslavia. This can easily be achieved in small-scale industries initially and if required, must be planned for large industries as well.

SEQUENCING

The final element of an industrial strategy relates to sequencing. This requires balancing of three main factors. First basic needs of consumers must be met. In many cases this will also provide a basis for structural change but there may be conflicts of consumers choice. Secondly, there is likely to be a limit to the degree to which disruption of the economy can be tolerated. For obviously this strategy is not being proposed on a *tabula rasa.* While such activities as cashew processing and diamond cutting do not fit the essential aims of the strategy, they are an important element of the present economic structure. It may be necessary, especially in this difficult period of foreign exchange constraint, to continue and even expand some of these activities which will not, in the long run be given an important place in the industrial structure. Thirdly, there are numerous technical considerations which play a part in determining the sequence in which the selected industries can be developed. For example, although the iron and steel industry to be developed on the basis of Tanzanian ore and coal resources is to be developed in the next plan period (1981–1986), it will be essential to develop user industries (i.e. forward linkages) in engineering and metals transformation now, to provide a base for the efficient production of steel.

SOME CONCLUDING REMARKS

Modern economic growth, i.e. long-term rise in capacity to supply increasingly diverse economic goods to a country's population, this growing capacity based on advancing technology and the institutional and ideological adjustment that it demands has been enormously facilitated by greater division of labour and specialization of tasks. This has in turn been characterized by the development of a hierarchical structure between labour and management and between the various layers of labour as well as that of management. It has also been characterized by uneven development and fetishicm of commodities and has consequently ignored the mobilization of ***human*** resources.

Tanzania seeks a different development strategy. As pointed out the goals of the Tanzanian society embrace the concept of self-reliance at all levels of the development process. On the decision-making level this implies a will to build up and use a capacity for autonomous decision-making and its implementation at all levels of the development process. And, on the production level, self-reliance requires the development of an indigenous capacity to generate and put into use these elements of technical knowledge which an autonomous decision-making process has selected for indigenous supply. It is within this framework that an appropriate industrial strategy – such as that suggested here – can implemented.

NOTES

(1) J.K. Nyerere, *Freedom and Socialism* (Nairobi and London: Oxford University Press, 1968) and J.K. Nyerere, *Freedom and Development* (Dar-es-Salaam, Oxford University Press, 1973).

(2) For a fuller discussion, see *What Now? Another Development* (Dag Hammars-Kjold Foundation, Uppsala, 1975), *Employment Growth and Basic Needs* (International Labour Organization, Geneva, 1976) and R.H. Green, «Basic Human Needs, Collective Self-Reliance and Development Strategy» in *Self-Reliance and Solidarity in the Quest for International Justice* (Ecumenical Centre-Bossey, Celigny, Switzerland, 1976).

(3) See J.K. Nyerere, *Ibid;* for a historical framework of Tanzania's development, see J.F. Rweyemamu, *Underdevelopment and Industrialization in Tanzania* (Nairobi, Oxford University Press, 1973).

(4) I say so-called because ISI does not provide any general principle upon which a country can apply when choosing its optimal activities.

(5) Celso Furtado, «Underdevelopment and Dependence: The Fundamental Connection», (University of Cambridge, Centre of Latin American Studies, Working Paper No. 17, 1973).

(6) Pierro Sraffa, *Production of Commodities by Means of Commodities,* (London: Cambridge University Press, 1960). Basic industries appear on the last row of a triangularized matrix of the combined current and capital input-output tables of a mature economy. See especially, Leontieff, W. and Ann Carter, «The position of Metal Working in the Structure of an Industrializing Economy», (Harvard Economic Research Project, August, 1966, mimeo) and Simpson and Tsukui, «The Fundamental Structure of Input-Output Tables; An International Comparison», *The Review of Economics and Statistics* (November 1965).

(7) The argument that direct foreign investment reinforces dependence is provided by J.F. Rweyemamu, *op. cit.*, chapter 3.

(8) The necessary level of capital accumulation might be obtained either through increased exploitation, i.e. increased concentration of income distribution or reducing consumption by taxation or state enterprise pricing to augment public sector investment, or through a more intense absorption of technical progress by the multinational branches. It will be apparent that these modes of increasing capital accumulation are at variance with Tanzania's development goals.

(9) For a succint analysis of this problem of minimizing «fund idleness» as he calls it, see the useful article of Nicholas Georgescu-Roegen, «The Economics of Production», *American Economic Review*, Vol. 60, 1970.

(10) This is another facet of the general equilibrium «illusion». All stocks are assumed to be exogenous (including capital stock), without any indication of the manner of their replenishment. While in a mature economy the replenishment of capital stock may be taken for granted, this is not the case in an underdeveloped one where the lack of indigenous physical capability of replenishing capital is precisely one of its distinguishing features. In this context, moreover, the so-called Cambridge controversy about capital is not much ado about nothing. For it is precisely this «physical» stock which cannot be aggregated to serve the purposes of neoclassical analysis.

(11) Bread is basic in Sraffa's sense because it enters (through being a wage good) into the production of all other goods. Any basic consumption good (wage good) is to some degree a basic good in the Sraffa system; any good vital to producing goods and services essential to meeting basic human needs is basic good to some basic human needs analysts (e.g. Green, *op. cit.*).

(12) Continuous importation is a «partial» solution in more than one sense as the results of such a production system does not enable the economy to «lead» technologically in any industrial sector. It enables the economy to produce only «mature commodities» in the sense of Hirsch. See especially S. Hirsch, *Location of Industry and International Competitiveness* (London: Oxford University Press, 1967).

(13) Adolphe Lowe, *On Economic Knowledge: Toward a Science of Political Economics* (New York: Harper Torchbooks, 1970).

(14) J.F. Rweyemamu, «A Neglected Relation Between Agriculture and Industry», paper presented to IDEP Conference, Tananarive, July 1975.

(15) A partial exception is the useful work of Clive Thomas, *Dependency and Transformation* (New York: Monthly Review Press, 1974).

(16) The substitutability of wood for iron in tool making especially in the agricultural sector is clearly illustrated by the success of «village technology». See the useful article of G. McPherson and D. Jackson, «Village Technology for Rural Development», *International Labour Review*, Vol. III, No. 2, February 1975 (Geneva), pp. 97–118

(17) Given the ambitions plans in primary and adult education, the paper requirement to sustain these programmes cannot be underestimated, even with appropriate substitutions of paper for slates, etc.

(18) D. Turnham and J. Yaeger, *The Employment Problem in Less Developed Countries: A Review* (OECD Development Centre, Paris, 1969). Werner Baer and Michael Herve, «Employment and Industrialization in Developing Countries», *Quarterly Journal of Economics,* Vol. LXX, No. 1 (February 1960), and Frances Stewart and Paul Streeten, «Conflicts Between Output and Employment Objectives in Developing Countries», *Oxford Economic Papers,* Vol. 23, No. 2 (July 1971).

(19) R.S. Eckaus, «The Factor Proportions Problem in Underdeveloped Areas», The The American Economic Review (September 1955).

(20) R. Hall Mason, *The Transfer of Technology and the Factor Proportions Problem: The Philippines and Mexico;* UNITAR Research Reports, No. 10, New York.

(21) Emmanuel Arghiri, *Unequal Exchange. A Study of the Imperialism of Trade* (New York: Monthly Review Press, 1972).

(22) Louis T. Wells, Jr. «Economic Man and Engineering Man: Choice of Technology in a Low Wage Country», Background Paper, Ford Foundation Seminar on Technology and Employment; New Delhi, March 21–24, 1973; John W. Thomas, «The Choice of Technology in Developing Countries; The Case of Irrigation Tuberwelles in Bangladesh», (mimeo).

(23) Walter Galenson and H. Leibenstein, «Investment Criteria, Productivity and Economic Development», *Quarterly Journal of Economics* (August 1955), *A.K. Sen, Choice of Techniques: An Aspect of the Theory of Planned Economic Development* (Oxford, Basic Blackwell, 1960). See G. Arrighi, «International Corporations, Labour Aristocracies and Economic Development in Tropical Africa» (University College, Dar-es-Salaam, 1967, mimeo).

(24) Technological development can therefore be taken as *sequential* and *cummulative.*

(25) See Masaru Saito, «Diffusion Mechanism of Technology and Industrial Transformation: Case of Small Scale Industries in Japan», OECD, Paris, 1973.

(26) See the useful paper of Francisco R. Sagasti, «A Framework for the Formulation and Implementation of Technology Policies: A Case Study of ITINTEC IN PERU» presented to the Interamerican Forum on Technological Development, Austin, Texas, February 24–27, 1975.

(27) This form is ultimate in two senses. It requires very great changes in production relations. Equally it requires more equal levels of productive forces (including capital) available to groups of workers if it is not to lead to sharp inequality along enterprise lines.

RESUME

J. F. RWEYEMAMU s'est penché dans son article sur les problèmes que pose la formulation d'une stratégie pour l'industrialisation de la Tanzanie. Cette stratégie doit, pour être efficace, être basée sur la Déclaration d'Arusha de 1967 qui a mis en relief l'importance des aspirations profondes de la société Tanzanienne et sa conception du processus de développement. Cette stratégie doit non seulement faciliter le processus d'accumulation du capital mais elle doit aussi et surtout opérer une transformation de la structure institutionnelle de la société Tanzanienne avec l'introduction d'activités axées sur les besoins essentiels et qui favorisent en même temps des processus indigènes et innovateurs. L'efficacité de toute formulation pour une industrialisation de la Tanzanie repose selon l'auteur sur la précision et l'exactitude des réponses apportées aux questions suivantes :

Quel contenu et quel sens donner à cette stratégie ?
Quelle technologie faut-il adopter ?
Quelle technique faut-il utiliser pour un meilleur rendement ?
Dans quel cadre institutionnel faut-il mener cette stratégie ?
Quels rapports faut-il établir entre ces différents éléments ?

Les réponses proposées par l'auteur sont les suivantes :

Dans le cadre du choix des activités industrielles à mener, il pense qu'il faut opter pour une stratégie qui repose essentiellement sur l'industrie mécanique, les industries chimiques, les industries alimentaires et les industries textiles, les industries de production de minerais non-métalliques et les industries du papier puisqu'il s'agit avant tout de satisfaire les besoins fondamentaux des Tanzaniens. Les techniques à utiliser dans ces activités doivent non seulement tenir compte du niveau de sophistification technique que l'institution en place peut supporter mais aussi jouer un rôle catalyseur dans le processus de diversification institutionnelle et d'intégration.

Après avoir rappelé l'importance d'une définition claire et précise de la politique technologique et de ses buts, l'auteur insiste sur le fait qu'en ce qui concerne la Tanzanie, cette politique doit être basée sur deux points essentiels : une politique de désagrégation du paquet technologique à incorporer dans les processus de production et une politique de «pilotage» des institutions financières qui permette d'inciter les entreprises à utiliser plus de technologie et de matières premières locales. Tout cela doit avoir lieu dans un cadre institutionnel qui garantit une participation effective des ouvriers dans la gestion des entreprises.

Quant aux rapports à établir entre les différents éléments, ils nécessitent un équilibre entre trois facteurs : la satisfaction des besoins fondamentaux des consommateurs, le degré de rupture à admettre par rapport à certaines activités qui existent déjà et quelques autres considérations techniques.

En conclusion, l'auteur fait remarquer que la stratégie choisie par la Tanzanie de baser son industrialisation sur l'auto-suffisance dans tous les domaines implique :

a) une volonté de construire et d'utiliser le pouvoir de prise de décision autonome
b) le développement d'une capacité indigène à créer pour les utilisateurs des éléments de connaissances technologiques.

LES BIENS D'EQUIPEMENT DANS L'INDUSTRIE ALGERIENNE

Par

S. P. THIERRY *

I. – INTRODUCTION

L'activité industrielle a pour rôle de produire soit des biens de consommation finale (destinés à la consommation des ménages), soit des biens de production (qui servent chaque année pour les consommations intermédiaires des secteurs productifs), soit des biens d'équipement (c'est-à-dire les installations et machines à durée de vie supérieure à une année utilisées par les unités de production elles-mêmes).

Le rôle d'un secteur de fabrication de biens d'équipement dans le processus d'accumulation du capital a déjà fait l'objet de travaux importants sur le plan théorique, notamment dans le cadre de la théorie de la reproduction élargie. Il apparaît toutefois qu'une approche historique des problèmes est toujours indispensable pour analyser et comprendre les processus réels au sein d'une économie donnée.

La croissance industrielle des pays industrialisés s'effectue par exemple actuellement dans le cadre d'une économie déjà complexifiée. Le progrès technologique s'y développe en grande partie du fait de leur capacité propre de recherche appliquée et d'innovation, par amélioration progressive des technologies existantes. L'investissement industriel s'effectue principalement par recours aux capacités nationales d'engineering, de travaux et de fabrication de biens d'équipement .

Le processus d'industrialisation, amorcé en Algérie entre 1962 et 1970, et poursuivi lors des deux derniers plans quinquennaux, s'est déroulé dans des conditions historiques fort différentes :

- les projets de développement ont mis en œuvre des technologies qui n'étaient encore ni disponibles, ni connues dans le pays avant 1962
- les collectifs de travailleurs ont été le plus souvent constitués sans bénéficier d'une expérience industrielle préalable
- la faiblesse initiale des capacités nationales en matière d'engineering, de travaux et de fabrication de biens d'équipement s'est traduite par un recours massif aux importations.

Quinze années de pratique ont déjà permis une croissance importante de la production en quantité et en valeur pour les principaux biens de production industriels destinés aux secteurs bâtiment et travaux publics, aux transports, à l'hydraulique, pour les biens d'équipement agricoles, et pour les biens de consommation finale.

Par contre, dans le domaine des biens d'équipement industriels, les machines destinées aux centrales électriques, aux cimenteries, aux acieries, aux laminoirs, aux industries de transformation des métaux, aux industries chimiques, aux industries textiles etc... sont le plus souvent importées.

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Une simple lecture des statistiques du commerce extérieur met en évidence l'importance croissante des besoins en biens d'équipement industriels.

Les importations annuelles *(1)* de biens d'équipement sont passées de 600 millions de dinars en 1963 à 9,7 milliards de dinars en 1976, et concernent près de 50 % des importations totales du pays. Il est donc légitime de s'interroger sur la place des biens d'équipement industriels dans les plans de développement nationaux et sur les raisons qui conduisent actuellement à un recours aussi massif au marché mondial.

Une telle situation est commune à de nombreux pays du Tiers-Monde, notamment ceux d'entre eux qui ont développé depuis de longues années un processus intense d'industrialisation. Elle n'est toutefois pas générale puisque certains pays tels que l'Inde, le Brésil, la Corée du Nord et partiellement le Mexique ont réussi à développer leur secteur de fabrication de biens d'équipement lourds et fournissent déjà grâce à leur production nationale une partie importante de leurs installations industrielles nouvelles.

Les questions qui se posent concernent donc les conditions qui peuvent s'opposer à l'émergence et au développement d'un tel secteur dans une économie en cours de structuration.

D'une façon plus précise, trois problèmes principaux doivent être étudiés :

- le premier concerne *les effets de taille.* Il s'agit de savoir si le niveau de la demande intérieure est suffisant pour permettre le fonctionnement d'une industrie nationale de fabrication de biens d'équipements, ou si au contraire une telle industrie serait condamnée si elle se développait à travailler en partie pour l'exportation durant les premières années de son fonctionnement
- le second concerne les processus de mise en œuvre. Il s'agit de savoir si *les modalités de réalisation* des investissements en vigueur en Algérie peuvent s'opposer ou favoriser le développement d'une telle industrie.
- le troisième concerne *la nature des technologies* utilisées. Les choix actuels de technologie sont-ils susceptibles de constituer des obstacles à l'émergence d'une industrie nationale de fabrication de biens d'équipement ? La production de technologies nationales constitue t-elle un préalable ou une conséquence de l'émergence d'un tel secteur ?

Certains auteurs ont tenté de répondre à ces questions par une approche extérieure en expliquant la plupart des phénomènes par l'existence d'une dépendance vis-à-vis du marché mondial et des firmes dominantes.

La présente note privilègiera au contraire une étude intravertie de ces problèmes en cherchant à mettre en évidence les processus de fonctionnement et de décision des structures nationales qui permettent d'expliquer la période passée, de comprendre et de planifier les évolutions futures.

2. – LES CATEGORIES DE BIENS ET LEURS EQUILIBRES

2.1. - Catégories de Biens et Importance Relative

La réalisation d'un projet industriel nécessite la mise en œuvre des éléments suivants, dont la pondération sera exprimée par rapport aux montants des investissements, compte tenu du système des prix actuels :

. Etudes d'engineering :

Elles concernent les opérations de conception pour préparer les spécifications techniques des équipements de production (destinées aux usines de fabrication de matériels mécaniques et électriques), préparer les plans généraux et les plans de détails (destinées aux entreprises de travaux qui confectionneront le génie civil et procéderont à la pose des circuits électriques et fluides), contrôler les travaux et le montage sur le chantier, et superviser les opérations d'essais au démarrage.
On estime généralement qu'il faut environ 18.000 heures d'études en moyenne par tranche d'investissement de 10 millions de DA, et qu'un technicien peut fournir 2.000 heures d'études par an. Les études d'engineering peuvent représenter environ 10 % du coût technique d'un projet en moyenne.

. Equipement de production :

Ils comprennent les équipements de fabrication proprement dit (process) avec leur partie mécanique (machines outils), et leur partie électrique (moteurs, mécanismes de régulation), les équipements d'entretien, les équipements de levage et manutention, ainsi que les équipements généraux nécessaires aux utilités (sous station électrique, traitement des eaux, production d'air comprimé, d'oxygène, équipement de laboratoire).
On estime généralement que l'ensemble de ces équipements peut représenter environ 40 % du coût technique d'un projet, dont 25 % proviennent de la construction mécanique et 15 % de la construction électrique.

Travaux :

Ils concernent les opérations de terrassement, de génie civil, de montage de la charpente, des équipements de production, de pose des câbles et des tuyauteries, de peinture etc...
On estime généralement que l'ensemble des travaux peut représenter 40 % du coût technique d'un projet, dont 20 % pour le génie civil, 10 % pour la charpente et 10 % pour les autres travaux.

En définitive, les catégories de biens qui concourent à la réalisation d'une nouvelle unité industrielle ainsi que leur poids dans le coût de l'investissement peuvent être synthétisés de la manière suivante :

Catégories de Biens entrant dans la Réalisation d'une Installation Industrielle Nouvelle

Catégorie Principale	Catégorie Secondaire	Poids sur le coût du projet %	Secteur concerné
Etudes	Conception supervision	10 %	Etudes d'engineering
Equipement de production	Equipements mécaniques	25 %	Construction mécanique
	Equipements électriques	15 %	Construction électrique
Travaux & infrastructures	Terrassement et génie civil	20 %	Bâtiment et travaux publics
	Charpente et bardage	10 %	Construction métallique
	Travaux divers	10 %	Bâtiments et travaux publics

A l'aide de ces catégories, il nous est maintenant possible d'évaluer la situation actuelle du pays en terme d'emplois (besoins des programmes industriels en cours de réalisation) et de ressources (capacités des structures nationales, importation).

2.2. - Equilibres Actuels en Terme d'Emplois et de Ressources

L'estimation directe des besoins précis du secteur industriel par catégorie de bien n'est pas aisée. Une estimation approximative a été faite sur la base des ratios exprimés au paragraphe ci-dessus, compte tenu des programmes d'investissements industriels de l'année 1978, à savoir :

- 7,5 milliards de dinars pour le Ministère de l'Industrie Lourde.
- 8 milliards de dinars pour le Ministère des Industries Légères.
- 16 milliards de dinars pour le Ministère de l'Energie et des Industries Pétrochimiques.

Pour appliquer les ratios, il a été supposé que ce programme de 31 milliards de dinars recouvrait un budget technique réel de 20 milliards de dinars une fois retiré des enveloppes les postes budgétaires (impôts et taxes, intérêts intercalaires,formation, stock outil, frais préliminaires) qui ne portent pas sur nos catégories de biens d'équipement.

Calcul Théorique des Besoins pour les Réalisations Industrielles Nouvelles en 1978

Catégorie de Besoins	Proportion du Budget Technique	Montant (millions de DA)	Volume Physique
Etudes d'Engineering	10 %	2 000	36 millions d'heures d'études
Equipements mécaniques	25 %	5 000	140 000 t. d'équipement
Equipements électriques	15 %	3 000	86 000 t. d'équipement
Terrassement et génie civil	20 %	4 000	2 millions de m3 de béton
Charpente et bardage	10 %	2 000	200 000 t.
Travaux divers	10 %	2 000	-
Divers non	10 %	2 000	-
TOTAL	100 %	20 000	

En matière *d'engineering,* un volume de 36 millions d'heures d'études correspond au travail annuel de 18 000 ingénieurs et techniciens. Rappellons que les effectifs totaux des bureaux d'études industriels algériens étaient estimés *(2)* à 1380 agents en 1971, et peuvent être estimés actuellement à 5 000 environ. Ceci explique que plus de 70 % des études d'engineering sont actuellement sous traités à des sociétés étrangères, ce qui correspond à une sortie de devises annuelles de 1,4 milliards de dinars.

En matière *d'équipements mécaniques,* un volume annuel de 5 milliards de dinars correspond approximativement à 140 000 t. d'équipements mécaniques.

En matière *d'équipements électriques,* un volume annuel de 3 milliards de dinars correspond approximativement à 86 000 t. d'équipement. Le total (équipement mécanique et électrique) de 8 milliards de dinars est à rapprocher de la production totale en valeur des ISMME *(3)* qui était de 2,6 milliards de dinars (déduction faite de 1,4 pour la Sidérurgie).

En valeur, les besoins annuels des projets industriels représentent 3 fois la production totale des industries algériennes de construction mécanique et électrique. Si on tient compte en outre du fait que, qualitativement, les usines algériennes sont actuellement surtout orientées sur la production de véhicules industriels et de machinismes agricoles, on peut considérer que près de 90 % des équipements industriels mécaniques et électriques sont actuellement importés : seules les usines de la SONACOME à Médéa (vannes et pompes) et Oued Hamimine (machines outil), de SONELEC à Draria (armoires électriques) et Gué de Constantine (câbles) et de SN METAL à Côte rouge et Allelick (chaudronnerie, forge) contribuent à la réalisation des biens d'équipement, cette contribution restant encore marginale actuellement.

En matière de *charpente, et de bardage,* un volume annuel de 2 milliards de dinars représente environ 200 000 tonnes de charpente : ceci est à rapprocher de la production réelle de la SN METAL qui était en 1977 voisine de 40 000 tonnes (soit 20 % des besoins nationaux).

En matière *de travaux* (terrassement, génie civil, et travaux divers) dont la nature de l'activité impose une localisation géographique dans le pays, 100 % de l'activité est exercée dans le pays : le recours à des sociétés étrangères et toutefois encore fréquent pour des raisons de capacité d'encadrement. Seules les sociétés SNS, SONELGAZ et SONATRACH ont développé des structures permanentes (100 % nationales ou sous formes de sociétés mixtes contrôlées à 51%) pour faire face à leurs besoins en la matière.

Il apparaît en définitive que la contribution de la production nationale aux réalisations industrielles nouvelles est actuellement assez faible, une estimation sommaire conduisant à moins de 40% du montant de l'investissement.

Ce taux de 40 % serait encore un peu moins élevé et descendrait à 20 % si l'on tenait compte des consommations intermédiaires indirectes importées des entreprises de travaux (une part non négligeable du ciment et du rond à béton est encore importée) et de la présence de techniciens étrangers dans les structures nationales d'engineering et de travaux (15 à 20 % des effectifs au minimum).

On peut donc estimer qu'actuellement la réalisation d'un projet industriel se traduit par une sortie de devises correspondant à 80 % du coût technique du projet.

Estimation Sommaire de la Contribution de la Production Nationale aux Réalisations Industrielles Nouvelles

Catégorie de Besoins	Origine des Ressources	
	Importation	Production Nationale
Etudes d'engineering	70 %	30 %
Equipements mécaniques	90 %	10 %
Equipements électriques	90 %	10 %
Terrassement & génie civil	0 %	100 %
Charpente et bardage	80 %	20 %
Travaux divers	0 %	10 %
Divers	50 %	50 %
Total Moyen Pondéré	60 %	40 %

Les estimations théoriques développées ci-dessus pour les équipements de production apparaissent vraisemblables si on les compare aux chiffres d'importation figurant dans les statistiques douanières entre 1966 et 1970.

Evolution des Importations de Biens d'Equipement Electro-mécaniques entre 1966 et 1970

millions de DA –

Tarif Douanier	Equipements	1966	1970	1973	1976
84	Mécaniques	360	1 249	1 751	5 083
85	Electriques	128	344	542	1 681
	T O T A L :	488	1 593	2 293	6 744

Source Direction Nationale des Douanes – Alger

Il apparaît finalement qu'en 1979 les *industries algériennes de constructions mécaniques et électriques pourraient quadrupler leur production finale en valeur grâce à une politique de substitution aux importations de bien d'équipement.*

Encore faut-il que les processus de fabrication et les effets de taille permettent à une telle politique d'être envisageable technologiquement. Tel est l'objet des développements qui vons suivre.

3. – LE MODE DE FABRICATION DES BIENS D'EQUIPEMENT ET LES EFFETS DE TAILLE

L'argument des effets de taille est parfois présenté comme s'opposant au processus d'industrialisation des pays du Tiers-Monde : il consiste à affirmer que les besoins intérieurs de ces pays ne sont pas à la mesure des effets de taille technologique (et donc des économies d'échelle) de la production industrielle, le développement des secteurs productifs nationaux supposant l'acceptation de travailler durant de longues années pour l'exportation.

L'histoire économique algérienne des années 1962 à 1978 a déjà démontré la faiblesse de ces arguments pour la fabrication des biens de production c'est-à-dire pour la sidérurgie, les matériaux de construction, la production des véhicules industriels, les industries chimiques (engrais notamment), l'industrie textile, et les industries agro-alimentaires : pour tous ces secteurs, la croissance de la demande intérieure a été telle au cours des derniers plans que les tailles dites «économiques» ont toujours été dépassées par les besoins nationaux. Le problème de ces branches industrielles entre 1970 et 1978 a été constamment un problème de retard des capacités de production nationale par rapport aux besoins intérieurs, et de maîtrise de la productivité, et non un problème d'effet de taille.

L'argument des effets de taille pourrait toutefois sembler plus pénalisant pour le secteur de fabrication des biens d'équipement. Nous verrons que tel n'est pas le cas, en décomposant pour les besoins de l'analyse le secteur des biens d'équipements mécaniques et électriques en fonction des processus de fabrication.

3.1. - Organisation de la Production des Biens d'Equipement Electro-mécaniques

L'organisation de la production des biens d'équipements s'articule en fonction de deux considérations :

– la première consiste à distinguer l'activité *fabrication des composants de base,* de l'activité *d'assemblage* de ces composants pour constituer des ensembles technologiques complets ayant une finalité précise.

– la seconde consiste à distinguer, pour les ensembles technologiques, *les fabrications de séries* (sur catalogue) des fabrications *sur commande* (sur spécification originale de l'utilisateur).

La conjugaison de ces considérations permet de classer les unités de fabrication électro-mécanique en trois catégories :

– *Les unités de fabrication en série de composants de base,* c'est-à-dire d'organes standards de base dont la technologie est simple et qui feront partie, par assemblage, d'un équipement plus complexe.

Deux exemples significatifs peuvent être donnés :

- dans le domaine mécanique, celui des pompes et des vannes
- dans le domaine électrique, celui des moteurs et tranformateurs de faible et moyenne puissance.

– *Les unités de fabrication et de montage, en série de sous ensembles,* c'est-à-dire de machines en état de marche, pour lesquels l'utilisateur se contente d'une solution standard définie sur catalogue, qu'il intégrera dans son processus de fabrication.

L'un des exemples significatifs concerne le domaine des machines outils fabriquées en série.

– *Les unités de fabrication et de montage sur commande d'ensembles complets*

Il s'agit alors des équipements pour lesquels une solution technologique générale devra être adaptée en détail aux exigences de l'utilisateur, les moyens de conception et de fabrication devant pouvoir être adaptés commande par commande à ces exigences. Les exemples classiques concernent les installations métallurgiques, pétrochimiques et énergétiques pour lesquels les équipements doivent être adaptés de façon spécifique à la qualité des matières premières, à la gamme et à la qualité des produits finis, et aux autres contraintes particulières définies par l'utilisateur (qualité des consommations intermédiaires, types d'énergie utilisée etc...).

3.2. - Effets de Taille par rapport à la Demande Intérieure

Il n'est pas possible de raisonner globalement pour évaluer le rapport entre la demande intérieure et les effets de taille des unités de fabrication de biens d'équipement.

Notre raisonnement consistera à examiner *analytiquement* (ce qui ne sera possible ici que sur certains exemples) les besoins physiques avec les effets de taille physiques par type de fabrication.

Pour la fabrication en série des composants de base, les exemples déjà connus en Algérie sont les suivants :

Produit	Effet de Taille		Demande Intérieure Horizon 1980-85
	Quantité	Unité	
Vannes de diamètre 40 à 600 mm	7 000	T	15 000 T
Boulonneries Visseries	1 000	T	plus de 10 000 T
Pompes	20 000	unité	plus de 30 000 T
Pièces moulées en fonte	10 000	T	plus de 40 000 T
Pièces moulées en acier	5 000	T	plus de 20 000 T
Pièces forgées	5 000	T	plus de 20 000 T
Câbles électriques	5 000	T	plus de 30 000 T
Moteurs MT/BT	3 000	T	plus de 10 000 T
Transformateur MT/BT	3 000	T	plus de 10 000 T
Contacteurs et autres appareils électro-mécaniques	5 000	T	plus de 10 000 T
Charpente	30 000	T	plus de 150 000 T

Pour les fabrications d'ensemble ou de sous ensembles fabriqués en série, les exemples déjà connus sont les suivants :

Ensemble ou sous-ensemble	Effet de Taille		Demande intérieure 1980–1985
	Quantité/an	Unité	
Chaudière BP	8 000	U	12 000
Echangeurs	2 000	U	4 000
Wagons ferroviaires	2 000	wagon	5 000
Machines outils standard (perçeuses, fraiseuses).	500	unité	1 500

Pour les équipements électro-mécaniques lourds fabriqués sur commande (turbines, centrales thermiques, équipements sidérurgiques, équipements chimiques etc...) on considère généralement qu'un complexe de taille acceptable est un complexe capable de fabriquer et d'assembler environ 50 000 tonnes d'équipements par an. Les prévisions de demandes intérieures s'établissent actuellement comme suit en fonction du rythme des investissements industriels au cours du prochain plan.

Evolution de la Demande Annuelle en Equipements Electro-mécaniques Lourds en 1985

Tonnes-

Nature des Biens d'Equipement	Hypothèse Faible	Hypothèse Forte
Sidérurgie et transformation des métaux	14 000	31 000
Equipements miniers	5 000	10 000
Industrie chimique	13 000	16 000
Production d'électricité et distribution	1 700	2 500
Equipements lourds de manutention	1 700	2 500
Matériaux de construction	6 000	6 000
Equipement du secteur hydrocarbures	7 000	9 000
Divers	10 000	10 000
T O T A L	60 400	85 000

Il apparaît donc que les effets de taille ne s'opposent pas au développement d'une industrie nationale de fabrication de biens d'équipement, *celle-ci pouvant être assurée de débouchés intérieurs* sans être obligatoirement contrainte de rechercher des commandes sur le marché mondial.

Encore faut-il que les modalités de réalisation des projets à l'intérieur du pays lui permettent de s'insérer dans les processus d'investissement. Tel est l'objet de l'étude faite au chapitre suivant.

4. – MODALITES DE REALISATION DES INVESTISSEMENTS

La question posée concerne l'existence éventuelle d'une contradiction entre les modalités de réalisation choisies pour les projets, et la logique de développement des industries nationales de fabrication de biens d'équipement.

Certains auteurs imputent parfois aux modalités de réalisation retenues l'absence de recours réel aux capacités nationales de réalisation, et donc le freinage du développement des industries nationales de fabrication de biens d'équipement.

4.1. - Les Modalités de Réalisation et leur Conséquence

Une fois une décision de planification prise sur un projet (gamme de production, capacité, localisation), les fonctions suivantes doivent être développées :

- Engineering Général
  Il s'agit de définir, puis de contrôler, l'articulation générale des différentes composantes du projet (spécification des équipements de fabrication, spécification des équipements secondaires, plans de génie civil et bâtiments, spécification et plans pour les utilités) ;
- Engineering de process électro-mécanique
  Il s'agit d'utiliser une technologie donnée (faisant l'objet ou non d'un brevet) en respectant les spécifications de l'engineering général, pour arrêter les plans et superviser la fabrication des équipements principaux (fabrication mécanique lourde, fabrication des équipements électroniques, régulations et commandes électro-mécaniques de l'ensemble).
- Fabrication des équipements électro-mécaniques de process
- Fabrication des équipements auxilliaires
- Réalisation des travaux
- Montage des équipements
- Essais à vide et en charge
- Montée en production

Choisir une modalité de réalisation, c'est définir la répartition de ces tâches entre la Société Nationale exploitante et les structures nationales ou étrangères de réalisation.

On distingue couramment cinq modalités de réalisation selon la nature des partenaires et le rôle qui leur est confié. Dans la réalité, ***la structure qui joue un rôle déterminant est celle qui contrôle l'engineering de process et la fabrication des biens d'équipement électro-mécanique,*** car ces deux étapes conditionnent les données à prendre en compte pour toutes les autres.

Modalités de Réalisation selon la Nature des Partenaires en Présence

Partenaires / Modalités	Société Nationale cliente	Entreprises Nationales de biens d'équipement et de travaux.	Entreprises étrangères
Produit en main	- Décision de planification - Recrutement des travailleurs - Gestion de l'exploitation après 3 ou 4 ans	- Sous-traitant éventuel des firmes étrangères	- Engineering général - Engineering de process électro-mécanique - Fabrication - Travaux - Montage - Essais - Montée en production
Clé en main confiée à des entreprises étrangères	- Décision de planification - Recrutement des travailleurs - Essais - Montée en production	- Sous-traitant éventuel des firmes étrangères	- Engineering général - Engineering de process - Fabrication - Travaux - Montage - Essais
Clé en main confiée à des entreprises nationales	- Décision de planification - Recrutement - Essais - Montée en production	- Engineering général - Engineering de process - Fabrication - Travaux - Montage - Essais	- Sous-traitant éventuels des entreprises nationales de réalisation
Engineering décomposé avec importation des équipements principaux de production	- Décision de planification - Engineering général - Recrutement - Essais - Montée en production	- Contrats partiels divers	- Engineering de process - Fabrication des équipements de production - Contrats partiels divers
Engineering décomposé avec fabrication nationale des équipements principaux de production	- Décision de planification - Engineering général - Recrutement - Essais - Montée en production	- Engineering de process - Fabrication des équipements de production - Contrats partiels divers	- Contrats partiels éventuels

Entre 1962 et 1978, les décisions réelles des structures nationales ont intégré la prise en compte des éléments suivants :

– les modalités de réalisation ne sont pas neutres vis à vis des délais.

Eléments Relatifs aux Délais Selon les Modalités de Réalisation

Critère	Produits en main	Clé en main	Engineering décomposé
Nombre de contrat à gérer	1 seul	faible	Plusieurs centaines
Nombre de partenaire à coordonner	1 seul	faible	Très grand
Délais administratifs (avis 72 et autres)	1 seule fois	1 seule fois	Plusieurs centaines de fois
Souplesse en cas de problèmes pendant la réalisation	Nulle	Nulle	Grande
Conséquence de la défaillance d'un sous-traitant	Le partenaire peut réagir beaucoup plus vite		Grave
Vitesse de lancement du projet	Dès que : - site retenu - gamme de production décidée		Après la fin des études d'engineering

– les différentes modalités de réalisation ne permettent pas les mêmes possibilités de recours aux financements extérieurs.

Eléments Relatifs aux Financements Extérieurs Selon les Modalités de Réalisation

Postes à financer	Produits en main	Clé en main	Engineering décomposé
Equipement de production	Oui	Oui	oui sauf les petites commandes
Génie Civil	Oui	Oui	difficile
Engineering et services	Oui	Oui	difficile
Services liés au démarrage	Non	Non	non
Date de naissance de la dette	lorsque l'usine atteint ses performances	lorsque l'usine est prête	à la livraison de chaque commande partielle

– Le choix des modalités de réalisation peut enfin peser sur les chances des structures nationales de développer leur maîtrise technologique.

Eléments Relatifs au Développement des Capacités Nationales Selon les Modalités de Réalisation

	Produits en main	Clé en main	Engineering décomposé	
			Si cadres nationaux indisponibles	Si cadres nationaux abondants
Capitalisation du métier d'engineering	nulle	nulle	faible	forte
Possibilité de reproduire une usine similaire	faible	faible	faible	forte
Connaissance détaillée du détail de l'usine	faible	faible	moyenne	forte
Participation des moyens nationaux de réalisation	difficile	possible en tant que sous-traitant	possible si ces capacités existent	possible si ces capacités existent

Il apparaît ainsi que le choix d'un mode de réalisation suppose que l'on rende compatible les objectifs en terme de capitalisation technologique, de délais, et de financement.

En 1970 et 1978, trois éléments ont favorisé les solutions du type clé en main et produits en main :

- faiblesse du potentiel de cadres confirmés
- complexité administrative (il est plus facile de gérer un contrat clé en main au lieu de 400 contrats décomposés)
- à partir de 1975, volonté de recherche de crédits extérieurs globaux.

L'expérience des années 1962 à 1978 met toutefois en évidence que certaines entreprises nationales algériennes ont pu générer et amorcer le développement régulier de capacités propres en ce qui concerne :

- l'engineering général
- les entreprises de travaux et de montage
- la fabrication des équipements secondaires (charpente, bardage, tuyauterie industrielle, etc...).

Certes les situations sont différentes selon les secteurs, mais il apparaît que les expériences développées dans ces domaines au sein de la SONELGAZ, de la SNS, de la SONATRACH, de la SNERI ont été plus efficaces en ce qui concerne les travaux qu'en ce qui concerne les études d'engineering général

Il apparaît par contre à la fin de la décennie 1970–1980 qu'aucune structure nationale n'a pu générer encore de moyens importants susceptibles d'aborder les domaines suivants :

- engineering de process électro-mécanique
- fabrication d'équipements principaux électro-mécaniques.

Ceci explique en partie l'importance du recours aux solutions du type clé en main, les structures d'engineering national étant en accroissement mais encore fortement minoritaire.

4.2. - Le Problème Important des Capacités Nationales d'Engineering

Cette situation s'explique par deux raisons principales :

- la première concerne le fait que les compétences en ce domaine ne peuvent être générées ex-nihilo et doivent provenir de prélèvements effectués sur une population de techniciens ayant pratiqué l'exploitation ou l'entretien, d'installations similaires de production. De tels prélèvements n'ont été possibles que rarement jusqu'à présent à une époque où justement les problèmes de maîtrise de l'exploitation se sont posés et se posent encore avec toute leur acuité : les ingénieurs et techniciens nationaux ont vécu entre 1970 et 1980 une période intensive de découverte de technologie nouvelle, en découvrant au jour le jour les problèmes pour lesquels la génération précédente ne pouvait leur transmettre aucune connaissance ;

- la seconde concerne le fait que les décisions de planification n'ont pas porté entre 1962 et 1977 sur les capacités de fabrication d'équipement de process. Les projets planifiés, tant dans l'industrie lourde que dans l'industrie légère, ont porté essentiellement sur la fabrication de biens de production de base (matériaux de construction, produits métallurgiques, produits chimiques, textiles etc...), sur la fabrication de biens d'équipements agricoles (tracteurs, machinismes agricoles) ou infrastructurels (véhicules industriels, engins de travaux publics etc...).
  Or le développement des structures d'engineering de process aurait supposé des possibilités de dialogue technique intense avec les usines de fabrication de biens d'équipement.

On peut donc dire que les deux conditions essentielles nécessaires à la genèse réelle du secteur de fabrication des biens d'équipements lourds n'étaient pas remplies entre 1962 et 1978 puisque ce secteur n'était pas inscrit dans les priorités de planification, et puisque le pays n'était pas encore en mesure de prélever dans les unités de production des techniciens expérimentés susceptibles de s'orienter vers des tâches de conception dans des structures d'engineering de process.

De ce fait, l'engineering de process et la fabrication des équipements électro-mécaniques devaient être presque totalement confiés aux firmes étrangères : ***les modalités de réalisation*** de type clé en main ou produits en main souvent retenues, apparaissent en définitive ***plus comme une conséquence que comme la cause de non-existence de l'industrie nationale de fabrication de biens d'équipement.***

5. – CHOIX DE TECHNOLOGIE ET CONCEPTION TECHNOLOGIQUE

Une thèse souvent développée consiste à imputer à la nature des choix de technologie effectués entre 1962 et 1978, la faiblesse du développement des industries nationales de fabrication de biens d'équipement. Un tel secteur aurait été pénalisé par le recours systématique aux technologies dites «de pointe», et par l'absence de volonté réelle de développer des technologies nationales.

Cette thèse doit être soigneusement discutée, et le problème de la technologie resitué de façon claire.

5.1. - Alternatives Technologiques

Il importe de distinguer tout d'abord deux niveaux de choix technologiques :

- le premier concerne le choix des grands procédés de fabrication alternatifs qui mettent en cause les paramètres fondamentaux de fonctionnement d'une branche (exemple : filière classique et filière réduction directe en sidérurgie)
- le second concerne le choix des équipements secondaires au sein des grandes installations (exemple : choix entre dépoussièrage mécanique ou dépoussièrage électro-statique pour les fumées d'une

cimenterie, choix entre manutention par convoyeur ou manutention manuelle au niveau d'un stock de produit avant expédition).

En ce qui concerne le premier niveau, les alternatives réelles à un moment donné dépendent :

- des solutions technologiques disponibles et éprouvées qui sont offertes sur le marché mondial
- des solutions technologiques nationales qui ont pu franchir le cap *des essais de laboratoires, des installations pilotes, puis des essais semi-industriels* au sein des structures nationales de recherches appliquées.

Les alternatives réelles sont généralement peu nombreuses. A titre d'exemple, on peut citer les cas suivants :

- la SONELGAZ peut opter entre quatres grands procédés pour la production d'électricité :
  - les centrales thermiques à vapeur
  - les turbines à gaz
  - les centrales nucléaires
  - les centrales hydrauliques
- la SNS peut opter entre deux grandes filières technologiques pour la production de l'acier :
  - la filière classique (réduction du minerai par le charbon dans les hauts-fourneaux)
  - la filière réduction directe (réduction du minerai par le gaz naturel).

En ce qui concerne par contre le deuxième niveau des choix de détail, les alternatives réelles dépendent :

- des solutions proposées sur le marché mondial
- des capacités d'innovation des collectifs nationaux de travailleurs dans la branche concernée
- de la nature des capacités de fabrication disponible pour mettre en œuvre les innovations de détail envisagées.

Les alternatives réelles sont généralement à ce niveau beaucoup plus nombreuses.

5.2. - Choix de Technologie : Approche Statique

Entre 1962 et 1976, en l'absence totale de structures nationales de recherches appliquées, les alternatives réelles ont été limitées au choix entre les solutions technologiques éprouvées et disponibles sur le marché mondial.

Sur le plan du choix entre les grands procédés alternatifs, quatre grands types de critères ont été pris en compte pour préparer les décisions, la pondération de ceux-ci ayant souvent été difficile au sein de structures ne bénéficiant pas d'une très longue expérience industrielle :

- le premier concerne *la compatibilité* des alternatives technologiques *avec les matières premières ou les sources d'énergie nationale.* A titre d'exemple, la SONELGAZ n'a pas retenu dans ses programmes de développement les solutions hydrauliques ou nucléaires, pour tenir compte des sources d'énergie nationale disponibles. De la même manière, la SONELGAZ a opté délibérément pour la solution «turbines à gaz» lorsque ses centrales étaient implantées à l'intérieur du pays, car cette technologie évite le recours massif aux refroidissements hydrauliques et permet d'économiser l'eau douce.
  A titre d'exemple également le complexe d'El Hadjar a été développé en utilisant la technologie classique pour permettre l'utilisation du minerai de l'Ouenza : la teneur en manganèse et en gangue de ce minerai n'aurait pas permis son traitement en réduction directe (qui constitue pourtant la solution la plus récente).
- le second concerne *le coût en capital et le coût en devises* des solutions technologiques en fonction de la taille des projets. A titre d'exemple, la technologie de coulée continue a été retenue dans les acieries d'El Hadjar pour réduire le coût en capital du projet, et donc le coût en devises des équipements importés.
- le troisième concerne *les perspectives de maîtrise plus ou moins rapide* de la montée en production selon la technologie retenue. A titre d'exemple, l'extension de l'acierie d'Oran a été décidée par recours à une technologie très ancienne (Four Martin) du fait des connaissances technologiques existantes pour ce procédé au sein du collectif des travailleurs de l'usine, et donc de la certitude de maîtrise rapide de l'extension par ces travailleurs.
- le quatrième concerne la qualité des produits finis exigée en aval par les secteurs utilisateurs. A titre d'exemple, la SNMC a dû faire intervenir dans le choix des procédés de fabrication de ciment, la nécessité d'élaborer les ciments spéciaux nécessaires aux entreprises du Ministère des Travaux Publics pour les travaux maritimes en bord de mer.

Si l'on excepte le cas de la liquéfaction du gaz qui a donné lieu à la sélection d'un procédé très nouveau et complexe, les décisions se sont le plus souvent portées, pour ce type de grands choix, sur des procédés généralement anciens et éprouvés depuis de longues années : les technologies de pointes sont donc très rares en Algérie. Au niveau par contre des choix technologiques de détail, la période 1962–1976 a été marquée par l'absence d'expérience industrielle des collectifs de travailleurs : les solutions proposées par les firmes étrangères ont été souvent soit entérinées sans discussion, soit contestées sans raison objective. Ceci explique l'effort actuel d'investissement «de valorisation du potentiel existant» nécessaire pour modifier certains organes technologiques qui, sans affecter globalement le fonctionnement des installations, pénalisent le rythme de montée en production et la productivité dans les usines.

5.3. - Conception Technologique, Innovation et Recherche Appliquée : Approche Dynamique

Depuis 1976 au contraire, il apparaît que les conditions objectives de l'industrie algérienne laissent présager des possibilités de prise en charge plus dynamique des problèmes de technologie.

Il apparaît tout d'abord que deux phénomènes permettent actuellement *l'émergence de structures nationales de recherche appliquée :* la création de l'ONRS au niveau national, et au niveau sectoriel, la capacité des entreprises nationales à prélever au sein des usines et à orienter vers la recherche de certains cadres cumulant une formation scientifique théorique avec une expérience industrielle importante.

Un tel processus ne bouleversera certainement pas la réalité technologique nationale à court terme, mais permet d'espérer à moyen et long terme une prise en charge plus profonde des problèmes liés au choix entre les grandes filières alternatives, ainsi que l'adaptation de ces filières aux réalités économiques nationales. Au niveau de la sidérurgie par exemple, les programmes de recherche appliquée envisagés ont pour but de permettre la mise au point d'installation pilote, puis semi-industrielle pour l'adaptation des procédés existant aux ressources naturelles nationales : ils permettent d'espérer la mise au point après de longues années, de solution évitant toute importation de matières premières et d'énergie.

Il est clair également que l'expérience industrielle accumulée par les travailleurs permet progressivement à la fois un meilleur contrôle des solutions technologiques retenues pour les unités nouvelles, et des innovations technologiques marginales dans les unités anciennes : au sein de l'usine sidérurgique d'Oran par exemple, les innovations conçues par l'unité ont permis, au prix d'un investissement très modeste, d'accroître de 50 % la capacité nominale et la production réelle du laminoir.

Il apparaît ainsi que les processus de création technologique ne pouvaient être générés ex-nihilo. Ces processus peuvent commencer à voir le jour actuellement dans le pays en grande partie grâce aux réalisations universitaires et industrielles qui ont été mises en œuvre entre 1962 et 1978.

La recherche appliquée et les processus d'innovation pouvant actuellement s'alimenter à partir de l'expérience industrielle réelle accumulée dans les unités de production par des cadres et techniciens auxquels l'université et les centres de formation technique avaient donnés des connaissances théoriques.

6. – LES BIENS D'EQUIPEMENT DANS LA PLANIFICATION DES ANNEES 1980–1990

Les développements qui précèdent ont mis en évidence l'importance de l'accroissement de la demande intérieure pour les biens d'équipements industriels, et le fait que son niveau n'est plus maintenant incompatible avec les effets de taille des secteurs de constructions électro-mécanique.

Les problèmes qui se posent donc, au début de la décennie 1980–1990, concerne *la place* qui peut être accordée à ce secteur dans les décisions prochaines de planification et *les orientations fondamentales* qui devraient être prises concernant son développement.

Les réflexions qui vont suivre proposent quelques thèmes de recherche concernant ces deux types de problèmes.

6.1. - La Place du Secteur dans les Décisions Possibles de Planification

Le processus de planification de la décennie 1980–1990 se caractérise tout d'abord par le fait que, contrairement à ce que l'on avait pu observer au cours des 15 années précédentes les capacités de réalisation des différents secteurs dépassent maintenant les disponibilités financières que le pays peut consacrer à l'investissement.

En dinars constant 1978, les estimations préliminaires connues actuellement font état de projets potentiels de l'ensemble des secteurs (hydraulique, agriculture, habitat, industrie, infrastructure technique sociale et administrative) dont le total dépasse 1 500 milliards de dinars sur 10 ans, alors que la formation brute de capital fixe pourrait varier entre 800 et 1 300 milliards de dinars selon l'évolution des prix de l'énergie.

Ceci signifie que les arbitrages relatifs au rythme de développement des différents secteurs, seront importants. Il est déjà probable que l'agriculture, l'habitat, les infrastructures techniques (transport ferroviaire, ports, hydraulique, routes, télécommunication), sociales (santé, éducation) et administratives conduiront à mobiliser près de la moitié de la FBCF du pays. La part disponible pour le secteur industriel pourrait donc atteindre 40 à 50 % de celle-ci, soit un total sur 10 années de 400 à 600 milliards de dinars (en dinars constant 1978) : en outre, l'achèvement du programme VALHYD en 1983 aura pour conséquence la décroissance des besoins de financement du secteur des hydrocarbures.

Dans le cadre de telles enveloppes pour les investissements industriels, la place du secteur des biens d'équipement pourrait être recherchée de façon à rendre compatible :

- la nécessité de poursuivre le développement des industries de base (sidérurgie, chimie et matériaux de construction notamment) pour faire face aux besoins croissants de l'habitat et de l'infrastructure ;
- la volonté d'accélérer le développement des industries légères qui remplissent trois missions : accroître la livraison aux ménages de produits manufacturés, permettre la valorisation, en aval des produits des grands complexes métallurgiques et chimiques de base, permettre une création plus massive d'emploi pour des coûts en capital moins élevé ;
- l'objectif pour la décennie 1990–2000 de disposer de capacités nationales de fabrication de biens d'équipement permettant de réaliser à cette époque près de 50 % des installations industrielles par des moyens nationaux.

Il apparaît actuellement que les études disponibles permettraient d'envisager la réalisation au cours des dix prochaines années :

- d'un complexe électro-mécanique lourd (CEMEL) important capable de réaliser et d'assembler environ 80 000 tonnes de biens d'équipement sur commande destinés à équiper les industries de base (mine, production électrique, métallurgie, chimie, matériaux de construction, tranformation des métaux) ;
- d'une dizaine d'unités de tailles moyennes destinées à fabriquer en série des composants de base (forgés ou moulés) ou des sous-ensembles (moteurs, tranformateurs, compresseurs, chaudrières, convoyeurs, bandes transporteuses, ponts roulants etc...).

Un tel programme nécessiterait, d'après les premières estimations, la mobilisation annuelle de 2 à 3 milliards de dinars durant 10 années et permettrait également la création d'environ 200 000 emplois directement productifs.

6.2. - Orientations Essentielles

Les orientations essentielles nécessaires au développement d'un tel secteur paraissent les suivantes :

- la première concerne *la gamme des produits visés*, c'est-à-dire finalement l'importance relative accordée aux équipements nécessaires à chaque branche industrielle dans le programme de fabrication
- la seconde concerne *l'origine des technologies* à mettre en œuvre dans les usines du secteur
- la troisième concerne la création et le développement des *structures de connecti .i* d'un tel secteur aux autres opérateurs nationaux, c'est-à-dire le problème de l'engineering de process déjà évoqué plus haut.

Le choix de la gamme des produits visés pourrait donner lieu à une réflexion axée sur trois thèmes :

- le premier consiste à souhaiter le choix de configuration permettant de préserver une grande souplesse dans les gammes de produits possibles, de façon à permettre au secteur de s'adapter aisément à son marché réel en régime de croisière, c'est-à-dire à la structure de la demande de biens d'équipement en Algérie entre 1990 et 2010, structure qu'il est difficile de prévoir de façon précise actuellement ;
- le second consiste à souhaiter une certaine priorité pour les équipements destinés aux industries légères et de tranformation des métaux, car ceux-ci font généralement appel à des technologies simples et génèrent une demande régulière et répétitive
- le troisième consiste, pour les biens d'équipements lourds, à privilégier les besoins des secteurs dont l'activité n'est pas conjoncturelle et liée à l'exportation (comme celle du secteur des hydrocarbures) mais régulière et liée au processus de croissance de l'économie du pays (métallurgie, matériaux de construction, chimie, production d'électricité).

En ce qui concerne *l'origine des technologies,* les réflexions devraient vraisemblablement tenir compte de deux phénomènes :

- le premier concerne la nécessité de prévoir des liaisons organiques précises entre le secteur de fabrication de biens d'équipement et les structures nationales ayant pour fonction de développer la recherche appliquée et l'innovation, et donc de développer les conceptions technologiques nationales
- le second concerne le fait qu'à court et moyen termes, le recours à des fournisseurs de technologie (titulaire de brevets ou licences) sera indispensable dans la majorité des cas. Le problème des relations techniques et juridiques directes et détaillées avec ces fournisseurs ne se posait pas réellement lorsque les équipements étaient fabriqués à l'étranger. Ce problème deviendra prépondérant avec l'accroissement des capacités nationales de fabrication de biens d'équipement.

En ce qui concerne *les structures de connection* entre les unités de fabrication de biens d'équipement et les demandeurs nationaux, le problème de la création de structures nationales d'engineering de process (et non plus d'engineering général) apparaît comme fondamental car c'est à ce niveau que se localisera véritablement les relations avec les fournisseurs de procédé, et les moyens susceptibles de permettre la concrétisation industrielle des solutions suggérées par les structures nationales de recherche appliquée et d'innovation.

7. – CONCLUSION

Au terme de notre analyse, nous pouvons considérer en définitive que les modalités de réalisation et les technologies de détails retenues entre 1962 et 1978 par le secteur industriel public constituent plus des conséquences que les causes de la faiblesse du développement du secteur de fabrication des biens d'équipement.

Par ailleurs, il apparaît que les programmes d'industrialisation de la période passée ont permis de rassembler certaines conditions favorables à la croissance d'un tel secteur :

- par l'évolution du niveau de la demande intérieure en biens d'équipement qui est devenu compatible avec les effets de taille de ce secteur ;
- par l'accumulation d'une expérience industrielle réelle dans toutes les branches au sein des collectifs de travailleurs, même si cette accumulation s'est faite avec des surcoûts ;
- par les possibilités de prélèvements qui sont maintenant offertes aux structures naissantes de recherche appliquée et d'engineering de process qui ne pouvaient pas être générées ex-nihilo mais devaient accueillir des techniciens cumulant une formation scientifique importante, et une expérience technologique industrielle réelle.

Dès lors, la réflexion du planificateur semble être orientée actuellement vers les objectifs à long terme relatifs à la place que devrait occuper un tel secteur dans les équilibres économiques généraux entre 1980 et 1990, ainsi que sur les conditions d'articulation des moyens à mettre en œuvre pour atteindre ces objectifs.

L'histoire dira si les conditions favorables ainsi générées par la période d'industrialisation 1962–1980 feront l'objet d'une valorisation réelle entre 1980–1990, pour permettre à l'économie algérienne de disposer durant la dernière décennie de ce siècle des conditions principales susceptibles d'accroître son indépendance technologique : le développement de structures de recherche appliquée et d'innovation dont les productions théoriques puissent être mises en œuvre par des structures nationales d'engineering de process et de fabrication de biens d'équipement.

NOTES

(1) Direction Nationale des Douanes. Documents annuels sur le commerce extérieur.

(2) Mr. BENBOUTA situation et perspectives de l'engineering dans l'intégration du système industriel algérien. SNERI – ALGER – 1972.

(3) Industrie Sidérurgiques, métalliques, mécaniques et électriques.
Source : comptes économiques 1974–1977. SEP (édition de Décembre 1978).

SUMMARY

The role of any industrial activity is to produce either final consumer goods, production goods (for the use by the intermediary productive sectors) or equipment goods (installations and machines which could last more than a year and which are used by the production units themselves). The author's intention in this article is to analyse the role of the equiment goods sector in the process of capital accumulation, using in particular a historical approach. He first points out that this is a sector where the state had to import almost everything. Hence the importance of analysing the place of industrial equipment goods in national development plans and of trying to find the reasons for such a massive resort to the world market. According to the author, the following problems are worthy of deep analysis if the obstacles to the emergence and development of such a sector are to be identified: Firstly, the issue of scale and its effect, secondly the problems related to the method of implementation and thirdly the nature of the technologies used. He then proposes to concentrate his study on the internal factors related to these problems. There are two reasons for this approach:

a) Firstly because most studies of these problems have concentrated on external factors such as the dependence on the world market and international corporations.
b) Secondly, the author's approach will make it easier to identify those decisions and functionning processes of national structures which could explain the difficulties of the past as well as help plan for future development.

Then the author goes on analysing the categories of goods and their equilibrum, giving the elements which are to be taken into account and their relative importance in the implementation of any industrial project. Given this theoretical frame, he makes an evaluation of the present situation of the country in terms of employment (needs of the on-going industrial programme) and of resources (capacity of the national structures and import). He then concludes that the annual needs of industrial projects are three times more important than the annual output of the engineering and electric industries of Algeria. Therefore the contribution of the national production to the implementation of new industrial projects is relatively weak. In any case it seems that the Algerian engineering and electrical industries could have increased fourfold their final production in terms of value with «policy of equipment goods based on import substitution since both their production process and the scale effects allows for this. After dealing with the choice of technology and technological conception, the place of equipment goods in the 1980–1990 planning, the author concludes his article with the findings that the production processes and the technology used in the 1962–1978 plans for the industrial public sector are to be considered as consequences rather than causes of the weaknesses of the development of the equipment goods production sector. Nevertheless the industrial programmes of the earlier period (1962–78) have created favourable conditions for the development of the equipment goods sector.

THE PROBLEM OF THE STATE IN BACKWARD CAPITALIST SOCIETIES

By

Harry GOULBOURNE *

The purpose of this paper is to raise some critical questions over the ways in which the state in backward capitalist formations has been perceived by radical and progressive writers. The discussion about these states has revolved largely around what is generally called the «post-colonial state», sometimes the «peripheral state», other times still, the «neo-colonial state», etc. Although this discussion has taken place within a general marxist framework, one of its most striking features is its gallop rough-shod over what would generally be considered to be fundamental marxist considerations regarding class and state, particularly in a capitalist mode of production. Undoubtedly, this is because the fundamental assumption underlying this discussion is that this type of state is qualitatively different from the state in developed capitalist formations. Consequently, the state in backward capitalist formations is perceived to present a qualitatively different problem for marxist analysis from the problem of the capitalist state as such. The task, therefore, for marxist political theory is said to be to develop a general theory of the state under such conditions.

Doubt may, however, be cast on the value of such an undertaking, divorced as it is from the attempt to sharpen our understanding of the capitalist state generally. The position here is that the state in backward capitalism is a form – or, more correctly, one of forms – of the capitalist state and that an adequate theory of the state in such conditions (if this were at all possible) must at the same time be an adequate theory of the capitalist state generally considered. The problems presented by the capitalist state – the nature of the relation between «base» and «superstructure»; social classes and the state ; the objective basis of the state and the mode of its operations ; the nature and specificity of its autonomy, etc.. – are also problems of the state in backward capitalist formations. The fact that answers to such general questions are likely to be different for different socio-historical contexts does not amount to differences of a fundamental nature. These specificities are often as similar as they are different and present a problem more in the nature of forms of the capitalist state which may be accomodated within a general theory of the capitalist state.

Analysts are correctly wary of giving the false impression that the state in backward capitalism can be adequately accounted for by simply inserting it into a theory of the capitalist state exclusively derived from the West European experience. But to present this type of state as being utterly different from that of the capitalist state in the West is perhaps a much graver mistake which partly accounts for a false assessment of the state forms found in the type of societies under consideration. The view that the state forms to be found in backward capitatlism are forms of capitalist states and should therefore be incorporated, theoretically, into a general marxist theory of the capitalist state, is premised on the facts that the states referred to

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in the literature rest on structures which are predominatly capitalist that is, where the capitalist mode of production exists and these states cannot be said to be in the control of revolutionary workers and/or peasant vanguard parties or movements.

THE POST-COLONIAL STATE PROBLEM

«The essential problem» of the post-colonial state, according to Hamza ALAVI who first attempted an explicit formulation of it, is that it is «not the instrument of a single-class» *(1)*. This is so because the state in post-colonial societies «is not established by an ascendent native bourgeoisie but instead by a foreign imperialist bourgeoisie» *(2)* in order to establish its dominance over all the social classes in the colony. This fact has brought about a distincly new problem for what ALAVI understands to be the «classic-marxist theory of the state» because this theory was based on experiences in West Europe where the state has been the instrument of a single ruling-class. This distinction provides ALAVI with the grounds for raising what he considers to be some «fundamental questions about the classic-marxist theory of the state» *(3)*.

First, the relationship between class and state has been «rendered» «more complex» by the post-colonial situation. Reminiscent of Fanon is ALAVI's argument that in post-colonial societies the indigenous bourgeoisie is lacking in creativity and the very juridico-political institutions necessary for class-rule are instituted by the bourgeoisie from the metropole during colonialism. Second, the state that is inherited subsequently at independence is «overdeveloped», vis-avis the socio-economic structures upon which it rests. The weakness of social classes in post-colonial societies leaves the way open for the military and bureaucracy (the two institutions of state that ALAVI concentrates on) not only to consolidate into an oligarchy but, more importantly, to surbordinate all social classes to itself. But, third, this is not all: political independence represented only a tactical retreat by the metropolitan bourgeoisie and its interests, along with those of the landed classes and the national bourgeoisie are now promoted and mediated by the «overdeveloped» state. The post-colonial state is therefore the instrument of three distinct classes whose interests are not exactly mutual but nor are they fundamentally antagonistic. Fourth, in strengthening the entrenched military-bureaucratic oligarchy and mediating between the three interests, the post-colonial state is made to participate directly in the production process under the banner of national development in a manner that the capitalist state elsewhere has not done. These factors combine to establish not merely the generally recognized relative autonomy of the capitalist state but a «distinct relative autonomy» of the post-colonial state from socio-economic forces. The post-colonial state, therefore, enjoys a centrality which cannot be explained by classic- marxist political theory. In ALAVI's view this centrality of the «overdeveloped» state enables it to dispense with the usual mediatory institutions such as political parties, regular elections, politicians, etc.., of the bourgeois state.

ALAVI draws a distinction between those post-colonial states which were directly and those which were indirectly ruled by metropolitan bourgeoisies and, correctly, points out that a considerable amount of detailed and comparative research is necessary before a rigorous description of the post-colonial state can be advanced. His own essay, in the first instance, is offered as an example of the post-colonial state in conditions developed under direct colonialism. But even so, the characterization of the problem of the post-colonial state outlined above is given as typical of the «post-colonial» world – «The essential features which invite a fresh analysis are by no means unique» *(4)*.

Two closely related points about the discussion over the state in backward capitalism may be noted here. First, a difference in emphasis may be detected in the literature. There are those writers, such as ALAVI, SAUL *(5)*, HEIN and STENZEL *(6)*, etc.., whose concern is to theorize the «problem» of the post-colonial state and the emphasis for them is therefore primarily the nature and function of the state. The other group of writers are primarily concerned with the broader question of development or underdevelopment and the state enters their discussions because they see the state as the crucial factor in development. Typical of this group are Archie MAFEJE *(7)* and Clive THOMAS *(8)*. As will be seen later, this latter group presents a more carefully argued view of the state in backward capitalism, although at the general theoretical level both groups approach the question of the state from the perspective of underdevelopment theory.

Second, this general theoretical affinity accounts for the remarkable degree of agreement regarding essentials. Generally, writers in both groups agree that the state in backward capitalist formations cannot be analysed in the way that the state in developed capitalism has been analysed by marxists; *(9)* that the state stands above society and therefore, for some writers the forms of state seen in such societies profoundly ressembles the bonapartist state Marx described in the *Eighteenth* Brumaire; *(10)* that the states' participation in production marks it off from the capitalist state elsewhere, etc. Both LEYS's *(11)* and GIRLING's, *(12)* critical remarks over some aspects of ALAVI's formulation are notable exceptions to the widespread consensus regarding the «problem» of the state in backward capitalism. Nowhere, however, is there a conscious attempt to reformulate the question of the state under such conditions.

THE PROBLEMS WITH THE FORMULATION

The «problem» of the state under conditions of backward capitalism is far from convincing. To be so it would be necessary for these theorists to show that (i) *the origins* of these states explain their *present* necessity and, (ii) that the *quantity* of detailed differences that may be said to separate these states from the state under conditions in advanced capitalism amount to differences of a *qualitative* nature. In the discussion under consideration neither of these questions has been directly broached and therefore the answers to them are at best ambiguous.

The answer to the first question would appear problematic for at least two reasons: first, to point to the origins of a phenomenon is not necessarily to say anything about its subsequent developments (contrary to the widespread nineteenth century view). The original necessity of the «post-colonial state» (i.e., the necessity of the colonial state) is a necessary factor in any comprehensive analysis of the state in backward capitalism, but it is not sufficient to explain its subsequent development and its present necessity. It is most indialectical to hold to the contrary. Even so, for many writers once the necessity of the colonial state is explained the assumption is that the necessity of the present state form is also explained.

Second, it should be remembered that imperialism – which for most writers explains everything about the Third World, including the various state forms therein – is not an independent phenomenon. It has always been linked to specific modes of production (such as slavery and capitalism). In the capitalist mode of production imperialism has taken different forms, forms dependent upon the phase of capitalist production and accumulation (e.i., primitive accumulation, monopoly capitalism). Imperialism is, so to speak, a dependent, not an independent variable and therefore does not speak for itself, it begs the question, it cannot be taken *sui generis*. The imperialist phenomenon which lies behind the original necessity – and certainly constitutes part of the present necessity – of state forms in backward capitalism, needs to be traced back to the mode of production and the phases of that mode in which it has its being. In terms of the state in backward capitalism, therefore, the really explanatory category of a general nature is capitalism itself.

If the argument, however, is that the sheer quantity of detailed differences between the state in developed and backward capitalism are such that they effect a qualitative difference, then the elements which are necessary to effect such transformation must be outlined. For example, in his discussion of transformation of a mode of production into another, MARX speaks of «merely quantitative differences beyond a certain point pass (ing) into qualitative changes » *(13)* and although in this particular part of his discussion he did not elaborate upon the crucial phrase «beyond a certain point», he was nonetheless careful to outline the elements necessary for such a transformation, namely, the quantity of means of production owned by the personified capitalist and the quantity of labour-power he controls. This has not been done in the discussion over the state in backward capitalism.

More generally, one of the most striking and far-reaching shortcomings in the thesis under discussion is that none of the writers seems to be aware of the fact that what they regard as the «classic-marxist theory of the state» constitutes only a starting point for a more systematic theory of the capitalist state since at no point did classic marxism attempt to construct such a theory. The «classic marxist theory» does not appear to them to present any problem of its own. The fact, therefore, that the state in developed capitalism is as much a problem for marxism as the state under conditions in underdeveloped capitalism, is missed by these analysts who operate with a rather simplistic notion of the state in developed capitalism.

The situation is reinforced by the utter neglect of debates elsewhere around the capitalist state but this is hardly surprising since there is in the thesis what amounts to a denial of the state in backward capitalism and the state in advanced capitalism having much in common.

Much the same may be said about the debate around the state in advanced capitalism; here there is a general neglect of the state in backward capitalism, sometimes with the ambiguous implication that either this type of state is utterly different from the state in advanced capitalism or that there is no difference at all between them. One result of this mutual neglect is that sometimes similar problems are treated as if they are completely new problems. Not only is it important to link the two debates, but it is also important to draw upon the insights achieved in the more advanced discussion over the state in developed capitalism in order to arrive at a better understanding of the state under backward capitalism. Since such an attempt cannot take place in a vacuum and since criticism is a definite step towards correcting and improving theory, it is useful to proceed by looking more closely at the two central points in the formulation of the «problem» of the state in backward capitalism – namely the relation between class and state and the centrality of the state – and to relate these to the general theoretical framework in which this debate is taking place.

CLASS AND STATE

The lack of a homogenous, single, national and independent ruling-class, the overbearing dominance of the military-bureaucratic oligarchy over society and the weakness of all social classes sums up the characterization in this debate of class and state in backward capitalist societies. The strength of the formulation is that it points quite unequivocally to some of the obvious links that exist between state action in such societies and the interests of foreign capital; certainly, no government in these societies can afford to refuse due respect to international capital within its national boundaries. It may well be, however, that these conditions are descriptive of a far more profound situation taking place in capitalism as a whole but which expresses itself clearest in backward capitalist formations because economic and political actions have a higher degree of visibility than is the case in advanced capitalism. Second, it is important to bear in mind that by describing an economic condition we do not think that this automatically explains political life, nor that changes in the economic functions of the state wholly explains the totality of the role of the state in a given society. Thus, although the formulation under discussion points to some of the limitations of the state under backward capitalism and to some of the functions of such states, the formulation cannot be accepted as adequately explaining the necessity nor all the more important function of the state.

First, at its most abstract, the formulation does not help us to understand how classes in national contexts relate to the state. This is more true of the first group of writers on the «post colonial state» than of the second group mentioned above. Both groups, however, stress the importance of the military-bureaucratic elements (which are not in fact classes) as the really

important internal class components in relation to the state. Thus, Shivji speaks of the development of the «bureaucratic bourgeoisie», Cournanel of «la bourgeoisie d'Etat» *(14)* etc. Generally, then, the really important class component is situated *outside* of the national social formation, namely, foreign bourgeoisies. When attempts are made, however, to relate developments to internal class interactions, it has proved necessary to fall back onto the «classic» marxist lines of analyses, if discussion is to pass beyond the military – bureaucratic oligarchy and foreign bourgeoisies. More recent and insightful discussions have taken note of this situation and the works of MAFEJE and THOMAS are particularly important in this regard *(15)*. More generally, however, the discussion of the relationship between class and state in backward capitalism is restricted to the characterization outlined by ALAVI.

One unfortunate consequence of this neglect of national dynamics in the discussion has been that some theorists see the relation that exist between the state and the working classes in backward capitalism in a distorted manner. For example, according to HEIN and STENZEL the working classes in the «peripheral state» do not have any meaningful effects upon state action since they hardly participate in national politics *(16)*. Others argue that there is a privileged stratum of the class which must be seen as part and parcel of the dominant faction of the national bourgeoisie/petite-bourgeoisie and international capital *(17)*. Another error regarding class and state is perhaps best expressed by THOMAS who argues in favour of an alliance of classes (against imperialism) led by the national bourgeoisie or petite-bourgeoisie towards a «non-capitalist path» to development which is in the interest of the exploited classes. Why this should be the result of such an alliance is an open question because those classes leading the alliance would be acting against their objective interests.

Even if it were a valid argument that the relation between class and state in backward capitalist social formations is such that the actions of the state and social activities in these formations have little to do with each other, it is worth noting that similar but less aggressive claims have been made regarding class and state in advanced capitalism too. The strong unity of the ruling-class that is perceived to exist in advanced capitalism (without further ado) is a reflection of a misconception regarding marxist political theory. For example, Poulantzas' notion of the «power bloc» (constituted by various elements due to the fractional nature of capital) reflects a far more complex relation between class and state than ALAVI and others would care to admit. Furthermore, the internationalization of capital, with the predominance of US capital since the last War, has seriously hampered the capability of some nation-states to defend and promote the interests of their national bourgeoisies *(18)*. In other words, the sharp contrast set up between the heterogenous and dependent ruling-classes in backward capitalism and the independent, homogenous ruling-classes in advanced capitalism in the formulation of the «problem» of the state in backward capitalism is a false one and is not particularly helpful in distinguishing between states differently located at different phases of capitalist development (a point to be returned to later).

The point in brief is that there is a need to establish, theoretically, the relation between class and state *within the confines* of the nation-state. This must go beyond the usual bureaucratic-military and foreign bourgeoisie configuration with the recognition that class analysis cannot begin and end at the superstructural level of the state. This call finds its justification in the fact that capital being (as Roger MURRAY puts it) a political opportunist, has not abandoned the nation-state as its primary base (for protection, a framework appropriate for accumulation, etc..) whilst seeking new organizational means, often beyond the control of individual states, to extract more surplus-value. Furthermore, it is still at this territorial dimension that the struggle between capital and labour continues to be fought out and if the class struggle is to be seen as the «motor» of change, then, the nation-state, which capital continues to use as both a starting-point and a port of last resort, cannot be taken as lightly as it has been in both the discussions on the internationalization of capital and that on the state in backward capitalism.

Finally, although the simplicity of the formulation helps to highlight in rather dramatic fashion some of the functions and limitations of the state in backward capitalism it fails by this very token to show some of the obvious creative aspects of these states and, more importantly, the formulation fails to identify the nexus of contradictions which provides these states with a necessity. To be sure, the formulation does contain some notion of this: the «post-colonial state», etc.., is said to find its necessity in the existence of three classes' interests. But, interestingly enough, these classes do not stand in a relation of antagonism to each other: their interests are said to be fundamentally mutual and only coincidentally conflicting. Thus, if the state does not emerge as a result of the class struggle either at a national or international level but as a result of the essentially harmonious conditions that obtains between national bourgeoisie, landed aristocracy and international bourgeoisie, and does not find its present necessity in class contradictions, then, an important question comes to the fore-front – why the existence of the state at all? This leads to a wider discussion of the theory of underdevelopment to which this discussion will return later.

THE CENTRALITY OF THE STATE

There can be no denial of the argument that the post-colonial state, or the state in backward capitalist formations, is central in its operations; indeed, as LEYS has remarked, this type of state is also extensive in this regard. The really important point, however, is that this centrality is not derived from the state being «post-colonial», as the formulation has it, but from the fact that it is a form of capitalist state existing during the monopoly phase of capital which tends to effect interventionist state forms. Although the centrality thesis is an obvious one it is nonetheless important to explain briefly its necessity and thereby show that this has nothing to do with its being «post-colonial» but everything to do with the fact that it is a capitalist state form.

First, the state has always played a «central» role in capitalist society. The very inception of capitalism necessitated a state with a central role in the mercantalist absolutist state which was used to forge the conditions for primitive accumulation and assisted the emerging bourgeoisie to consolidate itself as a class. Using the example of England, MARX showed that it was the state – both reflecting the contradictions in society and at the same time being the point where partial resolutions are found – which took the necessary steps (by passing legislation to restrict the working day) that placed the onus on elements of capital to attempt to increase productivity by intensification of labour and application of machinery. This marked the shift from the production of absolute surplus-value to relative surplus-value and the «real» as opposed to the «formal» subsumption of labour to capital.

In correspondence with these developments the liberal-democratic state-form emerged which, as POULANTZAS has noted, best suited the fractional nature of laissez-faire capitalism. The predominance of the capitalist mode of production meant the establishment of a process of production purely for commodities for exchange and the atomization that this process led to, became, for MARX, a generalized situation throughout society *(19)*. There arose the need, therefore, for a central body to act as a cohesive factor in the social formation, or, rather, a central body which will present itself as such and be generally accepted as such. Crucially, the antagonism between those who are separated from the means of production and are therefore having to sell their labour-power to subsist and those who are able to buy this labour-power due to their ownership and control of the means of production, necessitates the existence of a body which would appear to stand above the resulting conflict whilst infact acting in a manner that is partial to the one of the parties. The liberal state-form that developed in this nexus of contradictions established the perception of subjects as individuals and not as classes, thereby emphasizing the market-relationship (for equality) between capitalist and labourer and blurring, or hiding, or occluding, the relationship (of inequality) that obtains in the primary sphere of production *(20)*. In its «central» functions the liberal state also established the Utilitarian «edifice of rights» as the juridicial framework for the safe accumulation of capital.

Second, the centrality of the state vis-a-vis the economy has become much clearer under monopoly capitalism. This is so primarily because the state, in order to assist capital in its struggle with labour, has found if necessary to enter the sphere of production itself as an owner of means of production. This does not mean that the state sheds its regulatory and juridico-political functions; it continues to perform these, but in addition it now attempts to establish a measure of formal control over production so as to limit the inherent crises in capitalist production, to minimize its effects, and make more effective the state's «mediation» between capital and labour. The «planning» of the economy therefore becomes a crucial priority for the capitalist state and the participation of workers in «planning» output becomes an important part of the state's overall management ideology.

It may be argued, then, that the «distinct relative autonomy» that the centrality of the state is supposed to demonstrate, reveals, on the contrary, the relative weakness, or dependence of the state in backward capitalism on the economic «base». This is most clearly seen in the limited effect of state action on the production process. Briefly, as indicated earlier, the action of the state was of crucial importance in the transition from the production of absolute to relative surplus-value in Western capitalism – and the production of relative surplus-value on a general scale is one of the two elements that established for MARX the «specifically capitalist mode of production». The action on the part of the state that stimulated such a dramatic change in production revealed the state as the point where, as POULANTZAS argues, contradictions in a formation are condensed and find partial resolution. The relative autonomy of the capitalist state was thereby clearly demonstrated: although the contradictions which the state attempted to resolve first emerged and developed at the level of production, it was at the level of the state that resolution had to be sought, given the atomization/fractionalism of capital. In backward capitalism the state has repeatedly taken similar steps to resolve contradictions at the level of the production process-labour laws, etc. – but these do not have the same effects on production as occured on Western capitalism, thus revealing the greater dependence of the state in such conditions on the economic base.

The centralism that is claimed for the state in backward capitalism, therefore has always been a prominent feature of the capitalist state, although at the laissez-faire phase of capitalist production the state in its liberal form, was restricted to specific areas of production (legislation which affected the relations between capital and labour and therefore competition) and circulation (fiscal, etc., regulation). It should be noted too that because the discussants of the state in backward capitalism do not show any awareness of the fact that there may be phases of the capitalist state corresponding (or otherwise) with phases of capitalist production and accumulation, they tend to latch onto an essentialist view of the capitalist state, that is, the liberal state. This, of course, is consistent with their view that there is an unproblematic classic-marxist political theory. The contrast, then, between the non-contralized state – essentially the liberal-democratic state which hardly obtains anywhere any longer – and the centralized state in backward capitalist formations sets up a false dichotomy based on a superficial reading of the situation. Indeed, in some instances the state in developed capitalism is far more «central» in its functions than the state in backward capitalist formations – if centrality means the degree to which a state becomes involved in the socio-economic arrangements of a society.

THE LIMITATIONS OF UNDERDEVELOPMENT THEORY

A critique of the formulation of the «problem» of the state in backward capitalism is at the same time a critique of underdevelopment theory because, explicitly or implicitly, the discussion has taken place within the wider and more general theoretical framework established by underdevelopment theory. Although this theoretical position, as popularized by A.G. FRANK, Samir AMIN and others, never achieved total accep-

tance, it seriously rivalled and replaced orthodox development theory in most progressive and radical quarters. More recently, however, a strident marxist critique of underdevelopment theory has been mounted in various fields, the details of which cannot be recounted here *(20)*. It may be more relevant to note that the discussion around the state in backward capitalism has reproduced, wittingly or otherwise, much of the assumptions and failings of this theoretical framework.

A few examples may be listed here. First, the over-simplified, categorical distinction between «post-colonial» or «peripheral» and «capitalist» (meaning developed capitalist) states, reflects the rigid distinction between «developed» and «underdeveloped» or «metropolitan» and «peripheral» societies, a distinction which does not allow for the differences in the phases of capitalist development that actually exist in these formations. As indicated earlier, those analysts who attempted to look closely at specific social formations in the «periphery» found underdevelopment theory something of an embarrassment *(22)*. Second, the frequent absence of marxist categories and concepts – such as social classes (based on the separation of the labourer from the means of production in capitalist society) and the class struggle, modes of production and phase of capitalist development, etc. – and their replacement by radical humanistic ones such as «man», «freedom of makind» and so forth, takes us back to a position not essentially different from that which the underdevelopment school started, viz., development theory. Both schools assume and find «evidence» to conclude that a fundamental difference exists between the state in Third World and Western societies as expressed in the all too familiar dichotomies – «industrial»/«non-industrial», «developed»/«developing», «democratic»/«pre-democratic», etc.., and those mentioned above. This is of course a paradoxical situation, because the primary aim of radical underdevelopment theory was to show that «development and «underdevelopment» are but the two sides of the same coin, capitalism. The uncritical acceptance of the paradigm established by orthodox development theory, led radicalism to similar broad conclusions on some important questions.

Third, there is a strong radical nationalism inherent in the discussion which seems all the less obvious because of the simultaneous stress placed on Third World internationalism. For example, there is the general bemoaning of the supposedly uncreative national bourgeoisie in backward capitalist formations and socialism is then perceived as the only viable alternative to capitalism, not because of the outcome of class struggles in these formations, but because the national bourgeoisie will never be able to develop the productive forces following capitalist methods. This line of reasoning begs an important question: if capitalism could develop the productive forces, would capitalism be then prescribed and if not then why not, since the whole issue seems to turn on which mode of production is able to lead to «development» – understood largely as being what is perceived to be in existence in the West. It is from this perspective too that the prescription of a national class alliance in favour of the exploited classes put forward by some theorists must be viewed.

Finally, the most basic assumption of underdevelopment theory – as the works of LACLAU and BRENNER in particular have ably demonstrated – is that changes in society occur as a result of market-relations.

It is true that in discussing the question of change from one mode of production to another in pre-capitalist societies, MARX argued that the world market, in the first instance, is of great importance in bringing such societies into the capitalist system of exchange. But for MARX the really determinant factor, in the last instance, involved in transforming a mode of production to the capitalist mode was not to be found in the nexus of relations extraneously established at the level of circulation of commodities, but conditions *within* these pre-existing, pre-capitalist social formations at the time contact is made with the world capitalist system of exchange. These pre-capitalist conditions refer to the question of class structure and class struggle and the crucial issue is therefore how these relate or respond to the intervention from outside. In MARX's view, therefore, the procedure is different from that in the underdevelopment thesis: instead of starting and ending with the process of circulation, MARX saw this process as only the starting-point for an investigation of tranformation. BRENNER very correctly emphasizes that the mature MARX of *Capital,* unlike the young MARX of the *Communist Manifesto* (who WALLERSTAIN, FRANK, etc. were correct in rejecting) did not see the capitalist mode of production spreading automatically, unhindered, over the globe. The extent to which, or whether at all, the capitalist mode of production was established was not only determined by the dissolution-effect of exchange and its concomittant stimulation of commodity production but on the «solidarity and internal structure» of the very pre-capitalist modes and formations themselves *(Capital,* iii, p. 332).

Interesting as it would be it is not really of moment here to follow through this debate, suffice it to point out that the fundamental assumption on the part of underdevelopment theorists that the market-relations, as distinct from the relations of production established at the dimension of the productive process proper, (and which are located within specific social formations) are responsible for change, has had a profound effect on political analysis. HEIN and STENZEL, for example, argues, similarly to Fanon, that the objective function of the «peripheral state» is merely to act as a conductor for the dynamics of the world market to the national level. For AMIN «... one should not reason in terms of nations, as if the latter constituted independent entities... In reality, the class struggle takes place not within the context of the nation but within that of the world system» *(23).* It is hardly surprising, then, that discussions over politics and the state in backward capitalism has been carried out largely at the level of the *superstructure alone,* a procedure MARX abandoned early in his career. Whenever, too, the economic «base» is referred to it is usually market relations which are described and the production process merely assumed. Hence the conclusion that inequality is not so much a relation between classes in specific social formations as a relation between nations. AMIN puts it thus :

> – Since the relations between the centre and the periphery of the system are relations of domination... should not the world system be analysed in terms of bourgeois nations and proletarian nations, to use expressions that have become common? *(24)*

AN ALTERNATIVE APPROACH

The aim has not been to deny that states in advanced and backward capitalist formations do not differ in important ways. Nor has it been the aim to deny that market relations are important. The very fact that the contemporary capitalist world is described as partly «advanced» and partly «backward» – meaning the full and complete establishment of the capitalist mode of production as evidenced by the existence of free labour and the production of relative surplus-value on the one hand, and on the other, the *partial* establishment of the capitalist mode of production and the widespread existence of commodity production on the technical basis of pre-capitalist modes of production – suggests that there must be some considerable differences between the latter and the former. The argument here takes cogniscence of this but stresses that the differences do not amount to qualitative differences which consequently present problems for marxist political theory that are essentially different from those presented by the capitalist state as such. It is important, therefore, that the «problem» of the state in backward capitalism be reformulated and in attempting a tentative, preliminary effort here it may be important to first indicate some differences that exist between «advanced» and «backward» capitalist state-forms.

In the first place, there is perhaps a higher degree of visibility of state actions, etc., in backward capitalist formations than in advanced ones. The reasons for this may be multiple: the absence of institutions appropriate to contemporary requirements of «developing» economies, the subordinate place of these countries in the international division of labour, the pressures placed on the state as a result of nationalist promises, etc. In short, these factors often place the state in backward capitalism in a position where it is seen as the only point where important decisions may be taken. For example, it is noticeable that in countries where the economy is based almost entirely on a single commodity, any downward trend in the world market has an immediate effect on state action because social and political as well as economic considerations are involved. Whereas there are various layers in developed capitalism which may cushion the ill effects of a crisis (such as starvation) in the backward capitalist world this is the exception.

A second example of the differences between the state in advanced and backward capitalism is the degree to which the state in the latter case is called upon to either create new institutions or utilize existing ones in novel ways. The political party, for instance has been used not only as an ideological institution (reproducing the necessary legitimacy of a regime, aggregating demands, etc.) but also as a coercive institution (implementing government policies, policing the workplace, etc.), in some backward capitalist formations *(25)*. In other places the state has found it necessary to participate in the production of an ideology appropriate to rapid accumulation – such has been the case in parts of Africa since political independence in the 1960s *(26)*.

In these situations, however, the degree to which the state may be visible or may be called upon to create new institutions, etc., depends on the degree of class development (as may be evidenced by the structure arising out of the differentiation between owners of labour-power and owners of means of production) and the intensity of class consciousness (as may be evidenced by the quality as well as the presence of workers' organizations, etc.). This makes it difficult, if not foolish, to speak of the whole of the backward capitalist world as if it is a homogenous unified whole. Differences between countries in Asia, Africa and the Americas may often «disappear» in the ideology of «third worldism»; but these differences stand out in the conflicting policies they follow because these policies reflect interests of classes located within the confines of nation-states. This in itself acts to strengthen and intensify nationalism – yet another difference in terms of degree between advanced and backward capitalist state behaviour – which, although partly the inheritance of colonialism, is closely intertwined with class structure and perceptions in specific formations.

There are, therefore, some differences of a secondary nature between the state in the two types of capitalist formations, particularly as relate to functions. We do not however say that because the functions of the liberal-democratic and the social-democratic state-forms are different that one is capitalist and the other not. Furthermore, there was also a difference in the original necessity of *some* states in backward capitalism and the advanced capitalist state but the origins of the former in some cases out of the imperialist factor does not mean that the international market constitutes the only necessity for contemporary states in conditions of backwardness. The development of social classes and the coming of political independence marked «real» development in the sense that the necessity of the state came to be situated within specific formations themselves.

As has been indicated earlier, the necessity of the capitalist state lies not only in the sphere of circulation (see HOLLOWAY and PICCIOTTO) *(27)* nor only in the productive process (see POULANTZAS) *(28)* but in the *general* contradictions that obtains in the capitalist mode of production and capitalist society. Thus, the contradictions that arose in the productive process itself between capital and labour over surplus-value resulted in the state's intervention in that sphere. Admittedly, during the laissez-faire phase of capitalist production the state attempted to resolve or manage these contradictions at the level of the market, that is, the conflict between the two parties was tackled in legislation as if it were a problem emanating from the contract between buyer and seller, not as a conflict arising from the fundamental distinction between owners of the means of production and owners of nothing save labour-power; again, refusing to recognize that the money-relation between the two parties is in fact a capital-relation.

Given the establishment not only of capitalist exchange but also of commodity production on a large scale in the formations described as «backward» but also «capitalist» and that with class development and political independence, classes stand to a significant extent, in relation to each other as owners of means of production and owners of labour-power, then the necessity of the state-forms that obtain are to be sought, as in advanced

capitalism, not only at the dimension of circulation, but also in that of production. What is involved here is not whether production is taking place in terms of absolute or relative surplus-value – important as this point obviously is – but whether, given that capitalist exploitation exists, it can still be found only in the sphere of circulation, that is the world capitalist market. The answer to this determines whether analysts of developments in most Third World countries concentrate on market relations as distinct from relations of production. The answer determines too whether the analysts looks at internal class developments and struggles and the question of accumulation in terms of the nation state.

With these remarks it may be worthwhile to give a concrete example so as to illustrate the main gist of the argument. The example offered is that of developments in Jamaïca – as an example in some senses of a typical Third World state, etc., – where the state-forms that there have been are less ably explained in terms of «post-colonial», «peripheral», etc., and should be in terms of phases of capital accumulation, class development and struggle.

AN EXAMPLE: THE STATE IN JAMAICA

The progressive reforms of the social-democratic People's National Party, which came to office under Muchael MANLEY's leadership in 1972, have placed Jamaïca on the political map again after ten years of post-colonial development which drew little outside comment largely because, like most of her neighbours, Jamaïca has long been a very safe place for international capital. Indeed, the continued inflow of foreign capital into the Jamaïcan economy after political independence was dependent not only upon the stability and credibility of the state but largely upon the fact that it did not intervene directly in the social and economic arrangements of the country. This important fact which distinguishes «post-colonial» states of this type from those which have been patently interventionist can best be explained within the context of the specificities of Jamaïca's history, particularly from the 1880s, rather than simply restricting analysis to her relations with the world market.

In the first place, if the post-colonial state model is assumed, there has been a condition of what POULANTZAS has called «non-correspondence» between the state in post-colonial Jamaïca and the economy. Whereas in most states in backward capitalism a repture, or break, however minimal, is noticeable at political independence, in the Jamaïcan case, there is no evidence of such a rupture other than the formal legal status of political independence. In other words, continuity in the form of state that had long existed in the country was maintained. This situation has been explained in terms of the lack of a pre-colonial past to which politicians could look for alternative patterns of political organizations and legitimacy, but this argument is not convincing *(29)*. The correct answer to this must rather be sought in the context of class contradictions and the ways in which these expressed themselves at the level of the political organization. In general terms, it may be said that as the Crown Colony system –established in 1866 as a result of abolishing the free Assembly–was steadily liberalized from the 1880s

so as to allow greater representation by the propertied classes, the jurdico-political ideology of liberalism also began to take hold in both the dominant and the dominated classes in the formation. From 1944, when universal manhood suffrage and the two party system were firmly established alongside the well organized and disciplined unions, Jamaïca has had what Apter would call a pragmatic, turn-over and «non-ideological» political system. It has been able to absorb and channel whilst controlling protest and discontent and to pre-empt much of the country's radical elements by incorporating parts of their programmes into those of the parties.

But the development of such a political order in Jamaïca finds its basis in the development of a national bourgeoisie competent and confident in establishing its hegemony over the productive classes – albeit, with the support of a willing imperial Britain. This social process is well documented in various ways from its early antecedents in the slavery period (when the land was almost totally monopolized and the concentration of slave-ownership was the greatest in the Americas) to the present in which a sizeable proletariat, proletarianized peasantry, a petite-bourgeoisie and a national bourgeoisie can be said to have taken definite shape and form *(30)*. The period from the 1880s to the 1930s (a period which deserves much more attention than it has received) the bourgeoisie established itself as a distinct class on a national scale over the productive classes. Savings from the professions, government services and trade provided the means whereby the antecedents of this class came to own land at a time when banana was highly profitable *(31)*. As a result of the First World War the cane-sugar industry received a revival in the Caribbean and the long abandoned estates which could not compete against mechanized beet-sugar production in Europe, came back into production, many in the hands of new owners *(32)*. The presence of foreign capital in the economy before the 1950s was therefore limited, but with the development of the bauxite industry, with its sophisticated technology, and the tourist trade from these years, foreign capital has become an increasingly important factor. The rapid increase in government spending after the last War also motored this development *(33)*.

The period of liberalization of the state coincided, not accidentally, with the emergence and consolidation of the national bourgeoisie and, not surprisingly, a political faction emerged which was drawn in the main from the professions rather than from the capitalist elements themselves *(34)*. The colonial state-form that existed was steadily changed so as to provide a juridico-political framework appropriate to the development of this class. This process was accompanied by state encouragement of a frugal yeoman peasantry *(35)*. To this end primary education was entirely at the state's expense from 1892 and impressive quotas were awarded to secondary school whilst for a number of years a university college was opened and functioned. Education, it was argued, should be made relevant: the teaching of the three Rs was to be accompanied by instructions in agriculture, domestic science' etc.., in the belief that education was the crucial stimulas for economic and other developments. The activities of the state in this area stimulated the formation of the oldest teachers' organization in the region – the Jamaïca Union of Teachers, founded in 1894 – to oppose

much of the states's educational policies and to champion their own particularistic interests *(36)*. The state itself directly encouraged the formation of associational groups, the most notable being the Jamaïca Agricultural Society in 1895, in an attempt to improve the agricultural knowledge of small farmers *(37)*.

Between 1962–1972 the Jamaïcan post-colonial state continued to function in much the same way as the colonial state had done, that is, providing a secure and acceptable framework for capital accumulation and to keep clear of the directly productive sectors of the economy. In the decades of the 1940s–50s the PNP, under the influence of the radical left *(38)*, declared itself a «socialist» party dedicated to what it understood as a «mixed economy». No sooner it came to power, however, in 1955 and the PNP, now rid of its left element, made clear its intention to do everything in its power to ensure the smooth running of the economy on the same lines as before – but with greater efficiency. This new note of efficiency involved Premier Norman MANLEY, going out of his way to invite foreign capital into the country on an entirely laissez-faire basis. Thus, by the 1960s both political parties (the PNP and the Jamaïca Labour Party, JLP) had come to agree that the role of government was to provide safe political support for both local and foreign investments and accumulation. Consequently, only style and voice, organizational features and audience distinguished the parties before the resurgence of radical social-democracy under the leadership of Michael MANLEY in 1972.

The state provided the necessary framework for accumulation not only by maintaining the excepted jurdico-political framework but also by active encouragement to investors and providing the necessary infrastructure. Immediately after World War II the state sought to encourage both foreign and local capital to invest in non-agricultural production. For example, from 1947 a number of specific incentive laws were enacted covering textile, cement and various other manufacturing industries. The incentives were of course low taxation and guarantees that the Government would never set obstacles in the way of investors. The Export Industries (Encouragement) Law, 1956, assured investors that the Government would not stop such industries as would be established under the statute from applying capital intensive techniques even though the unemployment rate was well above 25 % at the time and opposition from some quarters could be expected *(39)*. Although there was little need to encourage investment in the bauxite industry (by Kaiser, Reynolds, Alcoa, Alcan) nonetheless the Government passed the 1950 Bauxite and Alumina (Encouragement) Law giving added incentives. These of course were added factors in the preference of Jamaïcan bauxite mines as compared to those of British Guiana (now Guyana) where the «communists» were seen as posing a serious threat. Risk-taking was minimized with state assistance and the state made no overture to enter the productive sector itself.

In the post-war years, Girvan has noted, two important factors stand out in the economic development of Jamaïca: the dominant role that bauxite has come to play and with this the concomittant dominant role of foreign capital in the economy, and, second, the rapid growth in government expenditure, especially between 1953–1966. The rate of governement investment, however, for this period grew from 1 % to 2 % only.

Both GIRVAN and JEFFERSON have shown that the considerable growth in state spending went into providing roads, improving education, building bridges, etc.. For example, the 1963 (Independence) Five Year Plan, drawn up by the present Leader of the Opposition who was then Minister of Development Planning in the Labour Government of Sir Alexander BUSTAMANTE, conceived of government spending in terms of stimulating the economy in a «Keynesian» fashion; the Plan was to «provide employment opportunities and boost consumer demand as a stimulus for increased output» *(40)*.

The success of this form of state in Jamaïca depended also on the favourable growth of the economy. For example, the real growth in per capita income was 4.3 % per annum for the period 1950–68 and whilst foreign capital was pouring into the economy over this period for most of it much of the surplus labour was leaving the country for the UK, Canada and the USA. Towards the end of the 1960s, however, the growth rate decreased – from 1950–60 it was 5.4 % whilst by 1968 it had fallen to 2.9 % – and emigration, particularly to the UK, came to a near stop. The effects of such developments began to tell first in Kingston, where the population grew from 203,000 in 1960 to 376,000 in 1970 and where the crime rate took a sudden upward turn accompanied with political gang warfare.

A second important factor which distinguished the state in Jamaïca in the immediate post-colonial period was the absence of economic and political nationalism, particularly in the forms that nationalism have been expressed in Asia and Africa. In an interestingly written piece Louis LINDSAY has argued that the «period of transition from colonial status to formal independence generated nothing which can properly be labelled as a nationalist movement» *(41)*. The gist of the point is correct, viz, that the so-called «nationalist» period of Jamaïcan history, 1938–62, cannot be described by its «nationalist» fervour because this was almost totally lacking. The PNP was called a «national» party because after some debate the leaders and founders did not wish to give the impression that the new party represented any particularistic interest; most certainly it was not meant to convey any sense of «nationalist» or «nationalism» *(42)*. The JLP founder and leader for many years, the late Sir Alexander BUSTAMANTE, for a long time had no interest in political independence for Jamaïca because, as he told his followers this would mean «brown man's rule» over the black majority of the population *(43)*. LINDSAY presents this situation as if there is something wrong with it (no doubt because he himself represents the new Jamaïcan nationalism) but the absence of nationalism in the country cannot be looked at in this purely ideological manner if we are to appreciate why this has been so.

The absence of nationalism may well be expected given the lack of conflict between national and international capital. The bourgeoisie did not see the state as an instrument to assist it directly in the accumulation of capital (as has been the case in most African post-colonial states) because this class had already developed sufficiently to take care of itself and to establish its own links with foreign capital. The areas that national and international capitals operated in within the country were different: bauxites,

insurance, telecommunications, tourism, urban transport have been areas in which foreign capital dominated; commerce, agriculture, manufacture, rural transport, etc.., have been the areas of concentration for national capital. In the areas that foreign capital dominated, KIRTON has noted that majority representation has long been accorded to national capitalist (for example, the banks) by virtue of their being capitalists rather than to satisfy any nationalist urge. The fact therefore that local and foreign capitals have not been engaged in open competition may no doubt account for the lack of conflict between them and hence the lack of political nationalism in the «nationalist» period and the first decade of political independence.

These features of the Jamaïcan state have been giving way to regular features of the interventionist state-forms which have become commonplace in both developed and backward social formations since the last War. Given the present condition of work on the developments taking place in Jamaïca it is not possible to unambigeously identify the cause underlying this shift in state-forms. The international capitalist crisis which has been partly responsible for effecting a radicalization of the foreign policies of many Third World countries (including Jamaïca's) and the desire of the more successful elements of the Jamaïcan capitalist class to enter areas of the economy previously dominated by foreign capital will, however, feature prominently in any eventual comprehensive evaluation of the situation. The rising costs of production in the sugar industry has made it difficult for it to compete on the world market and the fall in sugar price and the Sterling have deepended the crisis for the industry. Consequently, the sugar interests in the country have found it necessary to appeal to the state not only to negotiate a more stable arrangement for their products but also to facilitate financial assistance *(44)*. It would appear too that the presence of foreign capital, particularly in the very favourable conditions under which it operates, places some obstacles to the further development of the Jamaïcan bourgeoisie at this point *(45)*. The option of pulling out and investing elsewhere which is opened to international capital is not such an attractive alternative for the more successful elements of the Jamaïcan bourgeoisie (those in construction, manufacture, etc., as against those in agriculture) given its size, capability, etc., as HARRIS has pointed out. The areas available inside the country for expansion are therefore of crucial importance as reflected in the growing corporate concentration of capital that REID has noted *(46)*, and must be fought over.. But since foreign capital is likely to carry the day, given the present rules of competition and the total distribution of power national capital must call upon the state for its active support. Although the appeal to nationalism has a much wider social basis it is nonetheless its utility against foreign capital that gives it its present status.

In addition, these developments are being influenced by (and in turn influencing) the development of working-class consciousness and militancy. New demands are being made for the reallocation of lands in the countryside by a largely agro-proletariat *(47)*. In a recent World Bank report on the Caribbean by two of its «experts» it is the fact that workers are able to force the state to take certain progressive measures that is seen as being responsible for the current slow rate of capital accumulation in the

area *(48)*. The recommendation of the «experts», like those of the think-tank of the Trilateral Commission *(49)*, involves a cut-back on democratic practice which entails greater state expenditure on social reforms.

The present conjuncture created by the social contradictions in the formation established new conditions for the Jamaïcan state to grapple with in its attempt to maintain the social order. The new state-form that is emerging is one that is more capable of responding to the *varying* and *conflicting* demands of capital, on the one hand, and on the other, those of labour. In this situation the relative autonomy of the state is enhanced but this autonomy is not distinct from that enjoyed by the state in advanced capitalism. In an essay of this kind it is not possible to treat the various factors which would show the nature of the shift from a liberal-democratic to a social-democratic state-form in Jamaïca; it will therefore suffice to mention briefly some of the more important reforms introduced by the PNP Government since 1974 as an indication of this shift.

SOME ASPECTS OF THE MANLEY REFORMS

First, these reforms have gone a long way in rationalizing the terms that govern the relations between employer and employee. For example, equal pay for men and women has been established by legislation; employers are now obliged to pay redundancy wages to workers based on the length of service; agricultural workers must now be paid on a three-day basis during the non-reaping season. The controversal Labour Relations and Industrial Disputes Act, 1974, (based on the notorious 1972 Tory Industrial Relations Act in the United Kingdom) made it necessary for them to be a given period of notice before strikes can be called by unions whilst at the same time it has established that recognition of unions is obligatory on the part of employer. In the same year a national minimum wage was established for the first time throughout the country (at J 20.00 dollars per week for a forty-four hours week). These laws attempted to systematize practices that had been present over a long period but lacked legal uniformity. Hitherto the employer and the employee were left almost entirely to set the terms of employment without interferance by the state and this, naturally, gave way to considerable disparity throughout industry and agriculture – for example, there were still pockets of labour not unionized even although trade unionism made its first aggressive appearance in the country in the 1890s *(50)*. AKIN to these reforms has been the Government's attempt to promote (along with the more progressive elements of national capital) workers' participation so as to boost productivity and also to minimize conflict at the workplace.

Second, these reforms reveal a concern to promote economic nationalism which has been absent from state policy. This has had a two-fold expression: first there are the measures that have been taken to give the state some degree of control over foreign capital operating in the country. For example, whereas the US and Canadian firms involved in the bauxite industries owned between themselves over 200,000 acres (or 7 % of the country) on a freehold basis, the Government has affected measures so that

now the state owns the land and rents it back to the companies for definite periods. This does not, however, amount to the nationalization that many nationalists demanded. For instance, 15,000 acres of these lands are still in the hands of the companies because these acreages «contain the plants and buildings, roads, railways and ports; that is, land which is integral to the mining and processing operations» *(51)*. The state now owns, however, the usual 51 % of mining operations and has options to purchase shares in any aspect of any processing plant whilst the companies are guaranted forty years' supply of the ore.

The new economic nationalism is marked, secondly, by the outright nationalization of some important industries or the purchase of majority shares by the state. These have taken place in fields where foreign capital operated independently or had a clear dominance over national capitalist interests. Thus, for example, some banks (for instance, Barclays) have been taken over by the state; the radio, telephone and urban transport (of Kingston) which were all dominated by foreign capital have been nationalized. The setting-up of the State Trading Corporation to act as importing house for a number of crucial imports (for instance, chemicals and some foodstuff) has also affected some national capitalists. The state, however, has tended to leave national capital generally alone or to assist it as much as possible to ensure, as MANLEY has made clear, that there must be «a visible local presence in all major undertakings» *(52)* if national sovereignty is to have a meaning at all.

This form of nationalism does not infact challenge the presence of foreign capital. Indeed, as MANLEY has repeatedly stressed, there is ready recognition that there is an important place in the economy for foreign capital, particularly in the bauxite and alumina industries where advanced technology and capital intensive techniques are necessary – and the former is still beyond the capability of national capital and no doubt will be for some time until the new Bauxite Institute begins to have some effects on bauxite technology. MANLEY, therefore, envisages that his Government will continue to use «judicious... control mechanisms» in dealing with foreign capital because in «this way one can secure policies that are broadly consistent with national objectives» *(53)*.

This economic nationalism that the state now champions received its clearest formulation by Jamaïcan radicals in the early 1970s and is, therefore, not entirely new in Jamaïca. What is new is that it is now coinciding with the interests of one or more fractions of the bourgeoisie and it has become the main thrust of state policy. For much of the 1970s Jamaïcan radicals have been concerned with the question of foreign control of some major areas of the economy. This position is to be found chiefly in the works of GIRVAN and JEFFERSON who have variously argued that national capital ought to be protected by the state and be assisted positively to move into areas that foreign capital has been controlling. In GIRVAN's view foreign capital should be «a complement to structural change» *(54)*. For others, such as LINDSAY and BACKFORD, the crucial question has been the need to «mobilize» the people and to arrive at an ideology that will guide towards the eradication of persistent poverty *(55)*.

For MANLEY, who has always been quite frank about the aims of his Government, the political ideology necessary to speed Jamaïca on the road towards development is «democratic-socialism». This involves a rejection of the «capitalist model of socio-economic and political organization» and establishing a «mixed» economy which is committed «to the view that there is a clear and honourable role for the responsible businessman working in partnership with the public sector of the economy» *(56)*. The contradictions evident in these aspirations are, of course, not unusual for a social-democratic leader. The important point is that under the banner of socialism the PNP Government is leading the Jamaïcan state in its transformation from a liberal-democratic to a social-democratic form, which has become common in capitalist – developed as well as in some backward formations, particularly in West Europe.

The purpose of this example of changing state forms in Jamaïca is not merely to prove empirically – by showing an exception to a general rule as in a logical argument – that the formulation of the question of the state in backward capitalist formations is false. The case has already been argued theoretically and the Jamaïcan case is offered so as to substantiate the suggestion that class development and struggle as a result of capitalist exploitation and accumulation constitute the primary elements for marxist analysis of politics in backward as well as in advanced capitalism. This does not deny the importance of the sphere of circulation, the market-place, but it does attempt to place the emphasis at the level of production and hence exploitation, or the «capital-relation» as opposed to the purely «money-relation».

CONCLUSION

The general view throughout has been that the discussion around the state in backward capitalist social formations is limited and limiting because it seeks to establish a number of false dichotomies – between «capitalist» and «post-colonial» «peripheral», etc., states; between the unproblematic capitalist state/marxist political theory and the problematic nature of the state in backward capitalism. In so doing, the various trends of the discussion serve to highlight certain exaggerated features of *some* states in backward capitalism; undoubtedly, the discussion elucidates aspects of the state's limitations vis-a-vis international capital, although, of course, these limitations of the nation-state are not exclusive to states in conditions of backward capitalism. Locked as the discussion is into the more general theoretical structure of the underdevelopment/dependency school, recognition of the importance of classes and class struggles in these societies are at most formal because MARX's concept of exploitation, derived from an analysis of the process of production, is transformed into a «principal» contradiction between nations. The necessity for the present state forms that obtain in the backward capitalist formations is lost in a general discussion of the market on a world scale. Developments are seen as being entirely extraneous to national contexts. Quite clearly, an adequate understanding of the state-forms that obtain in these formations necessitates the breaking-down of misleading dichotomies and perception of capitalist formations – developed or otherwise – in terms of phases of capital accumulation and

possible corresponding state-forms that may emerge. One of the first steps in this direction involves the «disengagement» from theories that concentrate on exchange of commodities rather than on the process of the production of commodities prevalent in particular societies.

FOOTNOTES

1. Hamza Alavi, «The State in Post-Colonial Societies: Pakistan and Bangladesh», *New Left Review*, No. 74, July/August, 1972, P. 61.
2. *Ibid.*, P. 60.
3. *Ibid.*, P. 61.
4. *Ibid.*, P. 59.
5. John Saul, «The State in Post-Colonial Specities: Tanzania», R. Miliband & J. Savage, (eds.), *The Socialist Register 1974*, (London: Merlin Press, 1974).
6. A. Hein & W. Stenzel, «The Capitalist State & Underdevelopment in Latin America: The Case of Venezuela», *Kapitalistate*, 2/1973.
7. A. Mafeje, Science, *Ideology and Development: Three Essays on Development Theory*, (Uppsala: The Scandanavian Institute of African Studies, 1978), particularly chapter 2.
8. Clive Thomas, «Class Struggle, Social Development and the Theory of the Non-Capitalist Path», M. Palmberg, (de.), *Problems of Socialist Orientation in Africa*, (Uppsala; The Scandanavian Institute of African Studies, 1978).
9. See, for example, Thomas, *Ibid.*, pp. 22–3; also, S. Amin *Un-Equal Development: An Essay on the Social Formations of Peripheral Capitalism*, (Sussex: The Harvester Press, 1976), especially pp. 343–50, and, S. Langdon, «The State and Capitalism in Kenya», *Review of African Political Economy*, No. 8, January/April, 1977.
10. Notably, Issa G. Shivji, *Class Struggles in Tanzania*, (Dar-es-Salaam: Tanzania Publishing House, 1975), and, C. Leys, *Underdevelopment in Kenya: The Political Economy of Neo-Colonialism, 1964–1971*, (London: Heinemann, 1975), Chapter 7.
11. C. Leys, «The Overdeveloped» Post-Colonial State: A. Re-evaluation», *Review of African Political Economy*, No. 5, 1976; see also, M. Von Freyhold, «The Post-Colonial State and its Tanzanian Version», *Ibid.*, No. 8, 1977.
12. Sherry Girling, «Comments on Hamza Alavi», *Kapitalistate*, 2/1973, pp. 49–51, offers some useful comments although the piece has its own problems.
13. K. Marx, *Capital*, (Moscow: Progress Publishers, 1974), Vol. 1, P. 292.
14. A. Cournanel, «Ideologie et Developpement en Guinée», *Africa Development*, Vol. ii, No. i, 1977, pp. 63–88, Cournanel, however, does not place his work within the underdevelopment framework.
15. Mafeje, *op. cit.*, ch. 2; Thomas, in Palmberg, *op. cit.*
16. Hein & Stenzel, *op. cit.*, p. 40.
17. See for example, G. Arrigh & J. Saul, «Socialism & Economic Development in Tropical Africa», *Journal of Modern African Studies*, 6 (2), 1968; also, A. Peace, «The Lagos Proletariat: Labour Aristocrats or Populist Militants?», R. Sandbrook & Cohen, (eds.), *The Development of an African Working Class: Studies in Class Formation and Action*, (London: Longman Group Ltd., 1975), for a critique of the labour aristocracy thesis and J.S. Saul's reply, «The Labour Aristocracy' Thesis Reconsidered», *Ibid.*

18. See, for example, the literature on the «internationalization of capital» and the «world market», C. von Braunmuhl, «On the Analysis of the Bourgeois Nation State within the World Market Context: An attempt to develop a Methodological and Theoretical Approach», John Holloway & Sol Picciotto, (eds.), *State and Capital: A Marxist Debate.* (London: Edward Arnold, 1977); also, N. Poulantzas, «The Internationalization of Capital and the Nation State», in his, *Classes in Contemporary Capitalism,* (London: New Left Books, 1975.
19. Marx expressed the point thus:
In the form of society now under consideration (capitalist society) the behaviour of men in the social process of production is purely atomic. Hence their relations to each other in production assume a material character independent of their control and conscious individual action. These facts manifest themselves at first by products as a general rule taking the form of commodities. K. Marx, *op.cit.*, p.96.
20. *Ibid.*, chapters 7, 8 & 9.
21. See, R. Brenner, «The Origins of Capitalist Development: A critique of Neo-Smithian Marxism», *New Left Review,* 104, July/August, 1977; also the earlier major critique of A. G. Frank by E. Laclau, «Feudalism and Capitalism in Latin America, «*New Left Review,* 67, May/June, 1971 and the rather terse treatment by Ben Fine, «On the Origins of Capitalist Development», *New Left Review,* 109, May/June, 1978. In addition, Ann Phillips, «The Concept of Development» and P. Kennedy, «Indigenous Capitalism in Ghana», both in, *Review of African Political Economy,* 8, January–April, 1977, are important contributions. H. Bernstein «Sociology of Underdevelopment versus Sociology of Development», Bernstein et al, *Development Theory: Three Critical Essays,* (London: Routledge & Kegan Paul, forthcoming) is also rewarding reading whilst H. Goulbourne, «Some Problems of Analysis of the Political in Backward Capitalist Formations», Goulbourne, (ed.), *Politics and State in the Third World.* (London: Macmillan, 1979), seeks to apply the emerging mode of analysis to politics.
22. See for example, M. Mamdani, *Politics and Class Formation in Uganda,* (London: Heinemann, 1976), Introduction; also, E.A. Brett, *Colonialism and Underdevelopment in East Africa: The Politics of Economic Change, 1919–1939,* (London: Heinemann, 1973), Conclusions.
23. See, S. Amin, *op. cit.*, pp. 358–9.
24. *Ibid.*
25. See, H. Goulbourne, «The Role of the Political Party in Tanzania since the Arusha Declaration, 1967», Goulbourne, *op. cit.*, also Cournanel, *op. cit.*
26. H. Goulbourne, «Some Aspects of Ideological Functions in the Development of the Post-Colonial State in Tanzania», *Africa Development,* Vol. iii, No. ii, 1978. In *Capital* Marx went to some length in making the point – a point inadequately made in my article just referred to – that capitalist ideology is both produced and reproduced at the level of production itself. Sometimes, however, there is the appearance that these functions are restricted to the «superstructure», the formal world of ideas, which gives support to the socio-economic base. There can be little doubt that in advanced capitalism this is the case generally. In the context of backward capitalism, however, I believe that it is possible, due precisely to the backwardness that exists and the need to develop the productive forces rapidly, the state may be called upon to assist indirectly in the production and reproduction of ideology appropriate to the present phase of accumulation.
27. J. Holloway & S. Picciotto, «Capital, Crisis and the State», *Capital & Class,* 2, 1977; also their «Introduction: Towards a Materialist Theory of the State», *State and Capital.*
28. N. Poulantzas, *Political Power and Social Classes,* (London: New Left Books, 1975), pp. 123–141.

29. See for example, T. Munroe, *The politics of Constitutional Decolonization: Jamaïca 1944–62,* (Kingston: Institute of Social & Economic Research, 1972), pp. 175–8.
30. See, for example, D. Robotham, «Agrarian Relations in Jamaïca», C. Stone & A. Brown, (eds.) *Essays on Power and Change in Jamaïca,* (Kingston: Jamaïca Publishing House, 1977); also, W. K. Marshall, «Peasant Development in the West Indies since 1838», *Social & Economic Studies,* Vol. 17, No. 3, September, 1968.
31. See, Gisela Eisner, Jamaïca, 1830–1930: A Study in Economic Growth, (Manchester University Press, 1961), particularly, chapter 10, 12, 14 and 15.
32. Eisner, *op. cit.;* also, G.E. Cumper, «Population Movements in Jamaïca, 1830–1950», *Social and Economic Studies,* Vol. 5, No. 3, 1956; also, Stanley Reid, «An Introductory Approach to the concentration of Power in the Jamaïcan Corporate Economy and Notes on its Origins», Stone & Brown, *op. cit.*
33. See, C. Kirton, «A Preliminary Analysis of Imperialist Penetration and Control via the Foreign Debt: A Study of Jamaïca», Stone & Brown, *op. cit.*
34. Between 1844 and the First World War the elected members of the Legislative Council were nearly all from business and planter circles but the War had a profound effect on people's consciousness and the idea became widespread that there should be greater participation in the public life of the country, within the established framework – with the exception of Marcus Garvey who called for more drastic changes. As a result, the elections of 1919/20 saw the emergence in national politics of a number of professional men (lawyers, clergymen, etc.) and semi-professional men (particularly schoolteachers). See, J. Carnegie, *Some Aspects of Jamaïca's Politics, 1918–38* (Kingston: Institute of Jamaïca, Cultural Heritage Series, 1973).
35. A perusal of the daily papers in Jamaïca in the 1890s make this point abundantly clear; for example, *The Daily Gleaner,* and *The Colonial Standard & Colonial Dispatch.* (1892).
36. See, H. Goulbourne, «Teachers and Politics in Colonial Jamaïca: The formation of the Jamaïca Union of Teachers, 1894», *Caribbean Studies,* (forthcoming).
37. See for example, *The Journal of the Jamaïca Agricultural Society,* Vol. i, January, 1897; also, *Jamaïca Dispatches and Correspondence, 1894–1900,* Colonial Office 137, No. 560, Dispatch 234, letter from Sir Henry Blake, Governor, to the Secretary of State for the Colonies, dated, 3 July, 1895.
38. See, Richard Hart, *Forward to Freedom,* (Kingston: People's Educational Organization, 1952), also, Rex Nettleford, (ed.), *Manley and the New Jamaïca: Selected Speeches and Writings, 1938–1968,* (London: Longman Caribbean, 1971), particularly the extended introduction by Nettleford.
39. See, Owen Jefferson, *The Post-Car Economic Development of Jamaïca,* (Kingston: Institute of Social and Economic Research, 1972), chapter 5.
40. Norman Girvan, *Foreign Capital & Economic Underdevelopment in Jamaïca* (Kingston: Institute of Social & Economic Research, 1971), P. 131.
41. L. Lindsay, *The Myth of Independence: Middle Class Politics and Non-Mobilization in Jamaïca,* (Kingston: Institute of Social & Economic Research, Working Paper No. 6, 1975), p. 49.
42. The lack of nationalism goes a long way into the Jamaïcan past, for example, it was the free Assembly which asked the British Parliament to set up a Crown Colony in the country in 1866. In the new conditions of the immediate post World War I, EFL Wood, Under-Secretary of State for the Colonies, found, on his visit to Jamaïca to test political opinion, that the elected representatives, although highly critical of the Governor, was entirely unwilling to discuss ways of reforming the colonial political order. See, Hon.E.F.L. Wood, *Report on a Visit to the West Indies and British Guiana.* CMD. 1879 (London: HMSO, 1922).

43. See, Munroe, *op. cit.*
44. See for example, M. Manley, *National Self-Reliance, Phase 1,* (Kingston: Agency for Public Information, n.d., but this is the transcript of Government's economic policy outlined on 19 January, 1977), p. 2.
45. For an excellent discussion of this and related points see, D. Harris, «Notes on the Question of a National Minimum Wage», Stone & Brown, *op. cit.*
46. S. Reid, *op. cit.*
47. See, Robotham, *op. cit.;* also, R. Frucht, «Caribbean Social Type: Neither Peasant nor Proletarian», *Social & Economic Studies,* Vol. 16, No. 3, 1967.
48. A.A. Ayub & E.D. Cruikshank, «The Political Economy of the Caribbean», *Finance and Development,* Vol. 14, No. 4, December, 1977.
49. See, M.J. Crozier, S.P. Hantington and J. Watanuki, *The Crisis of Democracy: Report on the Governability of Democracies to the trilateral commission,* (New York: New York University Press, 1975).
50. See, G. Eaton, «Trade Union Development in Jamaïca», *Caribbean Quarterly,* Vol. 8, No. 1, 1962, and Vol. 8, No. 2, 1963; also, R. Hart, *The Origins and Development of the People of Jamaïca,* (Kingston: Trade Union Congress Education Department, 1952).
51. *Jamaïca and the Bauxite Companies: What the Agreements Mean,* (Kingston: Agency for Public Information in collaboration with the Jamaïca Bauxite Institute, nd.), p. 2.
52. Manley, *op. cit.,* p. 108.
53. *Ibid.*
54. Girvan, *op. cit.,* p. 265.
55. See, Lindsay, *op. cit.,* and G. Beckford, *Persistent Poverty: Underdevelopment in Plantation Economies of the Third World,* (New York: Oxford University Press, 1972), especially, p. 232; for a different view of from that of Lindsay's, see, T. Munroe, «The People's National Party, 1938–1944: A view of the Early Nationalist Movement in Jamaïca», unpublished Msc. Thesis, Department of Government, University of the West Indies, Mona, 1966; also, Munroe, *The Marxist Left in Jamaïca 1940–1950,* (Kingston: Institute of Social & Economic Research, Working Paper No. 15, 1977).
56. Manley, *op. cit.,* p. 4.

RESUME

Dans cet article, l'auteur étudie le problème de l'Etat dans les sociétés capitalistes sous-développées. Il rejette d'emblée l'argument facile qui soutient que le problème de l'Etat dans les pays capitalistes sous-développés est fondamentalement différent de celui de l'Etat dans les pays capitalistes développés. Pour l'auteur, l'Etat dans les pays capitalistes sous-développés n'est qu'une des formes de l'Etat capitaliste et que toute théorie de l'Etat dans ces conditions doit, pour être valable, pouvoir expliquer la théorie de l'Etat capitaliste en général. Il développe ses arguments dans deux grandes parties essentielles : une première partie théorie dans laquelle il fait d'abord une analyse globale du problème de l'Etat à l'époque post-coloniale pour ensuite étudier tour à tour les problèmes de la formulation, les rapports Class-Etat, la Centralité de l'Etat, les limites de la théorie du sous-développement et proposer une autre approche du problème. Dans la deuxième partie, il s'appuie sur le cas de la Jamaïque avec les réformes de MANLEY pour étayer les thèses qu'il vient de développer.

S'agissant du problème de l'Etat à l'époque post-coloniale, il fait remarquer qu'à la différence du problème de l'Etat dans les pays développés, l'Etat dans les pays sous-développés après la période coloniale n'est pas l'instrument d'une seule et unique classe mais de trois classes distinctes dont les intérêts bien que n'étant pas entièrement mutuels ne sont cependant pas fondamentalement antagonistes. L'auteur estime ensuite que dans la mesure où le problème de la reformulation des spécificités de l'Etat dans les pays sous-développés se pose, il convient d'accorder une attention particulière aux questions théoriques suivantes :

1. Les origines de ces Etats expliquent-elles nécessairement leur état actuel ?
2. La somme des différences dans les détails conduit-elle à une différence de qualité ?

Quant au rapport entre l'Etat et les Classes, il est marqué dans les pays capitalistes sous-développés par l'absence d'une classe dominante homogène, unique, nationale et indépendante, par la domination excessive de l'oligarchie militaire bureaucratique dans la société et par la faiblesse de toutes les classes sociales. Le rapport Etat/Classe dans les pays capitalistes sous-développés est rendu complexe par un ensemble de facteurs que l'auteur énumère dans son analyse. Il aborde ensuite le problème de la Centralité de l'Etat en faisant remarquer que la position ainsi occupée par l'Etat dans les pays capitalistes sous-développés tient moins à sa création après la période coloniale qu'à sa qualité d'Etat capitaliste qui a existé pendant la période de la phase de monopole du capital caractérisée par l'interventionisme de l'Etat. Dans la cinquième partie de son article, il introduit le débat sur les limites de la théorie du sous-développement, analysant et critiquant les différentes théories qui ont essayé d'expliquer le phénomène du sous-développement. Après avoir dégagé les différences fondamentales entre les caractéristiques de l'Etat dans les pays capitalistes développés et celles de l'Etat dans les pays capitalistes sous-développés et suggéré une autre approche théorique pour l'étude du problème de l'Etat dans les pays capitalistes sous-développés, l'auteur étudie le cas du développement de la Jamaïque et des réformes de MANLEY pour illustrer ses arguments.

LA PROBLEMATIQUE DE L'EAU EN MILIEU RURAL IVOIRIEN : ASPECTS METHODOLOGIQUES ET PEDAGOGIQUES *(1)*

Par

Kadja M. DANIEL *

I. – LES DONNEES PHYSIQUES DU PROBLEME

La Côte d'Ivoire se situe dans la partie méridionale de l'Afrique Occidentale. Son relief peu mouvementé facilite les échanges atmosphériques. On y rencontre au Sud-Ouest et au Sud-Est des zones recevant plus de 2000 mm/an de pluies, entre ces deux zones existe une région formant le climat baouléen qui connaît une pluviométrie de l'ordre de 1200 à 1600 mm/an. Seule la zone Nord et Nord-Est du pays est plus sèche avec un peu moins de 1000 mm/an.

Dans sa partie Sud, la Côte d'Ivoire est recouverte par une forêt dense, tandis que le Nord est caractérisé par une savane tantôt arborée, tantôt herbeuse. Entre la partie méridionale des lagunes et de la forêt dense, et le tiers septentrional du pays, s'étend une zone de transition forêt savane.

C'est la région des savanes du Nord qui constitue le réservoir d'eau de la Côte d'Ivoire, d'où partent trois grands fleuves qui l'arrosent : Sassandra, Bandama, Comoé ; il faut compléter ce tableau hydrographique en mentionnant d'autres cours non moins importants tels que le Cavally et les courtes rivières qui coulent vers le Nord et appartiennent au bassin du Niger et de la Volta noire.

Ce réseau hydrographique relativement important par rapport à l'étendue du territoire (322.000 km2) n'a pourtant pas permis jusqu'ici aux populations rurales de résoudre de façon adéquate, qualitativement et quantitativement, les problèmes quotidiens que pose l'approvisionnement en eau potable. Trois faits rendent compte de cette situation.

1.) Presque tous les villages et agglomérations rurales sont situés en retrait des grands cours d'eau ci-dessus identifiés.

2.) Il y a une inégale répartition des précipitations qu'accentue depuis environ six ans, une sécheresse persistante dans le centre et le nord.

3.) Enfin, l'inexistence au niveau de chaque communauté villageoise, d'une structure qui aurait pour but de résoudre collectivement le problème de l'eau potable.

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(1) *Cet article a déjà fait l'objet d'une communication au Ve Congrès Mondial de Sociologie Rurale tenue à Mexico en août 1980 sous le titre, la qualité de la vie et la problématique de l'eau en milieu rural ivoirien.*

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II. – LA PROBLEMATIQUE DU PROGRAMME-EAU

La Côte d'Ivoire est placée dans un contexte d'essai de développement, où du point de vue sociologique, l'adaptation et l'intégration des diverses catégories de populations à leur milieu social et naturel (ce qui suppose la maîtrise des facteurs sociologiques et écologiques) aux nouvelles structures de production, s'imposent comme une *exigence vitale* à la fois pour *l'équilibre social interne* de la société ivoirienne dans son ensemble et pour l'économie qui la supporte. L'alimentation en eau potable dont le projet a été arrêté par les pouvoirs publics, veut résoudre deux problèmes afin de faciliter cette intégration et cette adaptation des paysans dont il est question :

1.) Le manque d'eau à proximité des villages

2.) La contamination des points d'eau non aménagés source de nombreuses maladies hydriques qui immobilisent une importante partie des populations rurales. Sous son premier rapport (aspect quantitatif) le programme vise la création dans un premier temps de 7000 points d'eau entre 1974 et 1980.

Sous son second rapport (aspect qualitatif) il s'agit de rentabiliser au maximum des investissements en amenant les paysans à utiliser *effectivement* ces points d'eau équipés. Pour y parvenir, l'ONPR prend en charge l'éducation de la population rurale afin que celle-ci change les habitudes qui l'empêchent de «profiter pleinement des avantages de ces équipements».

A ce niveau de la problématique, le Programme-Eau comme tous les projets de développement, est une action qui prend pour cible le milieu rural avec un objectif précis : la restructuration et la modification de ce milieu, dans le sens visé par les leaders politico-administratifs et les technocrates.

En effet, qu'il s'agisse de la création de nouvelles activités de production ou de manière plus complexe, d'opérer une mutation dans le comportement des paysans, les projets de développement interviennent sur un milieu déjà structuré, ayant sa cohérence et sa dynamique propres. Tout le problème est de savoir dans quelle mesure la cohérence structurelle d'un projet de développement peut se substituer ou recouvrir celle du milieu rural choisi, et répondre ainsi aux objectifs définis par les planificateurs.

S'agissant du Programme-Eau, cette question de l'adéquation du projet aux structures sociales visées peut être exprimée à trois niveaux.

1.) En quoi ce Programme-Eau, au niveau pédagogique a-t-il débouché chez les paysans sur une prise de conscience du danger de l'eau polluée ?

2.) Dans quelle mesure le Programme-Eau a-t-il été intégré par les paysans à la dynamique de leurs structures sociales, et à leur vécu quotidien ?

3.) Troisième question liée aux deux précédentes, en quoi le Programme-Eau, au plan global, a-t-il contribué à la promotion du paysan ivoirien ?

On peut examiner à ces trois niveaux, au vue des résultats acquis, les implications sociologiques d'une telle opération en milieu rural.

III. - LA DEMARCHE METHODOLOGIQUE DU PROGRAMME-EAU ET SES IMPLICATIONS

Une Pédagogie Sectorielle

Dans ses objectifs, le Programme-Eau se saisit essentiellement comme une action sectorielle visant à procurer de l'eau potable aux villageois et à sensibiliser ceux-ci aux dangers de l'eau polluée. Pour y parvenir, parallèlement aux forages des puits, des équipes d'animateurs avaient été constituées pour effectuer un travail de sensibilisation auprès des paysans par deux types d'actions :

1.) Les séances d'éducation en matière d'hygiène ;

2.) La formation de comités de santé chargés de veiller à la propreté des puits. Sur le terrain le caractère sectoriel de l'opération va rencontrer deux contradictions majeures : l'attitude de dépassement des paysans, et le formalisme ou l'inertie des comités de santé.

L'Attitude de Dépassement

Face aux animateurs du Programme-Eau, les questions et les besoins qu'expriment les paysans dépassent largement l'action entreprise. En effet, les paysans posent des questions sur l'alphabétisation, le groupement coopératif, les rapports avec l'administration (carte d'identité, acte de naissance etc..., modalités d'obtention des puits selon les besoins du village etc...) maîtrise des techniques importées (comment réparer les pompes des puits). Face à ces demandes multiples la réponse ne peut et ne doit être que multiple. C'est que pour les paysans à travers ce Programme-Eau, se pose une *exigence de promotion rurale globale.* Mieux : pour eux, rien ne se coupe en «domaines». Sous ce rapport, la promotion rurale est la maîtrise, continuellement à reinventer par les groupes, des liens entre les différents aspects des divers changements.

Formalisme et Inertie des Comités de Santé

Du point de vue pratique, la présence d'un comité de santé au sein du village, traduit pour l'Animateur et l'ONPR *(2)* la concrétisation de la sensibilisation.

Dans les faits, le phénomène de l'eau et la sensibilisation entreprise par l'animation, n'ont pas entraîné un processus de dynamique sociale au sein des villages par l'auto-génération de comités d'organisation. En effet, les comités de santé ne sont pas des créations dont l'initiative revient aux villageois. Ils surviennent à la suite des propositions et des insistances des Animateurs. De là proviennent leur formalisme traduit en termes de Président, de Secrétaire etc... et leur inertie liée à leur caractère exogène par rapport aux structures sociales villageoises. Ce formalisme et cette incapacité

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(1) *ONPR : Office National de Promotion Rurale.*

à susciter un processus de changement indiquent le plus souvent, que les membres des comités de santé chargés de veiller à la propreté des points d'eau aménagés, n'ont en général aucun pouvoir dans les villages, et apparaissent plutôt souvent comme des éléments manipulables que la communauté villageoise pousse au devant des Animateurs.

Ce sont là des situations qui peuvent constituer des obstacles psycho-sociologiques majeurs au niveau d'une animation qui doit avoir pour objectif d'éveiller la conscience des villageois. Pour l'essentiel, cela signifie que l'hygiène en général et celle de l'eau en particulier ne sont pas perçues pour l'instant comme un *état quotidien,* permanent. Sous ce rapport, la référence à Dieu pour justifier toutes les pathologies, atteste d'une part que la liaison eau-maladie n'est pas encore faite, et d'autre part que les comités de santé n'ont pu déboucher sur une *mutation mentale et gestuelle.*

La Maîtrise Technologique «Confisquée»

La pédagogie sectorielle du Programme-Eau n'a pas défini la maîtrise par les villageois des problèmes technologiques liés aux puits et aux pompes, comme un des axes fondamentaux d'une animation libératrice. Ainsi par exemple, la première panne de la pompe du puits aurait pu constituer un bon prétexte pour former les paysans à démontrer, diagnostiquer et réparer la pompe , pour cotiser afin d'acheter les pièces de rechange nécessaires.

En fait, la logique d'une animation de promotion ne peut coïncider avec celles des entreprises chargées de la réalisation technique du projet. *La logique dominante de celle-ci est la productivité ;* accomplir leur contrat au coût de revient le moins élevé.

Les villageois eux sont d'une part médusés par les machines et leur efficacité et d'autre part étonnés des pannes successives. Ils sont en outre totalement impuissants, car ils ne connaissent rien à la pompe. Au demeurant, les paysans se voient contraints de vivre avec une technologie que seuls des personnages étrangers et inconnus possèdent.

L'opération Programme-Eau met donc en lumière *les contradictions aliénantes de la logique productiviste appliquée par des entreprises capitalistes à des villageois «bénéficiaires» mais sans capacité propre de contrôle.*

«Les Puits du Gouvernement»

Le mode d'intervention des organismes officiels et privés impliqués dans l'opération n'a pas fait des villageois les acteurs du Programme. Dans les faits, les puits et les forages sont exécutés sans consulter les villageois, ni sur le choix de l'emplacement, ni sur le jour d'arrivée des techniciens au village.

Enfin et surtout, la participation des villageois est niée par la gratuité des points d'eau aménagés. Cette *déresponsabilisation* des communautés rurales fait d'elles des assistés. Les puits, le forage, c'est l'affaire du Gouvernement. Si celui-ci a donné un ou deux puits il peut encore en donner trois ou quatre. Dans certains villages on va jusqu'à attendre que le Sous-Préfet donne l'ordre de puiser l'eau du puits qui vient d'être aménagé.

Cette brève évaluation des actions du Programme-Eau, de l'ONPR permet de réexaminer, à la lumière de ses insuffisances, les axes fondamentaux ou les implications qui doivent guider un projet de ce type.

IV. - DES AXES FONDAMENTAUX D'UNE ANIMATION LIBERATRICE ET D'UNE AUTO-PROMOTION

Le Programme-Eau de l'ONPR tel qu'il vient d'être présenté se devrait de mettre en œuvre une animation rurale dont les directions sont multiples. Il s'en faut que celles qui vont être examinées incessamment soient les seules ; mais elles nous semblent être les plus fondamentales et déterminantes en raison de leur caractère global et dialectique.

La Qualité de la Vie Rurale : Une Problématique Anti-Sectorielle

Le point d'eau aménagé ne saurait être la cible unique de l'animation. Si l'animation en matière de santé doit produire des résultats, c'est à coup sûr autour du puits pris comme *point d'ancrage* pour d'autres actions intégrées dans une *pédagogie globale*. Ainsi par exemple, la clôture du puits peut déboucher sur le parcage des animaux, qui à son tour doit conduire à une alimentation rationnelle du bétail faisant appel à l'utilisation des produits et déchets agricoles, pour aboutir à la rentabilisation du bétail par une définition de sa place et de son rôle dans la production économique des paysans.

En tout état de cause, il nous semble évident que l'amélioration de la qualité de la vie des paysans (axée ici autour du problème sanitaire posé par l'eau), passe par la résolution d'autres contradictions socio-économiques et socio-culturelles générées par l'état de sous-développement.

Ainsi, dans l'objectif d'amener les paysans à résoudre leurs problèmes de santé, il convient d'inclure les questions d'organisation du travail, d'apprentissage du contact avec les autorités politico-administratives, d'organisation de la commercialisation de leurs produits (l'acquisition et l'usage du filtre à eau ne peuvent être possible et effectif que si les paysans ont résolu certaines de leurs difficultés économiques). Sous tous ces rapports, et en raison des contraintes aigües du sous-développement que vivent les paysans, nous pouvons dire que l'éducation sanitaire doit être intégrée à une animation globale.

Partir des Structures d'Animation Villageoise

Il existe au sein des communautés villageoises de la Côte d'Ivoire, des *structures collectives* autour desquelles les populations organisent leur vie sociale de manière cohérente et autonome. Parmi ces structures autoanimées on peut citer : les communautés d'âge (classes d'âge, groupes d'âge) :

- les communautés généalogiques (lignages aux segments de lignage à dominance matrilinéaire ou patrilinéaire) ;
- les communautés résidentielles (quartiers, cours, concessions).

Au niveau de toutes ces structures, il existe une animation *primaire* dans *l'action.* C'est par cette animation primaire que les détenteurs du savoir et de l'autorité (guérisseurs, herboristes devins etc...), les maîtres d'initiation, les conteurs, les griots, les musiciens, mobilisent la communauté pour des actions culturelles, économiques et politiques déterminées.

Aujourd'hui, à travers des structures modernes qui dans la majorité des cas sont soit extérieures soit parallèles aux premières, des animateurs veulent mobiliser les mêmes populations à des fins politiques culturelles et économiques. Mais cette animation reste *sectorielle* et *ponctuelle,* et par conséquent incapable de mobiliser *l'ensemble* des populations de façon permanente pour plusieurs raisons :

1.- Les structures à travers lesquelles s'expriment cette animation sont *excentrées* ou parallèles par rapport à l'organisation villageoise.
2.- Ces structures sont conçues et proposées par des organismes officiels ou privés *exogènes* (par rapport aux structures villageoises).
3.- De manière générale le mode d'intervention de ces organismes relève de *l'assistanat* plutôt que de la *responsabilisation.*
4.- Les agents animateurs sont dans leur majorité des étrangers au village qu'ils animent.
5.- Qu'elles se nomment GVC (Groupement à Vocation Coopérative), Comité de Santé, SLD (Société Locale de Développement), la *maîtrise* des nouvelles structures n'est pas encore assurée par les communautés villageoises qui ne les intègrent pas dans leur système de *reproduction socio-économique.*

Toutes ces raisons qui engagent et maintiennent les communautés villageoises dans un processus d'exclusion et de marginalisation au niveau d'un développement auto-géré expliquent largement l'échec, les résistances et les lenteurs que rencontrent les actions éducatives et animatrices auprès des populations. Cette situation, en rapport avec les raisons présentées ci-dessus, invitent à faire les propositions suivantes dans le cadre des actions de l'ONPR :

1.- Il faut partir des *structures villageoises existantes ;* le principe qui anime cette proposition est que les structures villageoises, modernes ou traditionnelles, à partir desquelles l'action peut être engagée, doivent être des structures *auto-entretenues* ayant leur *dynamique propre.*
2.- Pour ce faire, il convient de recenser dans chaque cas, les structures internes existant dans chaque village, d'identifier et de comprendre les modes de mobilisation de ces structures.
3.- *Associer* les communautés villageoises aux prises de *décision,* à travers des *structures* de *concertation* à mettre en place après consultation des populations.

En somme la méthodologie d'un projet tel que le Programme-Eau, du point de vue de sa cohérence (interne et externe) suppose la prise en compte des structures des communautés rurales sans lesquelles un développement rural intégré en tant que tel ne peut se concevoir.

Auto-Promotion et Participation des Paysans

Les paysans sont l'épicentre de l'Afrique ; ils sont au cœur de l'Afrique, dont ils gouvernent, scandent et rythment les battements ; mais paradoxalement, ils sont les grands oubliés, les exploités et dominés de cette Afrique de fin de siècle entraînée dans un vaste mouvement d'échanges économiques internationaux inégaux et appauvrissants pour elle. Comment faire pour que les paysans ne soient plus ces damnés de la terre dont parlait Frantz FANON ? Il faut leur donner la *parole* et même le *pouvoir* par le biais de l'animation. Certes le paysan à son insu, est déjà programmé dans des plans quinquennaux de production que doivent soutenir des aides extérieures non moins programmées. Mais parler de l'auto-promotion autour d'un projet tel que celui du Programme-Eau en Côte d'Ivoire, c'est d'abord permettre aux paysans de parler pour exprimer leur besoin.

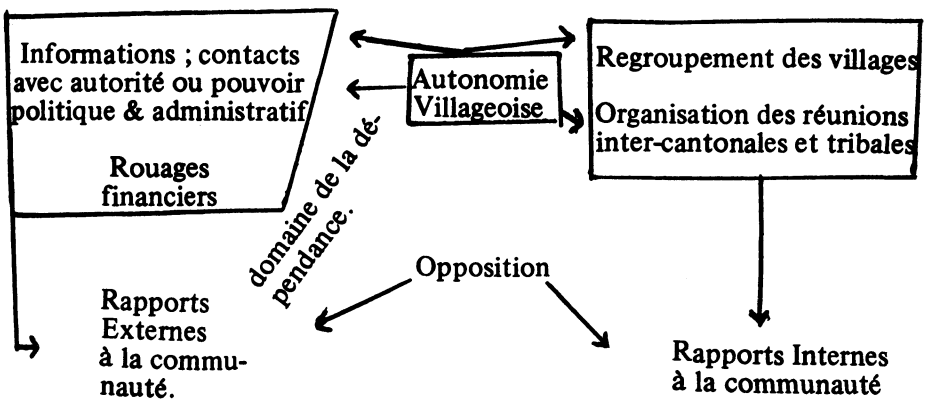
En effet c'est un acte éducatif que d'apprendre à exprimer des besoins, dans la mesure où tous les besoins ne sont ni ressentis, ni exprimés, ni explicites.

C'est ensuite donner aux paysans la capacité *d'identifier* le *lieu* ou les *personnes* à partir desquels s'élabore le discours sur les conditions et les orientations du développement.

Donner le *pouvoir* aux paysans ? C'est avant tout leur permettre de décider des actions qui sont liées à leur vie, et d'accéder à l'information. En effet, si la communauté villageoise doit prendre en charge son développement, il lui est nécessaire de connaître les multiples voies conduisant aux décisions administratives.

Dans l'ensemble, l'autonomie de la communauté villageoise reste encore grande lorsqu'il s'agit pour elle de se référer aux structures autochtones pour décider de certaines actions ; par contre cette autonomie reste quasi inexistante quand il faut entrer en relation avec l'extérieur. C'est cette situation que résume le shéma ci-dessus.

Schéma du Degré d'Autonomie



La problématique du *discours* et du *pouvoir* paysan, et la prise en compte des structures internes de la communauté villageoise pour une réelle auto-promotion des paysans nécessitent la pratique d'une animation «créatrice» dont l'axe principal doit être constitué par l'objectif suivant : l'éveil des consciences. Celui-ci suppose d'abord la connaissance des hommes qui composent le milieu ; cette connaissance ne saurait se situer dans le seul champ méthodologique *sujet-objet* mais dans celui plus dynamique de la concertation, de la réflexion collective et de la découverte mutuelle. Ici l'animateur, dans le cadre par exemple du Programme-Eau, doit jouer essentiellement un rôle de *décèlement* et de *médiation* dans le processus qui amenera la communauté villageoise à saisir toutes les implications des solutions que nécessitent les contradictions rencontrées. Deux schémas résument les situations que peuvent vivrent les paysans.

Schéma 1 : *Logique de l'Animation «Créatrice»*

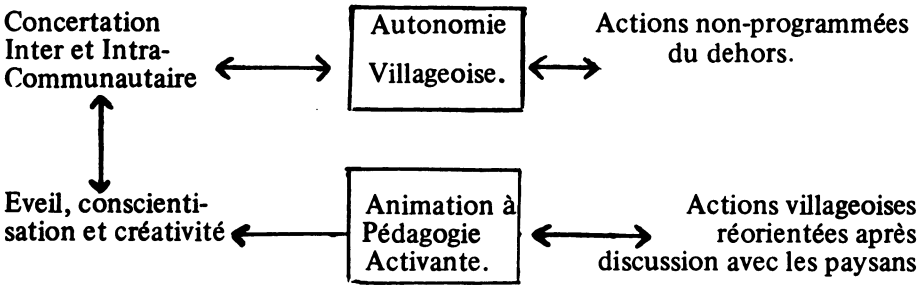
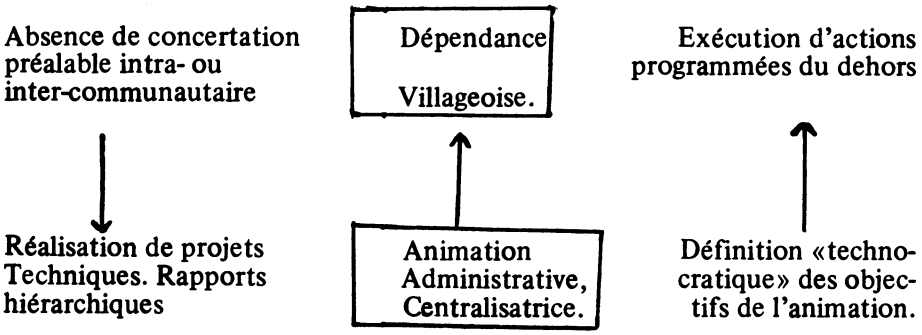


Schéma 2 : *Logique de l'Animation Bureaucratique*



Si dans le schéma 1 les flèches sont à double sens, indiquant par là le caractère *dialectique* du processus d'animation mis en place, dans le shéma 2, il n'en est pas de même où, à toutes les instances l'animation est à sens unique. Si un organisme d'état de promotion rurale (tel que l'ONPR) veut se valoriser aux yeux des paysans, c'est vers la cohérence du schéma 1 qu'il devra tendre.

Le pouvoir paysan entre souvent en contradiction avec le pouvoir de l'Etat. En effet le pouvoir paysan dont on parle tant s'arrête là où commence celui de l'Etat et de ses superstructures.

La self-reliance et l'amélioration de la qualité de la vie du monde rural (à travers un programme même aussi sectoriel que celui exposé ici), ne peuvent devenir effectives et efficaces, que si on prend en compte ***toutes les dimensions de la vie des paysans.*** Mais c'est surtout permettre aux paysans de se constituer structurellement en ***force économique et politique.***

Conjurer la faim, la maladie, l'exode rural, la désintégration des structures sociales rurales, c'est redonner dignité et confiance aux communautés rurales, par la reconnaissance de leur ***force de développement,*** d'adaptation au changement ; car c'est ***dans les structures de chaque société*** que résident les forces qui doivent assurer son développement.

SUMMARY

The Ivory Coast is undergoing difficulties in the supply of water to the rural areas although it is situated in a wet intertropical zone. These difficulties which are both qualitative and quantitative have been studied for some years now by the administrative authorities together with the rural population on the one hand and by the administrative authorities and some private or semi-private international organisations on the other hand. But the actions of the state towards the solution of the problem of water in rural areas have not always been clear and coherent even if they had economic, technological, sanitary pedagogical and even political implications. The author's view on the problem can be summarized in the following three points: –

1. The solution of the problem of water-supply in the daily life of the rural populations of the Ivory Coast must be analysed as part of a wider problematic of the improvement of the quality of life of rural populations. Therefore, the environment of the rural populations is a qualitative datum which cannot be conceived in terms of isolated and isolable elements.
2. The methodology to be used in that action must necessarily take into account the existing rural communal structures without which genuine integrated rural development cannot be defined.
3. This project should be understood as a starting point for the participation of rural populations in development by posing the problem of the increase of their autonomy.

INDUSTRIALISATION AND TECHNOLOGICAL POLICY IN TANZANIA : AN OVERVIEW

By

H. P. B. MOSHI *

1. – INDUSTRIALISATION DURING THE COLONIAL PERIOD

The penetration of capital into the underdeveloped countries (UDCs) in general and into Tanzania in particular distorted the economic, social and political structures of the country. The aim was to serve the interests of the world capitalist system. In serving the interest of capital, Tanzania had a role to play in the international division of labor, that of quenching the profit maximisation needs of capital. Colonialism, which is the imposition of a country's state apparatus on another country was practised in order to facilitate accumulation in the developed, capitalist countries.

In order for the accumulation to take place in the developed countries (DCs) it was imperative that exploitative relationship had to exist between the UDCs and DCs. The establishment of this relathionship meant that the structure of pre-capitalist economies had to be restructured (distorted) in order for the exploitation to take place. Agriculture was no longer meant to serving domestic needs and those of neighbours but had to be outward looking. That is, for export to the metropolis in form of raw materials to feed and «re-fuel» their industries. Again, by agriculture becoming outward looking, the producers (peasants) lost their freedom of deciding on what to produce. The loss of freedom was necessitated by the fact that the colonial government had introduced taxation system which compelled some peasants like those of Kilimanjaro and Sukumaland to grow coffee and cotton respectively in order to pay for the tax in cash. On the other hand, in the areas where production of cash crops was «prohibited» because of either natural reasons (geological and climatical) or deliberate colonial policy, its inhabitants became laborers (migrant labor) in plantations and estates where they earned meagre income for their subsistence and for paying the taxes.

At the level of industries, efforts of the colonial government were to de-industrialization. With the industrial revolution in Europe which had led to increased productivity through mass production, a factor of both technological advancement and better methods of organisation of labor, coupled with competition among individual and national capitalists, the products of industries were too much to be absorbed by their respective home markets. So the search and the need for markets increased. As a result of this, and given that the colonial government had the objective of satisfying this need, any domestic signs of existence or of growth of local industries were discouraged unless they were in conformity with interests of

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the ruling class or those of «perfection» of the raw materials for export. It is no wonder that the skilled artisants of the pre-capitalist period became unskilled artisants during colonialism and neo-colonialism. Hoes were no longer made locally but they had to be imported. The same applied to cloth and any array of other commodities. This process of de-industrialisation not only robbed of the colonies of innovative and technological base but created dependent relationship between the UDCs and DCs which has, as ever before working at the impoverishment of the UDCs.

Connected with the structure of production is the unequal development of urban and rural areas. The infrastructure to service both agriculture and industry, like insurance, banking, import and export houses plus the industries were concentrated in towns. All other amenities had to follow the same trend – telecommunication system, hydro or thermo power stations to generate electricity etc.. The effect of this being that rural areas were neglected and «exploited» at the expense of the urban areas. Even the basic social services such as education and health were concentrated in towns. The urban areas were not homogeneous in terms of development. Some towns had more industries than others, some had better infrastructure than others, just like some urban areas were more accessible than others. The level of development of urban areas depended upon their role in the colonial economy. For example, because of the importance of export-import nature of the economy the ports of Dar-es-Salaam and Tanga were quite developed. Just like the towns of Moshi, Arusha, and Mwanza because of their situation or location in the cash crop growing areas – coffee, sisal and cotton. This unequal development was also true in the rural areas, depending on their role in the economy. The cash crop growing areas of say, Bukoba, Moshi and Arusha were better-off, for example, in terms of income and education than Mtwara and Kigoma.

We have mentioned the unequal development because of two important reasons. First, the existence of inequality between rural and urban areas confirms the point that colonialism had no intention of developing the majority of Tanzania masses who live in rural areas. Second, with the existence of urban areas with better facilities and infrastructure than rural areas, the establishment of new industries tend to be attracted to these areas as a way of cost minimisation and consequently profit maximization. The net effect of this concentration is widening of the gap between rural and urban areas on one hand, and among urban areas on the other hand.

The colonial economy did produce a small class of indigeneous Tanzanians whose duty was to service the economy : Administrators, Church Ministers, traders, etc.., mostly through the colonial education system. This class, apart from working for the colonial government, acquired consumption habits which were in agreement with those of the colonisers. What we want to put forward is that the colonial economy gave rise to a class of luxury consumers. The importance of this phenomena is that the type of this consumption determined the nature of industries which were built in Tanzania and generally in the UDCs.

Again the continued existence of this class, even after independence, perpetuated these industries. Even more important at independence this very class of luxury consumers got hold of the state apparatus and thus became the main decision makers on issues affecting the economy. We contend that, given their major role as decision makers and as negotiators with the Multinational Corporations (MNCs) their tastes and interests will always be at the forefront. Bearing this in mind, therefore, one cannot fail to see the persistence of luxury consumption industries. We now turn our attention to the industries established during the colonial period.

1.2 *The 1900 – War I*

Prior to this period there is ample evidence that the technologies for iron-working, cloth making, salt refining, well shaft digging and irrigation had been in operation since 15th century. Iron-Works were found in south of Unyamwezi, Pare, Iramba etc.. Salt industry was common in Lakes Eyasi and Uvinza and Textile technology was widely dispersed within the country because of its raw materials. They ranged from cotton, bark to skins. From its character, these industries were for mass consumption. The products of metallurgy industry are as widely consumed by the populace just like the products of textile industry. Another important character of these industries was the existence of the iron industry. The importance of iron and steel industry in the whole process of industrialisation is incontestable. All manufacturing and agricultural machines and tools are product of iron and steel. The third character of the above industries is that all the raw materials were domestic.

The above character of the pre-capitalist industrialisation process was subordinated to that of the capitalist system. They lost both their mass character in terms of consumption and their domestic or local resource source. Again, the producer-goods industry, like that of iron and steel was never allowed to develop at all. These subordinated characters are not confined to the colonial period alone but also to the post-colonial period.

The type of industrial investment in Tanzania during the period under discussion, fall under three main groups:

1) Processing and Mining, as a matter of reducing bulkness. It became necessary that coffee, tea, sisal, cotton, copper and gold had to be processed before they were exported. Another reason for the processing, apart from that of bulkness, was that of maintaining quality. For example, in order to maintain the quality of tea, the picked leaves had to be processed within twelve or less hours. Coffee pulping requires almost the same time after picking. Quality maintenance just like bulk reduction, conforms with the «laws» of profit maximisation.
2) Production of those products whose transportation costs were too high if they were to be imported. The guiding principle here was that of comparing costs of local production to those of importation i.e. the transport components. Beverages, building material – like wood, had thus to be produced locally.

3) Production of those products – whose transport time was too long to maintain their palatability, flavor and «freshness». Perishables like bread fall under this category.

It is important to note that the amount and the type of industries established in Tanzania during this period were very much influenced and determined by what had already been established in Kenya. The «settler» economy of Kenya, coupled with the advanced infrastructure tended to attract most of the investments into that direction. Thus Tanzania and Uganda became markets for Kenya – based industries.

1.2 *Between the Wars (WW I to WW II)*

The character of industries during this period did not change; what had changed is that the war induced the establishment of more industries. As expected, the war created shipping crisis which led to partial «break» between the metropole and the colonies. The effect of this crisis was that goods (consumption) did not flow constantly to the centres of consumption in the colony. Because of this «disturbance» in flow of consumerables, the colonial government, for the first time thought of industries. For this reason the East African Industrial Research Board was started and based in Kenya while research committees were stationed in Tanganyika and Uganda. The investments of this board logically were concentrated in Kenya. To our list of industries, to mention a few, soap and margarine were produced in Kenya by East African Industries Ltd., a subsidiary of UNILEVER. Biscuits were also produced in Kenya for the East African Market. The uneven development of industrial development in East Africa, in favor of Kenya, started to take shape.

The period in discussion saw the opening of Amani Agricultural Research Institute, with the aim of looking for the possibilities of producing medicine, soap, oil, cigarette etc.. Thus by the end of the period, Tanzania had an added list of points, chemicals, edible oils etc.., on her industrial structure.

The period in discussion saw two open attempts of the colonial government of denying Tanganyika the right to have industries. In the late 1920's a Japanese Match factory was set up to produce matches in the country. The factory had to collapse because of heavy excise duty which was imposed on it by the colonial government in order to protect their import market. The early years of 1930 witnessed another attempt of discouraging local industries when a local firm set up three factories to manufacture binder twine (from sisal) for export (P. Massettee Kuuya, 1977, P.18). The character of the above «discouraged» industries did not differ from the pre-capitalist ones. They were for mass consumption (matches), again, they used local resources and an added character of exporting manufactured twine rather than merely processed sisal.

1.3 *The 1945–1961 Period*

The period saw the continuation of the character of industries discussed in the preceeding sections. The industries which were established during the period were stimulated by an external factor, this time it was not the war but it was the dollar crisis. Britain was suffering from the scarcity of dollars, the so-called dollar crisis. As a strategy, therefore, she had to look for means of both earning and saving dollars. The colonies were an answer to this, yet another crisis of capitalism. Since Britain was importing meat from Argentina, which was within the dollar circuit, she had to produce in the colony in order to save dollars. The effect of this was the establishment of the Tanganyika Packers Ltd. and the Metal Box Industries in Tanzania. The consequence of these establishments was that canned meat was now being imported from the colony. The same was for the other East African Countries.

Let us summarize the main findings of the colonial industrialisation before embarking on post-independence form of industrialisation. The growth of industries during the colonial period should be conceived in the context of the colonial economy which had two main features. First, the dominance of the export sector which was largely primary produce – based, contributing 45 % of all incomes generated locally in the economy. The economy also reflected excessive reliance on the external markets as a source of finished manufactured commodities to satisfy the local market. Consumer goods accounted for over 30 % of the total import bill. Second, the economy reflected a high degree of foreign ownership of the key sectors in the economy *(C. Y. Thomas 1974).*

Industries as an important component of the structure of the above economy had the following characteristics: Firstly, as a sector its contribution to GDP was very small – about 3–4 per cent; and concentrated in a few towns and regions. Secondly, the industries were mostly in raw material processing for export and in luxury consumption commodities to cater for the needs of the colonial bureaucracy and the «elite» class. Thirdly, the industries relied heavily on imported inputs – machinery, spare parts, personnel and other semi and/or manufactured inputs. This phenomena presents an enclave character of the industries. Fourthly, the industries lacked an important ingredient, that is, the producer goods type of industries. The absence of their «sector» ruled out the possibility of having a local technological base and a self-sustaining economy. Lastly, but not least, all decisions on the how and what of industries were made by the colonisers in the context of their own tastes and interests. There is no evidence, at least in literature surveyed by the author, of industries being established in Tanzania during the colonial period because they were crucial for the development of the country.

2. – POST-INDEPENDENCE PERIOD

The attainment of political independence in 1961 gave a qualitative change to the post-independence period. The state apparatus were no longer in the hands of a foreign power. The independent state could now chart out her development priorities without «intervention» from outside. More important, by attaining political independence a base for waging economic independence war was established. The waging of the war became of necessity because although the new state «(had) the power to make laws, to direct the civil service, to treat with foreign governments, and so on, but (had no) effective power of the economic developments in its own country». *(Nyerere 1977 P. 5)*

The partial character of the independence arose out of the fact that the inherited colonial economy was never restructured but was perpetuated in a concealled manner but at an advanced level. The industrialisation process of the post-independence period should thus be conceptualised in the above context. Its character and form could be analysed in two periods: From Independence i.e. 1961 to 1966 and from Post-Arusha Declaration (1967) to the present. The main distinguishing factor between the two periods is that the latter period experienced some progressive steps and policies of «restructuring» the economy by changing the form of ownership and control of industries and by changing the organisation of production in the rural areas (agriculture).

Nevertheless, the character of the colonial industries remained but the strategy of their establishment changed, that is, that of import substitution, import substitution meaning, the domestic production or manufacture of those commodities which used to be imported. It is crucial to emphasise that the substitution did not include intermediate and capital goods production.

2.1 *The 1961–1966 Period*

The nature and the type of industries established after independence were conditioned by three important factors; nationalistic, regional and global (capitalist competition).

The nationalistic factor arose out of the very act of attaining political independence. The independence government had to show the populace that it was responsive to their demand of achieving economic development, at least, with some self-reliance. History of the developed had taught the young nation that industrialisation was a necessary ingredient of a strong and a self-sustaining economy. Given the backwardness of industries in the country at independence, the need for their establishment became quite logical. Unfortunately, nothing was mentioned of changing the nature of the industrialisation process. What was important, at least to the new government, was to see a radio being labelled «made in Tanzania» regardless of the high import content of the inputs and the consequent character of enclaveness to the economy.

The regional factor influencing the location of industries in Tanzania was a factor of the defunct East African Community. As we had cited earlier, Kenya's manufacturing sector was more developed than those of the other two partners. For example, in 1957 the sector contributed about 13 % of the GDP in Kenya, 10 % in Uganda and 6 % in Tanzania. Because of this imbalance, there was a feeling that the industries in East Africa should be decentralised. As a result, the Kampala Agreement of 1964 allocated into Tanzania the aluminium, the tyre and the radio industries. These industries were to cater for the East African Market. It didn't take long before the duplication of these industries was effected in both Kenya and Uganda.

The third and perhaps the most influential factor in determining the nature and the type of industries was the global competition among capitalist countries. The objective of the competition was that of conserving the former markets and/or that of establishing new markets. Political independence meant that the country was faced by «new» capitalist competitors seeking to have a foot in the economy both on the supply and on the demand side. As a strategy therefore, in order for the capitalist countries to have guaranteed markets in the country, domestic production was necessary, rather than importation. After all, the strategy «falls well» within the nationalistic demands. High tariffs were used to protect these industries in order to wipe out competition, the electronics – industry (Phillips and National) are cases in point.

The combined effect of the above factors was that by 1965 Tanzania had 589 establishments employing more than 10 people, as compared to 101 and 308 establishments in 1946 and 1960 respectively. Although there was a quantitative increase in industrial establishments, the contribution of the industrial sector to GDP was still marginal – less than 10 per cent. Again, the quantitative increase did not alter neither the luxury consumption (except for the textile mills) or the import dependence character of the industries. The concentration of industries in few urban areas (Dares-Salaam, Tanga, Mwanza, Arusha, Moshi) almost continued unchecked despite policy statements by the government to counter the trend.

Perhaps it is worthwhile discussing the form of ownership and control in the industries. In terms of ownership they fall into two categories; privately owned and joint-ventures. Privately owned industries (e.g. Phillips) were foreign and as such the control was purely for private interests. For the joint-ventures, local capital through Tanganyika Development Corporation, created in 1962 (later renamed National Development Corporation) came into partnership with foreign-private capital. It need to be mentioned that in most cases NDC had the minority shares. The minority ownership of NDCs and more crucial, management being in foreign hands, made the control of these industries to be external. It can be recalled that the idea of forming development corporations in East Africa was one of the four broad recommendations advanced by the World Bank.

The recommendations were a product of the World Bank's survey of the economic potential and prospects of each country. The survey was carried a couple of years before independence to recommend to the new

governments on how to plan their economies. *(See Y. Tandon, 1978)* Since the World Bank Report acted as point of reference as far as economic issues were concerned, the control of the economy in general and industries in particular was external.

The other recommendations were that of the need to maintain a healthy investment climate, that of a «correct» economic orientation. This meant specialisation in the production and primary processing of raw materials for export to the developed countries. Lastly, that of the need to plan, «the three countries came out with their respective three or five-year development plans, consisting of shopping lists of projects».

2.2 *The Post-Arusha Declaration Period*

The pronouncement of the Arusha Declaration in February, 1967, brought major changes in the national economy. The documents defined the fundamental political and social orientation of the country, that of building a socialist and a self-reliant country. Whereas socialism means or implies elimination of exploitation of man by man or by a group, self-reliance entails effective use of local resource (man and otherwise) for the development needs of the society, in other words, effective control of the national economy.

The announcement of the Arusha Declaration should be seen as an eye-opener to (top leadership) after realising the mistakes made at the level of policy in the years after independence. These years were marked by the perpetuation of the colonial pattern of economic and industrial growth. The First Three Year Development Plan (1961–1964) or even the First Five Year Plan (1964–1969) or at least up to the time of Arusha Document, the economic policy of the country, as relates to industries, emphasized import substitution, processing of raw material(s) and export promotion. The document thus intended to inject structural changes in the economy.

The policy implication of the Arusha Declaration was the nationalisation of the commanding heights of the economy. Commercial banks and insurance companies were nationalized. The National Bank of Commerce and National Insurance Corporation were created to take-over their respective functions and likewise, both external and internal trade firms were nationalized, only to be replaced by the now defunct the State Trading Corporation and later by the Board of Internal Trade and the Board of External Trade.

On the side of industries, the nationalized industries were put under the aegis of the National Development Corporation (NDC) by the government simply acquiring majority shares up to sixty per cent (Industrial Share Acquisition Act 1967). «Unlike the previous joint ventures, however, the post-Arusha Declaration ones were formalized and officalized by the parliamentary acts» *(S. M. Rugumamu, 1980 P. 3)*. To cite a few examples, the picture of joint ventures was as follows: Tanzania Tanneries Company (NDC 75% and the Edernburg Coy of Sweden 25 %) The General Tyre Limited (NDC 74 % and General Tyre International 26 %) The Tanzania Fertilizer Company (TFC) (NDC 60 % Kloeckner Humbolt 20 %),

and the International Fertilizer Coy 20 %. The Tanzania Hides and Skins (NDC 70 % Booth International 30 %). These few examples reveal that there was no change of substance in the process of industrialisation except the changes in the form of ownership.

The nationalized industries needed both management and technical skills, unfortunately, for some industries, there was no local availability of these skills. The former owners had thus to continue as managing agents and technical consultants. The effect of this arrangement was/is the placing of all responsibilities of procurement, production and marketing on the shoulders of foreigners. The conflicts between private interests of profit maximisation and the public interests of economic development were the logical outcome.

The Second Five-Year Development Plan had envisaged that the increase in public ownership (public sector) would have led to an increased local control of the economy and more important central planning could have taken root. Experience has revealed the contrary. So long as the major economic issues affecting the economy and indeed the industries were outside the capacity of the nationals (even if the top managerial posts and directorships were occupied by the nationals) we could not expect meaningful control. Projects were established without a thorough study of inter-dependencies and enter-linkages between industries in terms of inputs, vertical and horizontal diversification, location, choice of technique etc.

The nationalization of industries did not necessarily results into less remittances abroad. Of course, the importance of profits as a form of remittance decreased because of the form of ownership and also because the industries were not doing quite well. But remittances in form of consultancy fees, management fees, expatriate salaries and allowances had to increase. Leave alone the dirty game of over invoicing and under invoicing imports and exports respectively.

The forms of payment for the services rendered by different Multinational Corporations (MNCs) were designed in such a manner that expatriate of capital was inevitable. The first form of payment was based on a stipulated percentage of the wholly or partly on profits plus a fixed minimum and maximum. TFC is a typical practioner of the same. The second form of payment is based on a fixed percentage of the wholly or partly on sales; The Instant Coffee limited and Tanganyika Packers are cases in mind. The third form of payment and the least used, is based on a single fixed fee regardless of sales or profits.

From the foregoing paragraphs we can conceive that despite the policies of restructuring the industrial outlook in the post-independence period, neither the dependence on the developed countries nor the character of industries did show changes in content. The successes of the second Five Year Plan to 1974 were confined to Import-substitution. The main concentration was in five basic consumer goods industries; food processing, beverages, tobacco, cotton textiles and shoes. This group of industries accounted for 52 percent of the total value-added *(Third Year Plan P. 39).* The period did not put much emphasis on structural changes, although it became a preparatory stage for the long term industrial strategy which was expected to restructure the industrial sector. A task which was to be implemented in the course of the Third Five Year Development Plan.

The postponement of this important task of restructuring the economy since independence should be seen as the major weakness in the country's planning mechanism in particular and the problems of development in a neo-colony. Most of neo-colony projects had to be implemented by an increasing dependence on loans and aid. The Third Year Plan banks on foreign sources of finance to the extent of 62 per cent of the total finances. Such state of affairs not only undermined the principle of self-reliance but also the intentions to control the national economy.

The history of development of industries, which we have been discussing so far, has identified the nature and the structure of industries in Tanzania. It has also attempted to pinpoint the forces at play in determining such a trend. Apart from the fact that the government did make some efforts to «revolutionize» the industrial sector and indeed the economy at large, such efforts were not fruitful. The sector remained marginal, accounting for approximately 10 per cent of the nation's Gross Domestic Product (GDP), growing at a slow rate of 2.1 per cent (compound annual growth rate) and employing less that 100,000 people. An examination of the issues of technology, the task of the succeeding section, might throw light on the reasons contributing to the above poor performance of the industrial sector.

3. – TECHNOLOGY IN TANZANIA INDUSTRIES

Among the most topical subjects of the demand for the «New International Economic Order» is that of transfer of technology. Technology has played such an important role in the economic development of the developed countries (DCs) that the underdeveloped countries (UDs) demand for an effective transfer of that technology in order for the latter to inject life into their economics. In appraisal of the import of the already «transferred» technology to UDCs, it has been found out that it has neither enhanced nor developed the recepient country's technological base apart from strengthening the dependence relationship.

The issue of transfer of technology, both innovative and productive, is problematic because one, science and technology (S and T) are not neutral since they are part and parcel of the political economy of a society; two, they represent an aspect of capital accumulation and use of such capital will be dependent upon the whims or otherwise of its owner or controller; three, their effective transfer is dependent upon the level of the socio-economic formation of the recipient and the existence of an indigeneous S and T community and, four, they (S and T) are essentially in most developed capitalist countries privately owned and controlled, mainly by the transnational corporations (TNCs) whose paramount motivation is profit maximisation and repatriation. *(See S.M. Rosenblatt 1971 pp. 23-58 and also G.C. Gwassa 1978).*

The above factors are important in that «failure, on the part of importers of technologies into LDCs, to take cognizance of this important condition, leads to the superimposition of technology on false base «*(P. Masette Kuuya P. 8)* Tanzania, like other LDCs did not take care of this

pre-condition. Tanzania was disillusioned by thinking that import substitution strategy would have led to the creation of a genuine local industrial know-how *(Second Five-Year Plan P. 75)*.

The Government failed to take note of the fact that the technological base, especially the innovative capacity, was systematically destroyed by colonialism as the economy was being designed to serve the world capitalist system. At independence, we should have expected the restoration of this base before shopping for projects and contracting with the TNCs. No serious efforts were made towards this end. Whenever the attempt was there inconsistency and lack of coordination of such projects were always evident.

The post-independence period was seen as a time for establishing industries for their own sake. Industries were seen, correctly of course, as the rescue of the economy, and as such, given their smallness in the economy, they had to be established. The false base on which these industries took root was that establishment of industries would have automatically restructured the economy and thus solve both the problems of unemployment, expatriation of surplus value and effective use of the local resources. The experiences of the period proved the contrary; employment in industries grew very slowly, expatriation of surplus value in different form went on unchecked and utilisation of local resource just like effective decentralisation of industries were not satisfactory either.

3.1 *The Impact of Technology in Industries*

A number of studies have been carried in Tanzania to appraise the impact of industrialisation and technology in the economy and indeed in the industrial sector. For the purpose of illustration we will concentrate our attention on the findings of J. RWEYEMAMU, Masette KUUYA, A. C. COULSON, S. WANGWE and a few others.

The analysis of the impact of technology will be in the form of assessing its effective use of local resources; its conformity with local or national needs and its employment generation capacity.

3.1.1 Local Resource Use

The technology which has been in use both in the pre and post-independence has been very heavily factor – biased against the country. This aspect of bias makes import substitution strategy wrong, otherwise, there is nothing inherently wrong about the strategy. For example the Tanga based Fertilizer Company is almost entirely based on the import of all its inputs – rock phosphate, sulphur ammonia and potassium. Inputs whose control are in monopolies and thus whose prices have been increasing. Since these inputs accounted for about 54% of the value of the output *(Z. Dobrska pp. 53–65)*, price increases were bound to affect profitability and more important increase the demand on the foreign exchange.

The use of imported raw materials was not a factor of their non-availability locally. Phosphate deposits of 9 million tons at Minjigu, near the Southern trip of Lake Manyara, and the high-grade gypsum, anhydrite, and anhydrous calcium sulphate deposits along the coast at Kilwa, were the

potential local sources of raw materials. Although three proposals were made to NDCs between 1964–1967, to exploit these sources, all were rejected *(A. Coulson, P. 2).*

The case of the Cement Factory at Wazo Hill, Dar-es-Salaam did not differ much from the above case. Despite the fact that cement production has a relatively wide range of alternative techniques of production, the management at the Waze Hill plant decided on a relatively capital intensive plant that consumed both oil and electricity *(Masette Kuuya P. 20).* Apart from the machinery being imported, oil, an input which has been a headache to the LDCs because of its ever-increasing price, was also being imported. Local sources of fuel, especially coal, are of abundance in Southern Tanzania, Ruhuhu Depression and Songwe – Kiwira areas have reserves to the tune of over 200 million tons *(H. P. B. Moshi, 1979, P. 16).* The case of the semi-automated bakery factory situated in Dar-es-Salaam manifests more or less the same abuses as the above cases. Automated machinery and wheat had to be imported. Surprisingly Tanzania's potential as a wheat grower cannot be doubted – Mbeya and Arusha Regions have that potential.

On the level of use of local manpower, the picture is not different from the above. Given the lack of the technological and managerial skills in the country, they had to be imported. It was hoped that these skills would be easily transferred to nationals in the long run. The reality was that the transfer was either too slow or did not take place at the stipulated time period. The cement factory just like the TFC do demonstrate this phenomena.

The use of foreign management or management consultancy and the high foreign loan – component of the investment, including foreign shares did constitute a lot to the high import component of the inputs to the industries at the expense of the use and development of local capabilities.

The factors contributing to these are mainly two; one, foreign interests of profit maximization underplayed the internal motives of development; and two, the national decision makers «were/are the most powerful supporters of the whole process. They of course, by their vocation and occupation for which the educational system had prepared them, multiplied the demand for the very services which depended on foreign technology.» *(A. Jamal, 1977)*

The last mentioned factor is very important in that the decision makers, consciously or unconsciously, perpetuated the colonial form of industrialisation. They became easy accepters of any type of technology and always mystified by the new or modern technology. In most cases they left the important decision of choice of technique to the TNCs. For example, the TFC contract contained the clause «Kloeckner will select the ***most modern processes*** corresponding with the ***latest technical development*** in the chemical industry...» (emphasis mine). No doubt this is placing too much on the shoulders of the TNCs!

The very act of leaving most of the important task of the projects to the disinterested parties, cross-circuited the process of planning and coordination. Each project mushroomed in its own way without taking into consideration the local resources, linkages to other industries and not even considering the development needs of the country. For example, the linkage between cement and fertilizer industries in the use of sulphuric acid

was never conceived of. Just like oil refinery was never linked to synthetic industries. The ultimate outcome was «individual projects, very impressive, but not integrated. There was hardly any interdependence or linkages in the projects».

3.1.2 Conformity with Local Needs

The most pressing need of the LDCs and Tanzania in particular is that of economic development. A strong economy requires a technological base which will revolutionize the productive forces both in industry and in agriculture. The development of the productive forces thus necessitates a self-reliant and a self-sustaining economy. But in order to have a strong industrial base certain key industries must be present; these are the producer-goods and the mass-consumption-goods industries, which should use local materials as their sources of inputs. The character of industries in Tanzania show the absence of these two types of industries. Their mere absence show the weakness and dependent-type of the industries in the country.

Connected to the issue of meeting of the local needs is the question of raising the standard of living of the masses. The masses of Tanzania live in the rural areas, how then has industrialisation benefitted them? The answer is simple, very little. The hoe is still the main productive force in the rural areas!

The performance of industries in terms of capacity utilisation is an important determinant of cost of production and in turn determines the cost of living. Since technology in use is very much dependent on foreign exchange and whose availability is determined by the export sector, its non-availability or inadequancy has led to under-utilisation of capacity in industries. Apart from the cost of inefficiency, the prices of industrial products have been so high that they become more «luxury» than never – accessible to a handful of people. This has been another danger to the standard of living of the masses.

3.3.3 Employment Generation

The Tanzania's First and Second Five Year Plan (1964–69 and 1969–77) emphasized the need for the use of labour intensive technology whenever it was economically possible. Although there was no effort made to include such a clause in the contracts, the government aimed at the fulfilment of one of its social welfare functions, those of increasing employment and aggregate consumption.

On implementation, most of the established industries were capital intensive, except for one textile mill – The Friendship Textile Mill supplied by China on very soft loan terms. Mwatex, a plant owned jointly by Tanzania (80 %) and a French firm Amenital (20 %) employed only 100 workers and produced 24 million sq. yards of cloth per annum, (while) the labor intensive Friendship plant employed over 3000 workers and produced over 24 million square yards of cloth and 1000 tonnes of yarn per annum. *(Masette Kuuya, 1977, P. 25).* In the case of the cement factory, its capital /labor ratio was higher than those of Kenya and Uganda.

The choice of capital intensive technology was in consonance with the interests of the owner and controller of that technology. The aim being that of avoiding incessant labor unrest and also to increase expatriation of surplus value.

4. – WHAT IS TO BE DONE?

The history of development of industries in Tanzania in particular and in the LDCs in general, has shown that the industries did not adequately cater for the need to restructure the world's exploitative economic order. The imported technology in use did not spark off a process of enhancing the technological capacity and capability in the recipient countries. The impact of that technology on the economy are, one, that resources availability is not determined by the factor endowment of the country; two, that investments are biased in favor of complementing the metropolitan economies, and against the building of intersectoral links within the economy; third, that, depletion of surplus value through its outflow in the form of factor payments for capital and know-how; and lastly that, the country was unable to develop the technological base of skills, knowledge, facilities and organisation upon which further technical progress so largely depend *(J. Rweyemamu, 1973).*

The above experiences, as painfully as they are, do not mean that we should not deal with the TNCs, on the contrary we *need* them *badly.* In dealing with them we have acquired some technical know-how and we have developed some of our own productive forces, though neither of these to the degree we would have liked. What is required now is to define our development objectives more seriously and fight to adhere to them, i.e. consistency.

The definition of countries objectives should always involve development of one's own resources *primarily* through self-reliance in conformity with its *own needs.* These two ingredients call for serious planning in utilisation and development of local resources as well as the creation of appropriate institutions for carrying out and initiation of the policy.

The Third Five-Year Plan seems to be in line with the need to restructure the economy and indeed the industrial sector. It aims at creation or implementation of the basic industrial strategy. No doubt that the iron ore deposits in the country will be exploited. The ultimate establishment of the iron and steel industry will initiate and enhance machine-design capability and consequently stimulate research towards further enrichment of that capability. The same process will be expected to take place in the other industries within the basic-industry circle.

The successful implementation of the above strategy requires both the establishment of research and training institutions as well as the imposition of code of conduct on the TNCs. The creation of training institutions like the University of Dar-es-Salaam and research institutes like Tanzania National Scientific Research Council, Economic Research Bureau, etc.; is a good point of departure as far as training and research are concerned. Perhaps what lacks is coordination among the institutions on one hand and the decision makers on the other hand. The purpose of training and the

research-results are important only when they can influence and direct the decision making mechanism. In this connection therefore, it is necessary that expertise knowledge should be part and parcel of decision making in the country's socio-economic objectives and priorities.

The lack of a coordinating body especially at the level of shopping for projects has resulted into lack of adherance to the set objectives. For example, while other decision makers are fighting for conservation of foreign-exchange others are acting the opposite, by contracting for the establishment of synthetic textile industries. Such acts of working at cross-roads not only undermine objective attainments but make the process of development unnecessarily long because of irrational use of resources.

The newly established unit on Science and Technology (S and T) under the Ministry of Planning should correctly aim at coordinating policy and plans to develop appropriate science and technology base. The S and T should thus be the centre for the scrutiny of all tenders attached to projects before the signing of contracts take place. It's necessary that the unit be manned by various specialists in order to adequately establish backward and forward linkages to projects.

On the imposition of a «code of conduct» on the TNCs, both national and international efforts are called for. National efforts should aim at invitation of more tenders, from one source. It's also necessary that the list and the range of concessions offered be cut down. Lastly, the country should lay down its conditions on which the «shopping» will be based.

The international approach demands for the LDCs to work as a team and with one aim of reducing the technological gap between the DCs and the LDCs. As a team the LDCs should make their demands known to international organisations like UNIDO, UNCTAD, GROUP of 77 UNCSTD etc.. Again, they should consistenty fight for their demands to be implemented.

The IMF and the International Development Association must be restructured in order to meet challenge facing the LDCs.

The above recommendations cannot be implemented and attained overnight. They will face some resistance here and there but they should never be postponed. However, consistent and committed leadership, efficient utilisation of national resources, increase in productivity and hard working and motivated masses, should never be under-estimated as the life blood of the process of economic development.

FOOTNOTES:

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9. S. M. Rosenblatt (ed). *Technology and Economic Development: A Realistic Perspective.* Westview Press, Boulder, Colorado, 1979, pp. 23–58.
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RESUME

Dans son article intitulé «Industrialisation et Politique Technologique en Tanzanie», H. P. MOSHI fait remarquer, après avoir défini l'industrialisation comme étant «l'application de la science et de la technologie dans le processus de production de biens matériels», que les problèmes technologiques et industriels sont comme les deux faces d'une même feuille de papier et que par conséquent ils sont indissociables. Deux grandes parties composent son article : Dans la première partie il retrace l'histoire du développement des industries en Tanzanie. Cette histoire est marquée par cinq grandes étapes, toutes liées aux besoins et aux problèmes de la métropole. Il fallut attendre la Déclaration d'Arusha de 1967 pour que l'industrie soit marquée d'un sceau nouveau, celui de l'intrusion du capital national dans l'industrialisation à côté des actions des compagnies multinationales. Dans la deuxième partie l'auteur traite des problèmes de technologie, évaluant la part de la technologie dans le processus d'industrialisation en termes d'adéquation de cette technologie aux conditions spécifiques de la Tanzanie, conditions spécifiques marquées plus particulièrement par l'option fondamentale pour une politique d'auto-suffisance.

En conclusion, H. P. MOSHI énumère les caractéristiques du processus d'industrialisation et de technologie en Tanzanie qui sont :

1. Sa nature extravertie
2. Son incapacité à utiliser les ressources locales pour satisfaire les besoins locaux
3. L'absence de rapports fondamentaux entre les trois éléments suivants : les biens de production, l'industrie et la consommation de masse. Au contraire ces rapports n'existent qu'entre les industries orientées vers l'exportation et les industries de consommation de luxe

En tant que stratégie, la critique porte moins sur l'importation de la technologie que sur le genre de technologie qui a été importée. Industrialisation ne veut certainement pas dire absence de contact avec les autres pays mais pour que de ce contact jaillisse la flamme du développement économique dans les pays en développement, il faut qu'ils se conforment à leurs ressources et besoins.

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B.P. 9543 – Kinshasa I, Zaïre

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Le rôle dévolu au Comité Scientifique au niveau du centre est fort appréciable dans la mesure où il détermine les grandes orientations de la recherche et lui imprime la collégialité dans la gestion matérielle et financière. Il est composé en plus du Directeur de centre et du Secrétaire administratif, de tous les Directeurs de Département.

Centre	Département	Section
KINSHASA	6	9
UVIRA	1	–
BANDUNDU	1	–
KISANGANI	1	–
GEMENA	1	–
LWIRO	5	–
MABALI	1	–
LUBUMBASHI	1	–
T O T A L	17	9

Les Directeurs de Départements sont des véritables coordinateurs à la fois des activités scientifiques et administratives des Départements. Ils sont avant tout chercheurs confirmés et expérimentés.

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Chaque centre de recherche de l'Institut est doté d'un département de documentation et bibliothèque. La plus importante, celle de Lwiro détient environ 45.000 volumes. La bibliothèque étant un lieu privilégié de la recherche, l'Institut de Recherche Scientifique consacre des efforts particuliers pour mieux nantir ce domaine.

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BOOK REVIEWS – REVUE DES LIVRES

Bela Balassa : *Policy Reform in Developing Countries* (Pergamon Press, Headington Hill Hall, Oxford, U.K. 1977 – 175 pp.).

Reviewed by P. Heinecke*

This book on economic and fiscal policy has an attractive title and deserves the attention of policy analysts in Nigeria. There are nine chapters, each of which is the original report which the author submitted to various governments between 1974 and 1976 in his capacity as their policy adviser. He has worked for the United Nations Industrial Development Organisation, the World Bank and for the governments of Mexico, Portugal, Venezuela, Chile, the Andean Common Market, Egypt and Korea. Since these industrializing countries have similarities to Nigeria, the book can be considered as a fairly typical example of the kind of advice some aid agencies have to offer Nigeria.

The preface states that, «the essays express the opinions of the author and should not be interpreted to represent the views of particular governments or international organisations.» Nevertheless, one can safely assume that Balassa's reform proposals do represent fairly closely UNIDO and World Bank policies.

The author belongs to a school of economists who assume that the high rate of growth and the maintenance of reasonably full employment in the richer countries in the post-war period has, on balance, been immensely helpful to the poorer countries; that the existing patterns of international trade are generally good; and that the main task for policy reform in poor countries is for them to adopt a package of fiscal measures enabling their economies to achieve the following : –

1. profitable climate for business enterprise, indigenous or foreign,
2. accelerated economic growth and rapid rise in G.N.P.
3. more industries, provided they have comparative advantage,
4. more exports,
5. less centralized planning by the national bureaucracy.
6. a perfected market to remedy distortions in factor and product prices,
7. reduced inflation and liberalization of foreign exchange rates and of import controls
8. provision of social services consistent with business interests but sufficient to prevent instability.

According to Balassa, the problem with developing countries is their inability to reform their internal structures to conform to the imperatives of the international market within which they inevitably operate.

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Their present economic inefficiency results from, «distortions in product and factor prices that create a wedge between private and social profitability of particular products or production techniques.» Their governments fail to appreciate the «sensitivity of economic agents,» and they consequently misuse fiscal measures such as subsidies, exchange rates and protection. The blame for their slowness in developing is thus placed on the shoulders of the countries themselves which have not yet fully grasped the sensitive technical intricacies of capitalism.

This approach has been seriously discredited by a growing number of scholars who show that the supposedly efficient international market has totally failed to achieve development except for a tiny minority of the world's population. That already rich minority becomes richer, while an increasing percentage of the world's population becomes poorer. This stark fact is shown in the United Nations Organisation's statistics on income distribution and is well summarised in Keith Griffin's book, «International Inequality and National Poverty.» Balassa would no doubt reply that this sad state of affairs is *despite* the well-meaning efforts of the United States and its international aid agencies. Others are increasingly saying that the state of affairs is *because of* the U.S. and its agencies such as the I.M.F., the world Bank and certain branches of the U.N. They say that advice and aid are being given with the sole aim of maintaining the economic and financial dependence of subordinate nations. Whereas the advisers and aiders themselves present their role as impartial and technical guidance on market efficiency, their critics say that the essence of business is to try to control its own market and to operate as if the entire globe were its preserve. Production is operated for profit not for people. Or, as Harry MAGDOFF puts it, «When market efficiency and economic rationality enter the door, morality and social justice fly out of the window!»

Repeatedly, Balassa refers to the theory of comparative advantage. It is better, he argues, for a country like Korea with abundant cheap labour to concentrate on producing goods which are labour-intensive, such as shoes, electronics and ships. And Venezuela, whose natural resource endowment is crude oil and hydroelectricity, has a comparative advantage in producing downstream petroleum goods such as chemicals and plastics. It is remarkable that this economic myth, originating from David RICARDO 180 years ago, is still being perpetrated. While it is quite true that historically certain countries or regions came to specialize in producing particular goods, e.g. sugarcane in Cuba, groundnuts in Nothern Nigeria, copper in Zambia, this has little to do with natural endowments or with what the country is «best suited for.» It arises from the fact that business is first and foremost a system of power. Korea's labour was cheapened to benefit the more powerful coloniser. Cheap labour is an aspect of poverty and is man-made. There was nothing *natural* about Cuba's sugarcane, just as there was nothing *natural* about the African slaves who were forced to grow it. Indeed, in terms of natural resource endowment, it is surely Nigeria which is the «have» and Japan the «have not.» Countries become powerful and wealthy not because of the natural resources they have in them but from their power to control and extend spheres of political and economic influ-

ence. The present pattern of specialization in world trade results historically from unequal treaties and military conquest – in short, from imperialism. That pattern is neither God-given, eternal nor unchangeable, as China and Cuba have proved.

In conclusion, Balassa's book is a prescription for the continued underdevelopment of the world's poor countries. It avoids the crucial question whether a particular country should be consuming certain goods at all. It regards increased demand per se through increased purchasing power as the desirable stimulant to growth. But as Cheryl PAYER writes in, «The Debt Trap,» (a classical book on fiscal policy), «just as the pusher of an addictive drug finds it good business to provide free samples in order to get potential users 'hooked', so western aid serves to make poor nations dependent on western brand names and on economic growth via imports.»

The book should be treated with great scepticism if Nigeria is to avoid following the path of Brazil and India, both of them classical cases of growth without development.

E. C. Amucheazi : ***Readings in Social Sciences – Issues in National Development.*** (Fourth Dimension, 179 Zik Avenue, P.M.B. 1164, Enugu, Nigeria 1980, 381 pp.).

Reviewed by P. Heinecke *

This book is a collection of twenty-one articles by scholars of the University of Nigeria Nsukka. Dr. AMUCHEAZI, the editor, is a senior lecturer in the Department of Political Science, Nsukka.

The theme of the book is of great relevance : the authors try to give an analysis of Nigeria's political, social and economic problems and to suggest solutions.

There are four parts: –

1. Politics and crises of development.
2. Economy and transformation of Nigeria.
3. Social change and welfare problems in Nigeria.
4. Moral values and socialization.

To varying degrees, all the writers question whether anything useful and positive has been achieved in Nigeria since independence. Some, like Dr. AMUCHEAZI himself, adopt a somewhat conservative approach, believing that there has been some progress since independence. For example, he feels there is now greater participation and grass roots democracy thanks to the previous Federal Government's reforms. Moreover, he largely accepts the elitist system of education that Nigeria has inherited from the British; and he has faith in the ability of a western-educated modernizing elite to overcome ethnicity and other divisions in society.

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At the other extreme, Dr. I. A. ETENG's «Changing Patterns of Socialisation...» fiercely rejects any notion of progress and development whatsoever. «In economics,» he says, «the best Nigerians in the field... have really done nothing positive... by way of improvement of the quality of life of the Nigerian toiling masses, except government squandermania over ill-motivated «jamboree projects», petty bourgeoisie scramble for poorly executed contracts, corruption and embezzlement sprees...» He concludes that, «capitalist penetration into... Nigeria arrested and distorted the historical momentum and logic of development... and drastically restructured the economy to conform to the imperatives... of the capitalist mode of production and consumption...»

Between these two extremes of AMUCHEAZI's mild self-congratulation and Eteng's scathing condemnation, we find a variety of other opinions. Professor KODJO is strongly critical of «private foreign interests» but implies that private Nigerian interests may be better. Dr. KALU does not seem sure whether Nigeria's traditional societies were barbaric or not and he proclaims a faith in liberation without clearly specifying what Nigeria is to be liberated from. Dr. E. NWOSU shows how successive government policies have depressed the rural economy but he seems unaware that this depression is deliberately fostered by big business to provide a reserve of cheap labour thus guaranteeing fatter profits. Dr. OFOEGBU writes copiously on regionalism but, surprisingly, he hardly mentions Kwame NKRUMAH's extensive thoughts on the subject; and he makes one incredible statement: «Prior to World War I, all aspects of international relations (law, politics and diplomacy) were strictly affairs of Christian, civilised nations of Europe.»!

This volume of writings by a galaxy of eminent academics is recommended for first years university students in the social sciences, and it should provoke plenty of controversy. It covers some major basis concepts in sociology such as socialisation, pluralism and functionalism and is a useful addition to Fourth Dimension's growing collection.

BOOKS RECEIVED

Inclusion on this list does not exclude future review of the publication.
L'apparition d'un titre dans cette liste n'exclut pas sa future critique.

1. **Amin, Samir/Alexandre, Faire/Daniel, Malkin :**
   L'Avenir Industriel de l'Afrique – (L'Harmattan – ACCT, France, 1980).
2. **Benamrane, Djilati :**
   Crise de l'Habitat, *Perspective de Développement Socialiste en Algérie, CREA/ Algérie.*
3. **Grant, James P. :**
   Disparity Reduction Rates in Social Indicators: A Proposal for Measuring and Targeting Progress in Meeting Basic Needs (Overseas Development Council, New York, 1978).
4. **Germidis, D. :**
   International Subcontracting : A New Form of Investment OECD Development Centre Studies.
5. **Hilbert, Roger and Christiane Oehlmann :**
   Foreign Direct Investments and Multinational Corporation in Sub-Saharan Africa : A Bibliography (Frankfurt/Main, New York : Campus-Verlag 1980).
6. **I. Dobozi J. Winiecki :**
   Prices of Raw Materials in the Eighties, Institute for World Economics of the Hungarian Academy of Sciences Budapest No. 106/1980.
7. **International Centre for Industrial Studies :**
   Draft World-Wide Study On Agro-Industries: 1975–2000 (UNIDO, 12 December 1977).
8. **Masini, J. - Ikonicoff, M. - Jedlicki, C. - Lanzarotti, M. :**
   Multinationals and Development in Black Africa : A Case Study of Ivory Coast (Saxon House, England, 1979).
9. **Mazrui, Ali :**
   Political Values and the Educated Class in Africa (London, Heineman – 1978).
10. **Mooney, Pat Roy:**
    Seeds of the Earth: A Private or Public Resource? (Inter Pares, Ottawa, 1979.)
11. **Morris, David Morris:**
    Measuring the Condition of the World's Poor: The Physical Quality of Life Index (Pergamon Policy Studies, U.S.A., 1979).
12. **O.E.C.D. :**
    Investing in Developing Countries (O.E.C.D., France, Fourth Revised Edition, September 1978).
13. **Peninou, G. - Holthus, M. - Kebschull, D. - Attali, J. :**
    Who's Afraid of the Multinationals? A Survey of European Opinion on Multinational Corporations (Saxon House, England, 1978).
14. **Plasschaert, Sylvain :**
    Transfer pricing and Multinational Corporations: An Overview of Concepts, Mechanisms and Regulations (Saxon House, England, 1979).
15. **Tharakan, P. K. M. and Symposium at ECSIM:**
    The International Division of Labour and Multinational Companies (Saxon House, England, 1979).

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