africa development

A Quarterly Journal

Revue Trimestrielle

Vol. II N° 2 1977

D. E. S. R. I. A.

Editorial Board — Comité de Rédaction

CODESRIA greatly acknowledge the support of the Friedrich-Ebert Foundation in publishing this journal.

Le CODESRIA tient à exprimer sa gratitude à la Fondation Friedrich-Ebert pour la généreuse contribution qu'elle a bien voulu apporter à la publication de cette revue.

Africa Development

A Quarterly Journal of the Council for the Development of Economic and Social Research in Africa

Revue Trimestrielle du Conseil pour le Développement de la Recherche Economique et Sociale en Afrique

TECHNOLOGY AND DEVELOPMENT IN AFRICA

TECHNOLOGIE ET DEVELOPPEMENT EN AFRIQUE

Guest Editors : Cadman Atta Mills, Norman Girvan

Vol. II N° 2

April - June 1977
Avril - Juin 1977

EDITED BY
A. S. BUJRA

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INTRODUCTORY NOTE I :
TECHNOLOGY :
A NEW WHITE MAGIC FOR AFRICA ?

Norman Girvan *

This special issue of *Africa Development* on technology comes at a particularly appropriate time in the struggle for the development of African peoples. In the litany on economic development invoked by the apologists of the international capitalist system since the second world war, several themes have occupied pride of place as the principal agent of development. In the 1950s the view that capital is the critical ingredient formed the basis of the majority of theories of development, and of the practices of development policy. However, during the first two decades after the war, several third world countries received huge amounts of direct foreign investment and foreign aid, and yet remained as underdeveloped, dependent and untransformed as they were before. The apologists for the system therefore sought another solution : the underdeveloped countries are overpopulated, they argued, population control must be imposed and the skills of the existing population upgraded. « Human Ressources » became the fashionable theme. Nonetheless in spite of initiatives along these lines the lot of the majority of people in third world countries has worsened steadily during the 1960s and 1970s. Today, with the international economic order coming under heavier and heavier fire, an attempt is being made to hold out a new form of white magic to the people of the third world : modern technology, it is being said, is the key to rapid development ; the developing countries should seek to secure as much of it as possible, and on the best possible terms.

To point to the ideological role of technology is not by any means to ignore its critical importance in the process of development of the productive forces in both the presently developed capitalist and socialist countries. Revolutionary changes in mechanical and chemical technology, and in the use of energy, have been at the basis of the explosive growth in the transformation of the natural environment into material output in the last two hundred years. There is no developed country in the contemporary world in which the development of a national scientific infrastructure and the application of new technologies on a wide and systematic scale, has not been fundamental to revolutionising productivity in agriculture, industry and all the economic and social services. Moreover, the process is one that is cumulative and self-sustaining : basic scientific research, which is carried out in the large universities and the specialized institutes, provides the infrastructure for applied research, which in turn provides

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the ingredients for the development of new technologies ; these two functions are carried out by government and the large corporations. New technologies are then incorporated into the productive system by means of new capital investment, this raises productivity and provides surpluses for the financing of basic scientific research, applied research, development, new investment, and so on in the cycle of reproduction.

In the light of this the « marginalised » condition of the third world in respect of science and technology can only be regarded as alarming. The developing countries with some 70 percent of the world's population, account for only 30 percent of the world's higher education, 5 percent of expenditure on research and development, and 1 percent of ownership of patents. It is thus in the field of science and technology that one of the most extreme manifestations of underdevelopment is exhibited. The *policy* implications that are drawn from this observation, however, is quite a different matter. Many of the international initiatives undertaken in the last ten years, and much of the science and technology programming undertaken in third world countries, appear to be based on the notion that a mere mechanical « transfer of technology » from the developed to the developing world will result in the desired contribution of science and technology to the development process. Convinced that the technological gap between the developing and the developed countries is of relatively recent origin and the income gap between them is largely a reflection of the technological gap (1), many third world countries have been exerting substantial pressure for the elimination of restrictive practices by transnational corporations in the transfer of technology, the establishment of institutions and mechanisms to ensure more access, and on better terms, to the fund of available technology, and the provision of resources and institutions for the development of local technological capabilities. Thus Technology Transfer codes have been instituted supported by Technology Contract registers, and the renegotiation of existing contracts ; research and development institutes have been established supported by national science councils, ministries of technology and the like ; and budgetary appropriations have been made for science and technology. Countries such as those of the Andean Pact group in Latin America, Mexico, and India, have been the leaders in this field.

The problem is that these measures, though not unimportant in themselves, appear to have had little effect in changing the condition to which they are addressed. A recent report on Latin America (2), for example, pointed out that the technological history of the presently developed countries shows a Phase 1, characterised by technological importation, followed closely by and overlapping with Phase 2, in which modification and adaptation of the imported technology predominated, and developing into a Phase 3, characterised by mutual

technological interchange with other countries. The report went on to observe that Latin America, and the rest of the developing world, appear trapped in Phase 1 : a manifestation of the condition of technological dependence. Research and development institutes that are established are not used by local industry or the local government — they too, in turn, become marginalized (3). Government expenditures on science and technology create the form, but not the content, of a local capability ; and technology contract registers generate much useful research information but do not seem to significantly affect the enormous bargaining power of the transnational corporations that are « suppliers » of technology. Such experiences suggest that policies of this kind speak to the symptoms, rather than the underlying causes, of the condition of technological dependence.

It is one of the virtues of the articles in this special issue of *Africa Development* that they address themselves to some of the underlying factors in the technology question, rather than to its surface characteristics. The extract from the UNCTAD IV report, on technological dependence, shows how far the thinking in international organizations has progressed from the early phase of preoccupation with « transfer of technology ». This paper draws heavily on the recent flowering of literature showing technology as an instrument of domination and surplus extraction by the transnational firms, and the inappropriate and even harmful nature of much of the technology that is now being offered to the developing countries as a means of development and modernization. The papers on Zaïre and Tanzania show in rich detail, based on extensive research, that the standard arrangements for the transfer of technology in fairly typical African countries transfer very little technology, if any ; and moreover result in the loss of control over critical centres of decision-making in the national economy, as well as giving rise to steep foreign exchange costs.

It is hoped that these articles will therefore make a stimulating contribution to discussion, research, and eventually policy on a subject of far-reaching importance to contemporary Africa.

NOTES :

(1) UNCTAD III, *Transfer of Technology* : *Report by the UNCTAD Secretariat*, TD-106-Corr. I, Santiago, 1972, p. 2.

(2) United Nations Economic Commission for Latin America, *Technical Progress and Socio-Economic Development in Latin America*, ST-CEPAL 53-L. 2 1974, pp. 26-28.

(3) Amilcar Herrera, « Social Determinants of Science in Latin America » in Charles Cooper (ed.), *Science, Technology and Development, London*, 1973.

REMARQUES INTRODUCTIVES I : LA TECHNOLOGIE, NOUVELLE MAGIE BLANCHE POUR L'AFRIQUE ?

Ce numéro spécial d'*Africa Development* qui est consacré à la technologie, vient à un moment particulièrement approprié de la lutte pour le développement des peuples africains. Dans la volumineuse littérature consacrée au développement économique par les apologistes du système capitaliste international depuis la seconde guerre mondiale, plusieurs thèmes ont tenu la vedette comme « agent principal » du développement. Dans les années 1950, l'opinion selon laquelle le capital constitue le facteur fondamental, était à la base de la majorité des théories du développement. Cependant, au cours des deux premières décennies d'après guerre, plusieurs pays du Tiers Monde reçurent d'énormes quantités d'investissements étrangers directs et d'aide étrangère mais sont restés tout aussi sous-développés, dépendants et inchangés qu'avant. Les apologistes du système durent alors se tourner vers une autre solution : les pays sous-développés sont surpeuplés, l'on doit donc imposer le contrôle des naissances, tout en élevant les capacités de la population existante. « Les Ressources Humaines » tel était le thème à la mode. Cependant, en dépit de toutes les initiatives prises en ce sens, la majorité des peuples du Tiers Monde ont vu leur sort aller de mal en pis au cours des années 1960 et 1970. Aujourd'hui, face aux attaques de plus en plus violentes dont le nouvel ordre économique mondial est l'objet, l'on essaie de faire miroiter aux yeux des peuples du Tiers Monde un nouveau genre de magie blanche : la technologie moderne qui est, affirme-t-on, la clef du développement rapide. Et les pays en voie de développement devront donc s'en approprier le plus rapidement possible et dans les conditions les meilleures possibles.

Souligner le rôle idéologique de la technologique n'équivaut nullement à ignorer son importance critique dans le processus de développement des forces productives dans les pays actuellement développés qu'ils soient capitalistes ou socialistes. Les changements révolutionnaires qui sont intervenus dans le domaine de la technologie mécanique et chimique et dans l'utilisation de l'énergie ont été à l'origine de la transformation explosive de l'environnement naturel en produits matériels finis au cours des deux siècles passés. Il n'existe pas dans le monde contemporain, de pays développé où le développement d'une infrastructure scientifique nationale et l'application de nouvelles technologies à une échelle étendue et systématique n'a pas fondamentalement révolutionné la production dans l'agriculture, l'industrie et tous les secteurs économiques et sociaux. En outre, le processus est cumulatif et auto-suffisant : la recherche scientifique fondamentale, qui est

faite dans les grandes universités et instituts spécialisés, fournit l'infrastructure pour la recherche appliquée qui à son tour fournit les éléments pour le développement des nouvelles technologies ; ces deux fonctions sont remplies par le gouvernement et les grandes entreprises. Les nouvelles technologies sont alors intégrées dans le système productif au moyen d'un nouvel investissement de capital, ce qui a pour effet d'augmenter la productivité et de créer des surplus pour le financement de la recherche fondamentale, de la recherche appliquée, de nouveaux investissements et ainsi de suite dans le cycle de reproduction.

Dans ces conditions, la situation « marginale » du Tiers Monde pour ce qui est de la science et la technologie doit être considérée comme alarmante. Les pays en développement, qui comptent plus de 70 % de la population mondiale, n'ont que 30 % de l'enseignement supérieur du monde, 5 % des dépenses pour la recherche et le développement et ne possèdent que 1 % des brevets d'invention du monde. C'est donc dans le domaine de la science et de la technologie qu'apparaît l'une des manifestations les plus extrêmes du sous-développement. Cependant les implications pratiques de cette observation constituent une toute autre affaire. La plupart des initiatives internationales prises au cours de ces dix dernières années et la plus grande partie de la programmation entreprise en matière de science et de technologie dans les pays du Tiers Monde, semblent basées sur l'idée qu'il suffit d'un simple et mécanique « transfert de technologie » des pays développés vers le monde en développement pour que la science et la technologie contribuent d'une manière effective au processus de développement.

Convaincus de l'origine relativement récente de l'écart technologique entre pays développés et pays en développement et persuadés que l'écart entre ces deux groupes de pays, en matière de revenus, est largement dû à cet écart technologique (1), beaucoup de pays du Tiers Monde font de grands efforts en vue de l'élimination des pratiques restrictives des sociétés transnationales dans le domaine du transfert de technologie. Ces pays tentent aussi de créer des institutions et des mécanismes susceptibles d'assurer dans de meilleures conditions, l'accès au financement de la technologie actuellement disponible et aux ressources et institutions dont l'effet sera de développer la capacité technologique locale. C'est ainsi qu'ont été institués des Codes de Transfert de Technologie s'appuyant sur des registres de Contrat Technologique et la renégociation des contrats existants. C'est ainsi qu'ont été également créés des instituts de recherche et développement s'appuyant sur des conseils scientifiques nationaux, des ministères de la Technologie, etc... C'est ainsi enfin qu'une partie des budgets est consacrée à la science et la technologie. Des pays tels que ceux du Pacte Andéen en Amérique Latine, le Mexique et l'Inde ont joué un rôle de pointe dans ce domaine.

Le problème, c'est que, bien que n'étant pas tout à fait dépourvues d'importance en elles-mêmes, ces mesures semblent avoir eu très

peu d'influence sur la situation qu'elles se proposent de modifier. Pour prendre un exemple, un rapport récent sur l'Amérique Latine (2), souligne que l'histoire technologique des pays actuellement développés montre une première phase caractérisée par l'importation de technologie, suivie de près par une seconde phase qui déborde sur elle et dans laquelle la modification de l'adaptation de la technologie importée prédomine et enfin une troisième phase caractérisée par échanges technologiques avec d'autres pays. Et le rapport fait ensuite observer que l'Amérique Latine et le reste du monde en développement semblent prisonniers de la première phase : une manifestation de la situation de dépendance technologique. Les instituts de recherche et de développement qui sont créés ne sont pas utilisés par l'industrie locale ou les gouvernements locaux ; eux aussi tendent à se marginaliser (3). Les dépenses gouvernementales en matière de science et technologie créent la forme mais pas le contenu d'une éventuelle capacité technique locale. Quant aux registres de contrat technologique, ils sont à l'origine de beaucoup d'informations de recherche mais ne semblent pas avoir beaucoup d'effets sur l'énorme pouvoir des sociétés transnationales qui sont les « fournisseurs » de la technologie. Ces expériences montrent que ce genre de politique s'adresse aux symptômes plutôt qu'aux causes profondes de la dépendance technologique.

L'une des grandes qualités des articles contenus dans ce numéro spécial d'*Africa Development*, c'est qu'ils s'attaquent à quelques-uns des facteurs fondamentaux de la question de la technologie plutôt qu'à ses caractéristiques superficielles. L'extrait du rapport de la CNUCED IV sur la dépendance technologique, montre les progrès accomplis sur le plan théorique par les organisations internationales depuis les anciennes conceptions sur le « transfert de technologie ». Ce document s'inspire abondamment de la récente littérature qui montre le rôle de la technologie comme instrument de domination et d'appropriation des surplus par les sociétés transnationales ainsi que l'inadaptation et les dangers que peut présenter une grande partie de la technologie que l'on présente maintenant aux pays en voie de développement comme moyen de développement et de modernisation. Les articles sur le Zaïre et la Tanzanie, qui sont basés sur des recherches fouillées, montrent clairement que dans les circonstances actuelles, les opérations de transfert de technologie dans les pays africains ont en fait contribué au transfert de peu ou pas du tout de technologie.

En outre, elles ont pour résultat la perte de contrôle des centres de décisions de l'économie nationale et coûtent une quantité considérable de dévises.

Nous avons l'espoir que ces articles apporteront une contribution décisive et stimulante à la discussion, la recherche et enfin la prise de décision sur un sujet d'importance capitale pour l'Afrique contemporaine.

NOTES : Voir page 7

INTRODUCTORY NOTE II :

TRANSNATIONAL CORPORATIONS TRANSFER OF TECHNOLOGY AND PROSPECTS FOR A « FAIR-DEAL » FOR THE THIRD WORLD

Cadman Atta Mills *

To date and despite innumerable international conferences on the effects of transfer of technology on the Third World, few concrete and credible strategies designed to break the technology strangle-hold have emerged. This is not surprising to us, for while there seems to be an emergent convergence of appreciation of the effects of technology transfers to the Third World (that is, technology transfers that are currently taking place accentuate unemployment, resource drain from the Third World to advanced capitalist countries, as well as social, political, and economic dependence), most contributions to the discussion on transfer of technology betray a singular lack of appreciation of the nature of the capitalist world system.

The usual point of departure in such discussions is to assume two distinct and antagonistic worlds ; the advanced industrialized capitalist world, and an underdeveloped Third World. The former world, the assumptions continue, has all the cookies (embodied and/or disembodied technology) and the instruments (transnational corporations, political and military dominance) which enable it to impose terms which are heavily biased against the Third World. The latter, while resisting ruinous terms being imposed is severely handicapped by its weakness, disunity, lack of indigenous technological capacity, lack of skilled negotiators etc. From this optic it is an easy step to devise two-pronged strategies for breaking the technology stranglehold : a) pious exhortation to the developed world to consider renegotiating the legal and juridical basis (the Paris Convention) for the transfer of technology in order to promote an effective transfer of technology to the Third World under « fair and reasonable terms and conditions » (1). b) to suggest ways and means for strengthening the technological capacity of the Third World with a view to reducing technological dependence.

To be sure even such approaches to the discussion may concede (in the from of a post-script) that ;

« It would be surprising if there did not exist a minority in developing societies that stand to derive substantial benefits from a conti-

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nuation of the *status quo*. Since this same minority typically exercises most of the decision-making power, the type of comprehensive strategies suggested could only be conceived and implimented within the context of far-reaching changes in the social, political and economic structures of the developing countries » (2).

We are fully justified, however, in dismissing such post-scripts as belated attemps at being *à la mode* and the proof for this is that precisely because the starting point places the nature of the contradictions in the technology issue at the state to state level (as opposed to contradictions between capital and labour at an international level), the negotiating table is always the central pillar in their recommendations for breaking the technology stranglehold.

We are convinced that the collection of articles in this issue, if properly and critically read, constitute a welcome (even if modest) step towards the posing of the transfer of technology issue in its proper world context. For those not yet convinced, the text by the UNCTAD secretariat on the various manifestations of technological dependence should put an end to any illusions that they may still have with respect to the effects of the transfer of technology on Third World countries. P. Masette Kuuya's paper is of interest mainly because it is a concrete detailing of these same manifestations using the specific case of Tanzania. Further it rightly points out that not all technology transfers are unmitigated disasters for the receiving country (see for example Friendship Textile Factory). The very nature of these projects, however, should alert us to the fact that technology is not neutral in its effects ; but rather it is conditioned by the socio-economic context of both the originating and receiving countries. What these two articles lack in terms of a historical perspective is amply compensated for by Ilunga Ilunkamba's « Conventions de Gestion et Transfert de Technologie au Zaïre : le cas du Cuivre ». This text is more than a chronicling of the evolution of l'Union Minière du Haut-Katanga into the mixed enterprise which is GECAMINES. It is a compelling history of the evolution of underdevelopment and dependence in Zaïre.

Steven Langdon also attempts to detail the effects of technology transfer on the Kenyan economy. By far, however, the major point of interest of his paper is the section on « Political Economy of MNC Technology Transfer in Africa ». This section and the subsequent ones deserve the undivided attention of all readers because it holds the key for a different appreciation of the nature of the capitalist world system. We shall however not attempt to paraphrase him, rather through a global analysis of the capitalist world system and the Transnational corporation — the preponderant agent of technology transfer — we shall attempt to show why we cannot help but agree with his conclusion that « ...it becomes naive for any conclusion to consider the strategies that African government might best adopt toward MNC technology transfer... » precisely because of the developing state-transnational

symbiosis which is an integral and indispensable part of the structure of the world capitalist system and the class alliances needed to sustain it. The questions that we shall pose are the following ; 1) what is the nature and the structure of the capitalist world system ; 2) What is the nature and role of the state — the superstructure — in both the developed and the underdeveloped part of the system ? and finally ; 3) whether given the nature of the system a « fair deal » is possible for whom and by what means.

Our point of departure is that the transnational phenomenon does not constitute a fundamental transformation of the nature of capitalism *nor* is it a transcendence by capitalism of some of its major contradictions *nor* does it call into serious question « the dominance of the nation state » especially as far as the state in the developed center of the system is concerned.

To begin with, the phenomenon is not entirely new ; as Massiah correctly brings to our attention, if the phenomenon has only become apparent since the last two decades or so, we must not forget that its characteristics were present from the very beginning of capitalism :

« Long before the 17th century European companies (Dutch, English, French) were controlling plantations, building warehouses and workshops and stationing garrissons in their trading centres in Asia (China, Japan, South East Asia) Africa and the Middle East. These companies were already engaged in multisectoral activities, they operated on the capital markets and at the same time were evolving their own brand of diplomacy » (3).

But if the transnational phenomenon is not entirely new, it bears stating, however, that it today represents the most advanced form of organization of capital at the present stage of imperialism.

The dominant characteristics of this advanced form of organization of capital are: a) the diversification (at an international level) of the location of productive activities whereby few areas of the world are left untouched, b) a process of vertical and horizontal integration where a given corporation systematically intervenes both in complementary and competitive lines of activities to safeguard and/or advance its market share in given product lines as well as to control all stages of activity and primary resources connected with the provision of its product, c) a division of labour between productive activity (properly speaking) and the planning and management of the corporation as a whole in order to assure long term profit maximization. It is these features that enable transnational corporations to decisively and systematically intervene in the international division of labour, creating universal interdependence at the expense of self-sufficiency and national autonomy while at the same time creating hierarchy and inequality both at the level of nation states, regions and classes within a given nation state, as transnational corporations spread their benefits (and costs) most unevenly. In the words of Hymer :

« It would tend to centralize high level decision-making in a few cities in the advanced countries, surrounded by a number of regional sub- capitals and to confine the rest of the world to lower levels of activity and income; i. e. to the status of towns and villages in a new imperial system. Income, status, authority and consumption patterns would radiate out of these centers along a declining curve and the existing pattern of inequality and dependency would be perpetuated » (4).

Further, the tremendous size of transnational corporations ; the huge financial, economic and political powers at their disposal, and more importantly the fact that any one sector of activity would typically be dominated by a small number of giant corporations operating with considerable sympathy to each other in their pricing behaviour, does enable transnational corporations to (in the words of Massiah) give 'an automatic inflationary answer' to the demands of labour and raw materials-producing countries in cases where they are unable to resist them.

For the smooth operation of transnational corporations, however, the support and assistance of the mother state remains crucial. As Sunkel points out.

« ...The structure (TRANSCOS) and the superstructure (direct governmental relationships) of the international system are interrelated and condition each other. In fact, it is a function of the superstructure to provide the ideological rationale and justification of the system as well as to lay down the rules of the game and provide the practical instruments of implementation » (5).

This, of course, does not mean that the actions of imperialistic governments in international and other affairs will always coincide with or serve to promote the particular interests of transnational corporations. We are convinced, however, that it would be a mistake to insist (as does Norman Girvan, for example) (6) that a distinction be made between western industrialized states and their transnational corporations and to suggest that the assumption of a common or identical interest between western states and western transnational corporations be rejected. The policies or interests of any state are neither autonomous of the often contradictory interests of the dominant class alliance, nor are they given once and for all. Such conflicts as may become apparent between western state policy and transnational interests may simply reflect a relatively weak power position of that section of the bourgeoisie which controls transnational corporations vis a vis the dominant class alliance at that point in time. In any case, it needs emphasizing that if conflicts of interests exist between western industrialized states and their transnational corporations, these conflicts are more apparent than real : The proliferation of such instruments of domination (and transnational expansion-facilitating tools) as tied aid, tied loans, preferential trading agreements, tarrifs, political support for

transnationals, threats of retaliation, governmental subsidies for technological development, etc... eloquently testifies to that. It also testifies that the time has come to put to rest once and for all the argument that transnational corporations constitute a self-reliant internatinal capitalism independent of nation states.

As far as the role of the underdeveloped state is concerned, we can do no better than to quote Steven Langdon ;

« Bargaining thus emerges in Kenya as a key process in establishing a *symbiosis*, or mutually co-operative dependence, between the state and the mnc's. The mnc's win privileges, particularly import protection by which they pre-empt African markets from competitors, and can accordingly maximize their monopoly rents from technology transfer ; the state, in turn, gains a share, for those prominent Africans that dominate it, in these high minc profits. What does *not* happen is significant pressuring of subsidiaries to increase the social benefits and cut the financial costs of mnc technology transfer » (7).

We may add that developing state-transnational corporation cooperation especially within the context of joint ventures is the best guarantee against nationalization and « unreasonable » demands from labour.

The capitalist system is therefore a *world system ;* an international industrial system whose main institutional agents are transnational corporations and which need the active backing of governments of both the developed countries and the underdeveloped countries for their smooth functioning and long term profit maximization. It is a system whose fundamental characteristic is inequality ; a) at the level of nation states, whereby laws, politics, foreign policy, culture, consumption patterns of the advanced countries flow to the dominated Third World countries — the flow of surpluses being the reverse, b) at the level of regions and classes within nation states, as this international system seeks to integrate the national bourgeoisies of the developing nations into a form of international alliance of bourgeoisies, even if in a subordinate role. But as this system integrates a select few into an international alliance, it can not help but marginalize the greater bulk of the population ; this bulk being marginalized not in the sense of its contribution to the production process but only in the sense of its sharing in the benefits of the results of productive activity. It should now be clear that the integrated national bourgeoisie which typically has either a hegemonic, or dominant, or leadership role in the class alliance which controls the state apparatus of the Third World country is totally incapable of fundamentally challenging this international system. For basically their aspiration can be no more than a demand for an elevation in their position in the international alliance, and it is in this light that *their policies* (indigenization and/or state participation, be it 10 %, 20 %, 51 % or even complete nationalization) must be seen. For in the final analysis, the development process is not simply

a question of transferring the ownership of the present industries from foreigners to nationals (be they private or state) leaving the structure of production and consumption as well as production relations unaffected ; and substituting dependence on direct foreign investment for dependence on foreign organization and management of production, imported technology as well as imported raw materials and semi-finished inputs. For this form of « economic nationalism » still spells the exclusion of the bulk of the direct producers from social and economic development. It is this point (and the fact that to keep the excluded segments of the population from challenging this unequal system the state apparatus in the dominated Third World country has to become increasingly repressive), that Hymer eloquently expresses :

« These national middle classes in the underdeveloped countries will gain a new lease on life as they take advantage of the spaces created by the rivaly between American and non-American oligopolists striving to establish global market positions. The native capitalists will again become the champions of national independence as they bargain with multinational corporations. But the conflict at this level is more apparent than real, for in the end the fervent nationalism of the middle class asks only for promotion within the corporate structure and not for a break with that structure. In the last analysis their power derives from the metropolis and they cannot easily afford to challenge the international system. They do not command the loyalty of their own population and cannot really compete with large, aggregate capitals from the center. They are prisoners of the taste patterns and the consumption standards set at the center, and depend on outsiders for technical advice, capital and when necessary, for military support of their position » (8).

Need we add that recent African history (American show of force during the Kenya-Uganda conflict, France and Belgium in Zaïre, etc.) make a documentation of Hymer's position totally superflous ?

Given our view of the international capitalist system, it becomes obvious why we are convinced that any veritable strategy to break the technological stranglehold must be an *anti-imperialist* struggle, involving a frontal attack on the world capitalist system, the unequal international division of labour, dependence on the developed capitalist world for economic, military and technical assistance, etc. We share with Langdon the point of view that a prior critical question will be how to establish societies in the Third World which are committed to solving the basic question of how best to organize national resources and social production to meet the needs of the bulk of direct producers. Further that in the dialectics of class struggle by which that question must be answered the terms by which technological transfers will be effected while important will probably not be determinant, precisely because such technology will be judged on the basis of how they advance critical social goals.

Without such a comprehensive anti-imperialist struggle, however, negotiations between the agents of transnational corporations (the western industrialized states) and those of the underdeveloped state will only be an occasion for at best elevating Mr. 10 % to that of Mr. 15 % while the dominant population in especially the developing country continues to suffer the direct aggression of both groups. This is clearly what is brought out in Sherif Mahmoud El-Hakim's poignant article on « The role of the Family, Kinship and Rural/Urban Migration in the Processing of Solid Waste in Cairo ». After describing to us an indigenous, environmentally sound, employment and income generating means of digesting wastes within the city itself, he concludes by pointing out that the government of Cairo is in the process of negotiating the importation of such technologies as incinerators. The article leaves no doubt as to who will be the beneficiaries as well as the victims of this negotiating process.

FOOTNOTES :

(1) See for example Report by the UNCTAD Secretariat on Transfer of Technology « Technological Dependence : Its Nature, Consequences and Policy Implications ») Fourth Session, Nairobi 1976. TD/190, p. 3.

(2) *Ibid*, p. 31.

(3) G. Massiah, « Multinational Corporations and a Strategy for National Independence », Paper presented at IDEP Conference on Multinational Corporations, Dakar 1974, CS/2562-18, p. 7.

(4) Stephen Hymer, « The Multinational Corporation and Uneven Development », Statement before the Subcommittee on Foreign Economic Policy of the Joint Economic Committee of the U.S. Congress, July 1970, p. 3.

(5) Osvaldo Sunkel, « Development, Underdevelopment, Dependence, Marginality and Spacial Imbalances — Towards a Global Approach », IDEP/Reproduction/269, p. 53.

(6) See Norman Girvan, « Economic Nationalists versus Multinational Corporations ; Revolutionary or Evolutionary Change ? », IDEP/R/2655, oct. 1974.

(7) See Steven Langdon's article in this issue.

(8) Stephen Hymer, *Op Cit.*, p. 27.

REMARQUES INTRODUCTIVES II :

LES SOCIETES TRANSNATIONALES, TRANSFERT DE TECHNOLOGIE ET PERSPECTIVES «D'ARRANGEMENT EQUITABLE» POUR LE TIERS MONDE

Jusqu'à ce jour et en dépit des innombrables conférences internationales sur les effets du transfert de technologie sur le Tiers Monde il y a eu peu de stratégies concrètes et crédibles capables de briser le carcan technologique. Ceci n'est pas pour nous surprendre car même s'il semble qu'il y ait une convergence entre les diverses appréciations des effets du transfert de technologie vers le Tiers Monde, (les transferts de technologie qui ont actuellement lieu aggravent le chômage, la fuite des ressources du Tiers Monde vers les pays capitalistes avancés et enfin la dépendance économique, politique et sociale), il n'en demeure pas moins que la plupart de ceux qui prennent part à ces débats sur le transfert de technologie font preuve d'un singulier manque de compréhension de la nature du système capitaliste mondial.

Ces débats sont en général basés sur une division du monde en deux parties distinctes et antagonistes : le monde des pays industrialisés avancés et le Tiers Monde sous-développé. Le premier avec tout son arsenal (technologie théorique ou appliquée) et ses instruments (sociétés transnationales, domination politique et militaire) qui lui permettrait d'imposer des conditions très désavantageuses au Tiers Monde. L'autre qui dans sa résistance contre ces conditions leonines serait handicapé par sa faiblesse, sa désunion, sa pauvreté en matière de technologie locale et en négociateurs habiles et qualifiés, etc... C'est ainsi que l'on se met à imaginer une stratégie en deux parties pour briser le carcan de la technologie : a) vœux pieux pour que le monde développé envisage de renégocier les bases juridiques (la Convention de Paris) du transfert de technologie en vue de favoriser le transfert efficace de technologie vers le Tiers Monde « à des conditions équitables et raisonnables » (1), et b) recherche de voies et moyens pour le renforcement de la capacité technologique du Tiers Monde en vue de la réduction de la dépendance technologique.

Il est vrai que même ce genre d'approche peut faire la concession suivante, sous forme de post-scriptum :

« Il serait étonnant de ne pas constater l'existence, dans les sociétés en développement, d'une minorité qui tire des avantages substantiels du maintien de l'état actuel des choses. Etant donné que cette même minorité détient précisément la plupart des pouvoirs de décision, le type de politique globale proposé dans la présente section ne pourrait être envisagé et appliqué que dans le cadre plus vaste de changements profonds des structures sociales, politiques et économiques des pays en développement » (2).

Cependant nous sommes pleinement fondés à considérer ce genre de post-scriptum comme des tentatives tardives d'être « à la mode » car puisque l'on avait dès le débat situé au niveau des Etats les contradictions en matière de technologie (par opposition aux contradictions capital/travail qui se situeraient au niveau international), la table de négociation se trouve toujours au centre des recommandations en vue de briser le carcan de la technologie.

Nous sommes convaincus que s'ils sont bien lus avec esprit critique, les articles rassemblés dans ce numéro constitueront un pas, si modeste soit-il, vers une définition de la problématique du transfert de technologie dans son véritable contexte mondial. Pour ceux qui ne sont pas encore convaincus, le texte du secrétariat de la CNUCED sur les divers aspects de la dépendance technologique devrait mettre fin à toutes les illusions qu'ils pourraient encore se faire en ce qui concerne les effets du transfert de technologie vers les pays du Tiers Monde. Le principal intérêt de l'article de P. Masette Kuuya provient du fait qu'il constitue une étude détaillée de la Tanzanie. En outre, il souligne, à juste titre que les transferts de technologie ne sont pas tous forcément à 100 % désastreux pour les pays récipiendaires (voir par exemple l'usine textile Friendship).

Cependant, la nature même de ces projets devrait attirer notre attention sur le fait que la technologie n'est pas neutre dans ses effets, mais qu'elle est conditionnée par les contextes socio-économiques des pays d'origine et de destination. Les lacunes de ces deux articles en matière de perspectives historiques sont largement complées par l'article de Ilunga Ilunkamba intitulé « Conventions de Gestion et Transfert de Technologie au Zaïre : le cas du Cuivre ». Ce texte constitue beaucoup plus qu'une chronique de l'évolution de l'Union Minière du Haut-Katanga en une entreprise mixte, la GECAMINES. C'est la passionnante histoire de l'évolution du sous-développement et de la dépendance du Zaïre.

Steven Langdon tente aussi de faire une étude détaillée des effets du transfert de technologie sur l'économie du Kenya. Cependant la partie la plus intéressante et de loin, de son article, c'est le chapitre intitulé « Aspect économico-politique du transfert de technologie par les multinationales en Afrique ». Ce chapitre et les chapitres suivants méritent d'être lus avec la plus grande attention car ils sont susceptibles de déboucher sur une appréciation nouvelle de la nature du système capitaliste mondial. Mais plutôt que d'essayer de la paraphraser, nous allons, en procédant à une analyse globale du système capitaliste mondial et des sociétés transnationales, agents les plus importants du transfert de technologie, nous efforcer d'expliquer pourquoi nous avons estimé devoir adhérer à sa conclusion selon laquelle « ...c'est faire preuve d'une certaine naïveté que de vouloir examiner dans une con-

clusion la stratégie la plus appropriée pour les gouvernements africains en ce qui concerne le transfert de technologie par les multinationales... » et ceci justement à cause de la symbiose entre l'Etat en voie de développement et la société multinationale, symbiose qui est elle-même partie intégrante de la structure du système capitaliste mondial et des alliances de classe que le soutiennent. Les questions que nous allons poser sont les suivantes : 1) Quelles sont la nature et la structure du système capitaliste mondial ? 2) Quels sont la nature et le rôle de l'Etat (la superstructure) dans les parties développées et sous-développées du système ? 3) Est-ce que, étant donné la nature du système, un « arrangement équitable » est possible. Si oui, comment et au profit de qui ?

Comme point de départ, disons que le phénomène transnational ne constitue ni une transformation fondamentale de la nature du capitalisme, ni un dépassement par le capitalisme de quelques-unes de ses principales contradictions, ni une sérieuse remise en question de la domination de « l'Etat-nation » surtout en ce qui concerne l'Etat dans le centre développé du système.

Pour commencer, le phénomène n'est pas tout à fait neuf. Comme Massiah nous le dit si justement, si le phénomène n'est devenu apparent qu'au cours des deux dernières décennies, il ne fait cependant pas oublier que les traits caractéristiques en étaient présents depuis le début même du capitalisme.

« Bien avant le XVIII[e] siècle, les compagnies européennes (hollandaises, anglaises, françaises) contrôlent des plantations, édifient entrepôts et ateliers et installent des garnisons dans leurs comptoirs en Asie (Chine, Japon, Asie du Sud-Est), en Afrique et au Moyen-Orient. Ces firmes ont déjà des activités multisectorielles, elles opèrent sur les marchés des capitaux et développent leur propre diplomatie » (3).

Mais si le phénomène transnational n'est pas tout à fait nouveau, il ne reste pas moins qu'il représente aujourd'hui la forme d'organisation du capital la plus avancée au stade actuel de l'impérialisme.

Les caractéristiques dominantes de cette forme avancée de l'organisation du capital sont : a) la diversification, au niveau international, de l'emplacement des activités productives qui concerne pratiquement le monde entier, b) un processus d'intégration verticale et horizontale qui fait qu'une société donnée intervient systématiquement dans des domaines d'activités aussi bien complémentaires que compétitifs pour sauvegarder ou faire avancer sa part du marché de certains produits et aussi contrôler toutes les activités et les matières premières en rapport avec la fourniture de ces produits, c) une division du travail entre l'activité de travail productif (à proprement parler) et la planification et la gestion de la socioté dans son ensemble afin d'assurer la maximalisation des profits à long terme. Ce sont ces caractéristiques qui permettent

aux sociétés transnationales d'intervenir d'une manière décisive et systématique dans la division internationale du travail, créant ainsi l'interdépendance universelle aux dépens de l'auto-suffisance et de l'autonomie nationale tout en créant aussi la hiérarchisation et l'inégalité au niveau tant des Etats-nations, que des régions et des classes au sein d'un Etat-nation donné du fait même que les sociétés transnationales multiplient bénéfices et coûts d'une manière inégale. Comme le dit Hymer :

« Ce système aurait tendance à centraliser les emplois supérieurs de prise de décision dans quelques villes-clés des pays avancés, environnées de nombreuses sous-capitales régionales, et à cantonner dans le reste du monde les niveaux inférieurs d'activité et de revenu, c'est-à-dire les maintenir dans le statut de villes et de villages d'un nouveau régime impérial. Les structures de revenu, de rang, d'autorité et de consommation rayonneraient de ces centres selon une courbe descendante et la structure existante d'inégalité et de dépendance serait maintenue » (4)

En outre, les dimensions gigantesques des sociétés transnationales, l'immense pouvoir politique, économique et financier à leur disposition et, plus important, le fait que tout secteur d'activité est dominé par un nombre restreint de sociétés géantes opérant en coopération étroite en ce qui concerne les prix, permet aux sociétés transnationales (selon le mot de Massiah) de « fournir une réponse inflationniste automatique » aux exigences des pays producteurs de main-d'œuvre et de matières premières lorsqu'elles ne peuvent y résister.

Cependant les sociétés transnationales ont un besoin crucial de l'appui et de l'assistance de leur état d'origine. Comme le fait remarquer Sunkel :

« La structure (les TRANSCOS) et la superstructure (les rapports étatiques directs ou indirects) du système international sont liées entre elles et se conditionnent l'une l'autre. En fait, la superstructure a pour fonction de fournir une explication raisonnée et une justification idéologique du système, d'établir également les règles du jeu et de fournir les instruments pratiques d'exécution » (5).

Ceci ne signifie évidemment pas que les actions des gouvernements impérialistes dans les affaires internationales et autres coincideront toujours avec les intérêts particuliers des transnationales ou serviront toujours à les favoriser. Cependant nous sommes convaincus qu'il serait erroné d'insister comme le fait Girvan par exemple (6), sur le fait qu'une distinction doit être faite entre les Etats occidentaux industrialisés et les sociétés transnationales et de proposer que soit écartée toute idée de communauté ou d'identité d'intérêts entre les Etats occidentaux et les sociétés transnationales occidentales. La politique et les intérêts d'un Etat ne sont pas indépendants des intérêts souvent contradictoires d'une alliance de classes dominantes. Ils ne se présentent pas non plus sous une

forme définitive et fixée une foi pour toutes. Les conflits pouvant apparaître entre la politique des Etats occidentaux et les intérêts transnationaux peuvent tout simplement constituer un reflet de la faiblesse relative de la partie de la bourgeoisie qui contrôle les sociétés transnationales par rapport à l'alliance de classes qui prédomine à ce moment-là. De toute façon, il faut insister sur le fait que s'il existe des conflits d'intérêts entre les Etats occidentaux industrialisés et leurs sociétés transnationales, ces conflits sont plus apparents que réels. La prolifération d'instruments de domination et aussi d'expansion des transnationales tels que l'aide liée, les prêts liés, les accords préférentiels, les tarifs spéciaux, l'appui politique aux transnationales, les menaces de représailles, les subventions gouvernementales en vue du développement technologique, etc... en constituent une illustration éloquente. Cela signifie également que le moment est venu d'abandonner une bonne fois pour toutes l'argument selon lequel les sociétés transnationales constituent à elles seules un capitalisme international autonome et indépendants des Etats-nations.

En ce qui concerne le rôle de l'Etat sous-développé, nous ne pouvons faire mieux que de citer Steven Langdon :

« C'est ainsi qu'au Kenya, le marchandage apparaît comme la méthode principale pour arriver à une symbiose ou une dépendance et de coopération entre l'Etat et les multinationales. Les multinationales ont des privilèges, notamment la protection des importations, par laquelle ils écartent leurs rivaux des marchés africains et peuvent aussi maximaliser les profits monopolistes qu'ils tirent du transfert de technologie. Quant à l'Etat, il s'approprie une partie de ces profits énormes fait par les multinationales à l'intention des dirigeants africains. Ce que l'on ne constate pas du tout, c'est l'existence de la part des subsidiaires d'une pression en vue de l'accroissement des bénéfices sociaux et de la réduction du coût du transfert de technologie par les multinationales » (7).

A cela nous pouvons ajouter que la coopération entre l'Etat en développement et la société transnationale, notamment dans le contexte de « joint ventures » est la meilleure garantie contre la nationalisation et les exigences « non raisonnables » du travailleur.

Le système capitaliste est donc un système mondial, un système industriel international dont les principaux agents institutionnels sont les sociétés multinationales et qui ont besoin du concours actif des gouvernements tant des pays développés que des pays sous-développés pour fonctionner convenablement et maximaliser leurs profits à long terme. C'est un système dont la caractéristique fondamentale est l'inégalité qui s'observe : a) au niveau des Etats-nations et qui fait que les lois, les systèmes politiques, la politique étrangère, la culture et les modèles de consommations des pays avancés rayonnent vers les pays du Tiers Monde sous domination, les surplus se déplaçant selon un

mouvement contraire ; et b) au niveau des régions et classes à l'intérieur des Etats-nations car ce système international cherche à intégrer les bourgeoisies nationales des pays en développement dans une sorte d'alliance internationale des bourgeoisies, même si certaines doivent jouer un rôle subalterne. Mais en intégrant quelques personnes sélectionnées dans une alliance internationale, ce système aboutit nécessairement à une marginalisation de la grande majorité de la population, marginalisation non pas dans le sens de la contribution au processus de production mais seulement pour ce qui est du partage des bénéfices résultant de l'activité productive. Il doit être désormais clair que cette bourgeoisie nationale ainsi intégrée qui joue un rôle hégémonique ou dominant ou dirigeant au sein de l'alliance de classe qui contrôle l'appareil d'Etat des pays du Tiers Monde, est totalement incapable de procéder à une remise en question fondamentale de ce système internationale. En effet, cette bourgeoisie aspire essentiellement et seulement à une élévation de sa place dans l'alliance internationale et c'est de ce point de vue que *sa politique* (indigénisation ou participation de l'Etat qu'elle soit de 10,20 ou 51 % ou même nationalisation totale) doit être vue.

Car à l'analyse, le processus du développement se révèle être non pas une question de transférer la propriété des industries présentes étrangères aux nationaux (privé ou public) en laissant intactes les structures de production et de consommation et aussi les relations de production. Il ne s'agit pas non plus de remplacer la dépendance à l'égard de l'investissement étranger direct par la dépendance en matière d'organisation et de gestion de la production par l'étranger, la technologie importée et les matières premières et les produits semi-finis également importés. Car ce type de « nationalisme économique » s'accompagne encore de l'exclusion de la masse des producteurs directs du développement économique et social. Ce fait (et aussi le fait que pour empêcher les catégories de la population ainsi exclues du développement de remettre en cause ce système inéquitable, l'appareil d'Etat des pays du Tiers Monde eux-mêmes sous domination étrangère, est obligé de recourir à une repression toujours accrue) est éloquemment exprimé par Hymer :

« Ces classes moyennes nationales des pays sous-développés auront regain de vie en tirant profit des espaces crées par la rivalité entre les oligopoles américain et non américain qui s'efforcent de créer des situations de marché globales. Les capitalistes indigènes seront à nouveau les champions de l'indépendance nationale en négociant avec les « corporations » multinationales. Mais à ce niveau le conflit est plus apparent que réel, car finalement le nationalisme ardent de la classe moyenne ne vise qu'à une promotion de cette classe dans la structure de la « corporation » et non à une rupture avec cette structure. En dernière analyse, le pouvoir de cette classe lui vient de la métropole et elle ne peut guère se permettre de défier le système in-

ternational. Elle ne dispose pas de la loyauté de son peuple et ne peut pas vraiment rivaliser avec le groupe des grandes capitales puissantes du centre. Elle est prisonnière des structures de goût et des niveaux de consommation établis au centre, et elle est tributaire des étrangers pour les avis techniques, les capitaux et, éventuellement pour l'aide militaire nécessaire à la préservation de leur situation » (8).

Est-il besoin d'ajouter que l'histoire récente en Afrique (démonstration de force américaine au cours du conflit Kenya-Ouganda, la France et la Belgique au Zaïre, etc...) fournit des illlustrations éclatantes aux observations de Hymer ?

D'après notre façon de voir le système capitaliste international, l'on peut clairement comprendre pourquoi nous sommes convaincus que toute stratégie authentique destinée à briser le carcan de la technologie doit consister en une lutte *anti-impérialiste*, avec une attaque frontale du système capitaliste mondial, de l'inégalité de la division internationale du travail, de la dépendance à l'égard du monde capitaliste développé en matière d'assistance économique, militaire et technique, etc...

Nous partageons le point de vue de Langdon selon lequel une première question critique sera comment créer dans le Tiers Monde des sociétés décidées à résoudre la question fondamentale de l'organisation optimale des ressources nationales et de la production sociale pour répondre aux besoins de la masse des producteurs directs. En outre, dans la dialectique de la lutte de classe par laquelle cette question doit être résolue, les conditions dans lesquelles les transferts de technologie doivent s'opérer sont importantes mais ne seront probablement pas déterminantes, précisément parce que cette technologie sera jugée sur la façon dont elle fait avancer les objectifs sociaux critiques.

Cependant, sans une telle lutte anti-impérialiste totale, les négociations entre les agents des sociétés transnationales (les Etats industrialisés occidentaux) et ceux de l'Etat sous-développé constitueront tout au plus une occasion de transformer Monsieur 10 % en Monsieur 15 % alors que la majorité de la population notamment dans les pays en développement continue à souffrir de l'agression directe des deux parties. Ceci apparaît clairement dans l'article émouvant de Shérif Mahmoud El Hakim intitulé « Le Rôle de la Famille, de la Parenté et de l'exode rural dans le traitement des ordures ménagères au Caire ». Après la description d'une méthode locale tout à fait valable au point de vue écologique et génératrice d'emplois et de revenus pour la digestion des ordures au sein même de la cité, il conclut en faisant remarquer que le gouvernement du Caire est actuellement en train de négocier l'importation de technologies telles que des incinérateurs. L'article ne laisse aucun doute quant à ceux qui sont destinés à bénéficier de ce processus de négociations ou à en être les victimes.

NOTES :

(1) Voir par exemple le Rapport du secrétariat de la CNUCED sur le Transfert de Technologie, intitulé : « La Dépendance Technologique : sa nature, ses conséquences et ses implications politiques », quatrième session, Nairobi 1976 — TD/190, p. 3.

(2) *Ibid*, p. 31.

(3) G. Massiah « Les Sociétés Multinationales et la stratégie pour l'indépendance nationale », communication présentée à la conférence de l'IDEP sur les Sociétés Multinationales, Dakar 1974, CS/2562-18, p. 7.

(4) Stephen Hymer, « La Société Multinationale et la Loi du Développement Inégal », IDEP/Reproduction 259, août 1971, p. 3.

(5) Osvaldo Sunkel « Développement, Sous-Développement, Dépendance, Marginalité et Déséquilibres spatiaux — Recherche d'une approche globale », IDEP/reproduction 269, p. 53.

(6) Norman Girvan, « Nationalistes économiques contre Sociétés Multinationales Changement révolutionnaire ou évolutif », IDEP/Reproduction 2655, oct. 1974.

(7) Voir l'article de Steven Langdon dans le numéro présent.

(8) Stephen Hymer, *Op. Cit.*, p. 27.

Technological Dependence : Its Nature, Consequences and Policy Implications

Report by the UNCTAD Secretariat*

THE NATURE OF TECHNOLOGICAL DEPENDENCE

The concept of dependence can be given several interpretations varying from « reliance », which can be mutual, to « being subordinate », which is certainly asymmetric. It is important to distinguish between these different connotations in analysing « technological dependence ». Technological dependence of one country on another in the sense of mutual reliance is not in itself a cause for concern, and may indeed facilitate prosperity through division of labour. The United Kingdom may well rely on the ability of France to make wine, while France relies on the ability of the United Kingdom to produce whisky. The picture is quite different when the relation is one-sided, and the concept of « technological dependence » refers to such an *asymmetric* form of dependence. A typical developing country depends technologically on developed economies in a manner that is quite asymmetric, involving a relation of subordination, and it is this asymmetry that makes the notion of technological dependence a central concern in economic development.

The developmet of the asymmetric features of technological dependence is largely the result of the industrial revolution, and in particular of the form that modern capitalism has taken. The dominance relations of the colonial era have helped to foster and perpetuate this asymmetry. The growth of such asymmetry and its numerous implications have been extensively discussed in recent years by economists of varying schools of thought. The characteristics of dependence as it exists today cannot be dissociated from the historical process that has brought this asymmetry into being while the experiences of the developing countries in different parts of the world are by no means uniform, there are enough characteristics in common to make it fruitful to view technological dependence as a global problem, without of course losing sight of variations within the over-all pattern.

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* United Nations Conference on Trade and Development. Fourth Session, Nairobi, 5 May 1976, Item 12 of the provisional agenda. Published with the kind permission from UNCTAD Secretariat.

This chapter seeks to identify the various manifestations of technological dependence. Technology involves not merely the systematic application of scientific and other organized knowledge to practical tasks, but also the social and economic atmosphere within which such application has to take place (1). Furthermore, technology refers not only to ways of *producing* goods, but also ways of *fulfilling* needs and deriving satisfaction. The technology of consumption has a profound impact on the structure of the economy, influencing the goods and services to be produced (2). Even the attitudes and values of people are, in a sense, a part of technology since they affect the capabilities of a nation (3). Broadly defined, « technological dependence » covers all these issues and it is in this broad sense that the expression will be used in this report.

There are several distinct though highly inter-related aspects of technological dependence of developing countries. Bearing in mind the relevance of asymmetry in the concept of technological dependence, the following aspects — some of which are obviously more important than others — seem to need careful scrutiny.

A. *WEAKNESSES OF PRODUCTION AND TRADE STRUCTURES*

1. *Asymmetry of commodity pattern*

A somewhat intractable but important aspect of technological dependence concerns the asymmetry of commodity pattern. The types of consumer goods consumed in developing countries reflect the influence of *mores* in the advanced industrialized nations, and this applies particularly to the consumption of the upper classes (4). The technological dependence of developing countries on the richer ones thus extends to taste formation also, leading to a significant restriction of the economic options open to developing countries (in the absence of radical political changes transforming the structure of economic classes on which this commodity pattern depends).

2. *Assymmetry of means of production*

Asymmetry of means of production reflects the typically sharp difference in the abilities of developing and developed countries to produce machinery and other capital goods needed for production. This is certainly one cause of the contrast between technological capabilities of different types of economies (5). There is little doubt that the sophistication needed in the manufacture of capital goods makes an important contribution to the utilization and adaptation of these goods, especially when modern designs are involved.

3. *Asymmetry of trade bondage.*

One consequence of the dependence of developing countries on the more industrialized nations for the supply of technical know-how, patents, management and finance is the power that rests in the latter countries to influence trade policy in the former. This can, for example, take the form of an agreement by the developing country not to export certain products utilizing specific know-how, or a requirement to import machinery and other goods from some specified enterprise. This asymmetry of trade bondage may put a developing country at a considerable disadvantage in the utilization of modern technology and in making use of the best available exchange opportunities (6).

B. *TECHNICAL AND FINANCIAL DEPENDENCE*

1. *Asymmetry of technical knowledge*

Asymmetry of technical knowledge largely reflects the fact that modern techniques of production were typically evolved in the developed countries and that there are barriers — both natural as well as artificial — to the transmission of this knowledge.

This technical asymmetry leads to two rather different consequences, namely (a) the absence in developing countries of some technical knowledge that is widely available in the developed countries ; and (b) the unavailability in *both* developed and developing countries of knowledge of possible technical processes of particular interest to developing countries but not to the developed ones (7). Thus the asymmetry of technical knowledge applies both to the unequal availability of existing knowledge as well as to the world shortage of innovations geared towards the requirements of the economies of the developing countries, e.g., making better use of surplus labour or of specific local resources, including environmental resources, in producing goods for domestic consumption (8).

2. *Skill asymmetry*

The exploitation of production opportunities depends not merely on the knowledge of technical processes but also on the skill to operate these processes efficiently. The shortage of skilled labour in developing countries is, therefore, another aspect of technological dependence. The type of shortage varies from country to country. While some developing countries have a large supply of degree-holding engineers, qualified doctors and scientists, there still tends to be an acute shortage of skills that come mostly from practice and learning by doing. In general the skill asymmetry tends to be sharpest at the down-to-earth level.

3. *Financial asymmetry.*

Financial asymmetry arises with respect to both direct private investment as well as loans and aid from developed countries to developing ones. The financial dependence of developing countries has been much discussed. Since finance is an important part of the control of business decisions, financial asymmetry also implies an asymmetry of decision making. This is most conspicuous in the case of direct private investment, for example for transnational corporations (9), but the influence of finance on decisions is more widespread, affecting public bodies as well. Financial carrots and sticks are frequently very effective, also in the hands of governments of developed countries.

C. *CAPABILITIES FOR CONTROL AND INITIATIVE*

1. *Asymmetry of control*

The last two asymmettries listed are somewhat more general and are related to some of the specific asymmetries already touched upon. The asymmetry of control refers to the fact that many choices facing developing economies are, in fact, made in developed countries, leading thereby to a dichotomy between those who take decisions and those who take the *consequences* of those decisions. This applies particularly to business decisions involving choice of techniques and products for developing countries, especially when made by transnational firms ; this is closely linked with the financial asymmetry discussed earlier. But the phenomenon is more general, and the control reflects the pervasive influence — political, economic and cultural — of developed countries on life in the developing world. It should be noted in addition that there are also asymmetries in terms of regulations that reinforce this asymmetry of control. The imperfect markets for technology and capital often permit industrialized countries to obtain special treatment in the developing countries in terms of governmental regulation. While this is essentially a part of the price that is extracted for supplying technology or capital, the consequences of such concessions are not always easy to understand (10).

2. *Asymmetry of initiative*

Finally, there is a basic difference between the typical developed country and the typical developing one in the ability to assume the initiative in the technological sphere, and indeed in the confidence necessary to do so even when the technical ability exists. In a state of imitative existence, the boldness needed to challenge the received technology is typically absent. This asymmetry of initiative may be hard to quantify, but it is certainly one of the more fundamental characteristics of under-development.

TECHNOLOGICAL DEPENDENCE AND RECENT DEVELOPMENT EXPERIENCE

Although the application of imported science and technology over the last quarter century has brought some progress in accelerating the growth of output, improving material standards of life and spreading modernization, the low-income countries still find themselves unable to meet the basic needs of the majority of their populations. The purpose of this chapter is briefly to consider the extent to which the prevailing approach to industrialization, based on a reliance on the transfer of technology from developed country enterprises, is capable of contributing to a diminution of this problem.

In the 15 years following the Second World War, over 60 countries gained formal independence and the total number since then has grown to nearly 80. These countries entered political independence with a backlog of crushing poverty, massive illiteracy and little accumulated capital or industrialization experience. Emancipation from alien rule was accompanied by a rising political consciousness, which expressed itself in demands for modernization. The best way of accelerating industrialization, it seemed, was to tap the vast fund of production technologies that had already been developed in the advanced countries. The technology was not free but, like the goods that it was used to produce, it was traded and could be bought or leased — mainly from transnational corporations domiciled in the industrialized countries, which had made themselves its proprietors.

A. *THE HISTORICAL PATTERN*

Traditionally, the transfer of technology to developing countries, largely in the form of direct foreign investment, has taken place in the extractive sector (petroleum, mining and export agriculture). This can be seen from the accumulated stock of foreign investment, in which the share of this sector was very high in the past and accounted for nearly one-half as late as 1967, compared with about 30 per cent in manufacturing (11). Additions to this stock (by United States firms at least) more recently, however, have been strongly dominated by manufacturing (12), reflecting in part the results of deliberate policies adopted by the developing countries.

The motivation for foreign investment in the extractive sector has been and is to secure access to critical imports of raw materials for the metropolitan countries and, although the resulting exports

have in recent years helped to generate foreign exchange resources needed for the financing of development, the direct effects on modernization, on the dissemination of skills and on the creation of employment have been quite small.

For all but a small minority of developing countries, the main feature of industrialization after the war was, following the example set by continental Europe and the United States in the latter part of the 19th century, an attempt to create international markets for manufactured goods by the establishment of a system of high tariffs and other types of restriction on imports. The fledgling industries thus created would produce domestic substitutes for goods that had previously been imported. The desire for greater economic independence was a natural outgrowth of political independence. The aim was to secure control of one's own instruments of production and to end « dependence on centres of decision' situated abroad » (13). In the absence of a sufficiently developed entrepreneurial spirit among potential industrialists, protection was felt to be necessary in order to stimulate local initiative, mobilize savings and enhance the establishment of smalll enterprises that could not become firmly established without the umbrella of tariffs.

Thus, there were two cornerstones to the strategy of industrialization : importation of technology from the industrialized countries, and the substitution of domestic manufactures for imports.

B. *TRANSNATIONAL FIRMS, DEPENDENCE AND THE CONDITIONS OF EXCHANGE*

In reviewing the results of this strategy, it is essential to keep in mind the pervasive influence of the world-wide market for technology and of the respective positions of transnational enterprises and developing countries in that market. The market has the following peculiarities : it is highly imperfect, with great monopoly advantage for the seller because of secrecy and/or the protection of patents and trade marks. The production technology (whether in the form of pure knowledge or embodied in foreign investment or machinery) is transferred under terms that are the outcome of negotiations between buyers and sellers in situations approximating monopoly or oligopoly. The final returns and their distribution depend on the relative power of the bargainers (14).

The probability of an unfavourable outcome is highest in the case of developing countries because of the asymmetry of technical know-

ledge discussed in the chapter above. Evidence of it is most vividly seen in the negligible participation of developing countries in the ownership of patents, reported in an earlier study by the UNCTAD secretariat, which shows that only 6 per cent (200,000) of the estimated 3.5 million patents in existence in 1972 were granted by developing countries, and that less than one-sixth of that total was owned by nationals of those countries. (15)

It is true that several developed countries are also heavy net importers of technology and may have few patented inventions to their credit. The seriousness of technological dependence as it applies to the poorer countries, however, is that, because of an absence of experience with modern technology generated by historical factors, there is a lack of skills. This can be of two kinds : (a) a shortage of relatively abstract, high-level skills needed in order to make technological choices — both in firms and in government — to appraise technology and to carry out research on the development of new technologies ; and (b) a lack of the more down-to-earth expertise needed in order to use tools and operate mechanical equipement.

The table below shows the decidedly low endowment of developing compared with developed countries in terms of type (a) skills. Thus, in 1970 there was an average of only about 6 engineers and scientists per 10,000 population for the 8 African countries for which data were available, compared with figures of 22 for Asia and 69 for Latin America. This contrasts with a figure of 112 per 10,000 in developed market economy countries. The poorer performance of developing countries repeats itself for every socio-economic indicator about which it was possible to obtain information. Among developing regions, Africa consistently fares the worst and Latin America generally the best, with Asia in between.

It should not be inferred from the table that the solution to the technology problem is simply to make good the deficiencies shown, e.g., by educating a greater amount of high-level manpower. The existing outflow of scientific personnel from developing countries already demonstrates a probable outcome if such a policy were undertaken in the absence of a parallel increase in the domestic demand for such skills (16). Moreover, the quantitative deficiencies in science and technology depicted in the table may be less significant than the fact that a great deal of scientific and technological activity in developing countries is unconnected with fundamental needs (17). There is no quantitative measure of the comparative lack of the second type of more mundane skills and capabilities directly connected with the productive process. As was stated in chapter 1, these capabilities are not the product of

TABLE

TECHNOLOGICAL DEPENDENCE : SELECTED SOCIO-ECONOMIC INDICATORS

(Averages expressed as medians for 1970 or latest year available)

	Developed market economy countries[a]	Developing countries and territories		
		Africa[b]	Asia[c]	Latin America[d]
I. *SCIENCE AND TECHNOLOGY*				
(i) ratio of total stock of scientists and engineers per 10,000 pop.	112	5.8	22.0	69
(ii) ratio of technicians per 10,000 pop.	142.3	8.3	23.4	72.2
(iii) scientists and engineers engaged in R & D per 10,000 pop.	10.4	0.35	1.6	1,15
(iv) technicians engaged in R & D per 10,000 pop.	8.2	0.4	0.6	1.4
(v) expenditure on R & D as percentage of GNP	1.2	0.6	0.3	0.2
II. *HIGH LEVEL MANPOWER*				
(vi) professionals and technicians as percentage of economically active pop.	11.1	....	2.7	5.7
(vii) percentage of the economically active population employed in manufacturing sector	25.4	3.5	10.5	14.1
(viii) literacy rates (per cent)	96[e]	High[f] Low[f] 20 15	32	77
(ix) ratio of primary and secondary enrolment to school age pop.	92[e]	32	56	78

Sources : (i)-(v) : UNESCO ; *Statistical Yearbook*, 1973, Table 8.3 ; and United Nations, *Statistical Yearbook*, 1974, table 199.
(vi) and vii) : ILO, Yearbook of Statistics, 1974, tables 2A an 2B.
(viii) and (ix) : *Handbook of International Trade and Development Statistics*, supplement for 1973, table 6.8.

formal technical training so much as on-the-job experience which is more difficult to produce. Consequently, their scarcity is the most acute for developing countries.

The most commonly cited advantage for developing countries provided by the transnational corporation is that it offers at one and the same time technology and a package of other crucial inputs such as financial resources, organizing capability, machinery and intermediate goods, and distribution channels for exports. It is frequently overlooked that the transnational corporation also strives to maintain this advantage by consolidating its control over the capacity to generate all of these inputs. In doing so, it deprives the developing country of the capacity to make its own technological and economic decisions. A few statistics will document the dominance that is exercized over one the of above inputs — technology. In the United States, where 70 per cent of all (public and private) expenditure on research and development in non-socialist countries occurs, the transnational corporations accounted for an average of 52 per cent of total private R & D expenditure in 1966, of which only 6 per cent occurred overseas — mostly in Canada, the United Kingdom and Europe (18). Of the 2,760 million Dollar in overseas receipts of royalties and fees for the transfer of technology by United States firms in 1972, it is estimated that between 85 to 90 per cent went to transnational corporations and three-quarters of that sum originated from their affiliated firms (19).

The impact of the transfer of technology is strongly conditioned by the multiplant (or multi-branch) spread of the transnational corporation and its unified approach to the management of its activities so as to maximize global rather than national profits. Although it may have a clear logic in terms of the efficient operation of the corporations, the location of decision-making centres outside the borders of

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FOOT-NOTES TO TABLE

a) The size of the sample in this column varies by indicator ranging from four countries in line (ii) to 25 countries in line (ix).

b) The size of the sample in this column varies by indicator, ranging eight countries in lines (i) and (ii) to 46 countries in lines (viii) and (ix).

c) Excludes China. The size of the sample in this column varies by indicator, ranging from seven countries in line (vi) to 36 countries in lines (viii) and (ix).

d) The size of the sample in this column varies by indicator, ranging from seven countries in lines (i) and (ii) to 43 countries in line (viii).

e) Includes Greece and Turkey.

f) Taking upper limit of estimates where no precise figures were given, e.g. for 10-15 per cent, 15 per cent would be be used for high estimate and 10 per cent for low estimate.

Note : The classification used in this table is intended for statistical convenience and does not necessarily imply any judgement regarding the stage of development of any particular country.

the developing countries in which these corporations operate tends to foster an international division of labour which accentuates the dominance dependence relationship described in chapter 1 above.

The discussion below of the effects of the technological aspects of recent industrializations strategies of developing countries will concentrate on three main issues : (a) the foreign exchange cost of technology transfer ; (b) the appropriateness of technology, and (c) the possibility of technological development.

C. *FOREIGN EXCHANGE COSTS : SOME DETERMINING FACTORS.*

As has been shown in previous studies issued by the UNCTAD secretariat, the foreign exchange cost of transfer of technology represents a considerable burden on the balance of payments of developing countries (20) and the over-all balance-of-payments impact of individual investment projects has often been on the negative side (21). Those findings are indirectly supported by other studies which have shown a negative value added calculated at world prices for a number of industries in developing countries (22) and a negative aggregate impact from the activities of transnational corporations on the balance of payments of host countries (23). At least three types of practices by transnational corporations tend to diminish the balance-of-payments benefits to developing countries. These include the tendency to rely on sources of finance within the host country (though this is sometimes acknowledged to mobilize domestic savings) ; the imposition of formal and informal restrictions on exports and sources of supply for their affiliates and independent licensees ; and the over-pricing of imports or under-pricing of exports by these enterprises.

In no small part, these practices represent the inevitable exercice of market power. But the ease with wich supplying firms have been able to extract excessive returns on their technology with these or other practices is due in part to the nature of import substitution policies enacted by governments of developing countries. High tariffs and restrictions shutting out competing imports of consumer goods combined with low tariffs on capital goods have permitted protected industries to price their products well above world market prices (24). For nationally owned « infant industries », the protection creating a monopoly market may have been necessary as a temporary measure permitting them to attain an efficient scale of production. It has not been justified on an indefinite duration to prolong the existence of excess capacity, or of units too small ever to operate efficiently in domestic markets of limited size (25). When, as is frequently the case, the protection has applied to the foreign affiliates of dominant, well-

established transnational firms it is simply a free gift further inflating potential monopoly profits that are then remitted through the familiar channels of transfer pricing, payments for know-how and trade marks, etc. which appear as costs on the affiliates' income statements (26). Opportunities for excessive payments for imported technology have also been enhanced by the provision of a host of other investment incentives, such as generous tax holidays, low-cost credits and underpricing of utilities. It may be said that the competition among developing countries to offer the most generous terms for the attraction of technology is itself a result of technological dependence.

D. *APPROPRIATENESS OF PRODUCTION TECHNOLOGIES*

A major cause of disappointment with the progress of the Second Development Decade has been the persistence of unemployment and the failure of the growth rate of employment to keep up with the growth of population in much of the third world. It has become evident that the rapid expansion of industrial output is not by itself sufficient to solve this problem. In the great amount of literature on the subject, the most frequently prescribed remedy is a greater reliance on efficient technologies using a high ratio of labour to capital. A strong case may exist for choosing more labour-intensive techniques, even in those cases when they are samewhat inferior to others in terms of productive efficiency, if they are preferred by workers and are more suitable to local institutions and traditions (27). In general, the industries of developing countries have tended to employ techniques which have not led to adequate utilization of domestic resources, including environmental resources. Moreover, there is a pronounced tendency for capital intensity to increase over time — partly owing to shifts in industrial patterns — which is another way of saying that the amount of investment necessary in order to create a job is becoming progressively greater (28). The technology marketed by transnational firms in import-substituting industries has been of the same labour-saving type used in industries in their own countries. In contrast, the same firms have in recent years been a major source of labour-intensive methods where they have established wholly owned subsidiaries for the export of manufactures, usually to their own countries (29). But these essentially assembly-type operations continue to represent a small proportion of manufacturing investment in the vast majority of low-income countries where emphasis has been on the exploitation of domestic markets. It can be concluded, therefore, that the powerful combination of technology, capital and organizational skills at the disposal of firms in developed countries has not contributed optimally to the solution of the employment problem and may actually have aggravated it in those instances where it has replaced traditional patterns of production (30).

The accumulating body of scattered empirical evidence on the *existence* of labour-using techniques, some in current use and others

long discarded by developed country firms, removes the absence of such techniques as a satisfactory explanation for the prevalence of capital-intensive production processes in the transfer of technology to developing countries (31). Among the other explanations, the most important is that the market prices paid for capital and labour in developing countries do not correctly portray their relative scarcities or, more generally, give the wrong incentives to firms choosing techniques of production. Technologies designed where labour is scarce are transferred unaltered to poor countries where labour is abundant because they already exist and because the heavily protected, monopolistic of oligopolistic markets of these countries obviate the need to develop new ones. Even under competition, market wage rates and interest rates on borrowed capital are an insufficient guide for choosing techniques that are the most desirable from society's point of view. Moreover, government policies such as tax incentives for investment, low tariffs on imported machinery and subsidized credit have the effect of artificially lowering the price of capital relative to labour in developing countries.

The impact of particular techniques of production is not only conditioned by the intensity with which they use labour, but also by the general social, economic and natural environments in which they are applied. This point applies especially to agriculture, a sector that has only lately begun to attract the kind of attention it deserves in countries with rising food deficits and growing unemployment. Developed country agricultural techniques based on large-scale, highly mechanized methods of cultivation in temperate climates are not adapted to the tropical conditions, low land-to-labour ratios and lack of skills prevailing in developing countries. Development literature abounds with examples of imported farm machinery that falls into disuse the moment the experts have left (32). Moreover, the socio-economic effects of imported technology depend critically on systems of land tenure, class structure and income distribution. Thus, although the introduction of high-yielding seeds through the green revolution succeeded in achieving spectacular increase in per acre yields in some case, it mainly benefited rich landlords with access to credit who farmed in areas where irrigation and fertilizers were available (33). A considerable potential exists for furthering the indigenous adaptation and development of simple technologies directed toward small-scale peasant farming and the creation of rural industry (34). However, for many Latin American and some Asian countries, land reform would be a necessary precondition.

E. *APPROPRIATENESS OF CONSUMPTION TECHNOLOGIES*

Although transnational firms have been the principal source for the transfer of production technology, it has until recently been over-

looked that they are also the main avenue for the transmission of « consumption technology » (35). A large proportion of the modern manufactured products consumed in developing countries today are either imported or were formerly imported from developed countries. Through their mastery of the techniques of advertising and product differentiation, and their application of global distribution and marketing strategies, transnational companies have helped to shape the consumption patterns of these countries. At the same time, consumer goods markets in these countries are dominated by urban middle and upper classes who have been the group most favoured by the unequal income distributions that have accompanied the type of import-substituting industrialization that has been pursued. It is these enclaves of affluence that have provided the main target for transnational firms (36).

The main charge against import substitution is that it has concentrated on the wrong products. The inappropriateness of many of the rich country products introduced and promoted in the domestic markets of poor countries derives from the fact that they embody technonological characteristics that are either unnecessary, undesired or too costly to meet the basic needs of nutrition, health, clothing and shelter (37). Labour-intensive methods of production are sometimes excluded if these modern products of high quality are to be manufactured.

The transnationals and their client firms in developing countries are not likely to be keen about or able to undertake the manufacture of goods that cater to the above-mentioned needs, for at least three reasons (38). First, although the gains to society from their doing so would be high, private profitability is low on account of the limited purchasing power of the income groups that would consume the products. Secondly, the specific production of appropriate goods tailored to the unique environments of individual developing countries would be inconsistent with the principle of efficiency based on standardazation and uniform specifications and quality characteristics. Modification of product characteristics is rendered more difficult in the case of highly differentiated goods that are covered by trade marks or brand names identified in consumers' minds, rightly or wrongly, with a certain standard of quality (39). Finally such a policy would be inconsistent with the corporate ideology of achieving a « global structure of excellence » based on the Western model (40). In sum, the efforts needed to respond to the basic wants of the great majority of the third world's population are beyond the field of interest of the transnational corporations.

F. *SELF-PERPETUATING FEATURES OF DEPENDENCE*

The conclusion of the preceding discussion is that the prevailing model of industrialization based on the introduction and application

of rich country technologies to reproduce rich country consumption patterns is both too costly and ill-suited for the satisfaction of basic material needs in developing countries.

But the technologies and the goods they produce are inseparable from one another. The acquisition of know-how from developed country enterprises, chiefly transnational corporations, demands the use of techniques of production that are biased against labour and towards the manufacture of commodities catering mainly to an affluent tiny minority of the population in the third world. Conversely, to produce these same commodities demands the application of technologies obtainable under the terms and conditions set by the enterprises. Dependence is built into this industrialization process.

Moreover, the technological dependence of developing countries may be selfperpetuating. While the transfer of technology may facilitate the expansion of industrial output in these countries, it does not necessarily further the ability to produce that output, or, more precisely, the capacity to adapt and modify existing technology and to evolve new technologies. There are several reasons for this.

First, a large part of the transfer of technology takes place as part of direct foreign investment which in many instances results in majority owned subsidiaries. So long as an industry or product group is under foreign control, the possibility of launching domestic technological initiatives in that industry remains academic. Because of the narrow, fragmented domestic markets for manufactures in many developing countries, a relatively minor capital outlay from the standpoint of a transnational company is sometimes sufficient to result in control or near control of an entire industry. In such industries, a national technology policy, if there ever is to be one will have to await and be co-ordinated with nationalization.

Secondly, the other two major sources of the technology employed in the industrial sectors of developing countries are : (a) licensing agreements concluded with nationally owned firms and covered patents and/or trade marks (disembodied technology) ; and (b) imports of machinery or intermediate goods (embodied technology) by nationally owned firms without licensing agreements. In the case of trade marks, the duration of validity has no limit. Consequently, so long as the trade mark is used, it is necessary to use the technology that goes with it.

Once the branded product has gained widespread consumer acceptance, there is little incentive for the licensee to abandon it and sustain the expense and risk of promoting his own trade mark. Because of their limited duration, patent licensing agreements offer greater opportunities for developing domestic technological skills — *a fortiori* for the use of imported machinery without licensing. But in both cases the long-term gain to society from the use of a domestic technology is greater than the private gain to the entrepreneur. In the absence of

special inducements to the contrary, the entrepreneur is likely to opt for the proven performance of foreign technology (41).

Thirdly, in the consumer goods sector the superiority of transnational enterprises is based on constant product innovation coupled with highly sophisticated advertising and marketing techniques (42). As a result, the consuming elite in developing countries is presented with a succession of new or « improved » products, each of which makes the one that preceded it obsolete. In following the kinds of policies described previously, developing countries have in effect committed themselves to the eventual domestic production of each new product and thus to the importation of the technology that corresponds to it. The technology comes both directly as pure know-how and already embodied in imported intermediate goods and machinery. The constant change together with the sophistication of some of the required technology deter its domestics replication. Hence import substitution is extremely incomplete and dependence is prolonged. This contrasts sharply with the experience of nineteenth century developing countries for which the main thrust of technology transfer and technological advance was centred in the production of machinery and intermediate goods rather than new types of consumer goods (43). The luxury consumption of the rich at that time mainly consisted of goods produced by the artisan class rather than imports, and the manufacture of capital goods which was initially highly labour-intensive, developed in an organic relationship with domestic consumer goods production for the masses.

Fourthly, since foreign technology has tended to be a substitute for technologies that might have been developed by local scientists and engineers, and since the pre-capitalist sector (i.e. subsistence, agriculture and rural craft industries) as at present organized generates very little demand for these local inputs, science and technological institutions in developing countries have become alienated from productive activities (44). Whereas in developed countries the inputs of local scientists and engineers are an investment item, in developing countries they are largely an item of consumption. In these circumstances, science and technology cannot contribute to the development of domestic technical capability.

The preceding discussion is not intended to suggest that the import of technology from developed countries is inherently undesirable, or that the solution is some kind of individual or collective autarky. Provided that a particular technology is in fact needed, the only alternative may in fact be to import it from a developed country in many instances. However, it is clear that the gains from the technologically dependent industrialization that has actually taken place have not been equitably distributed either between receivers and suppliers of technology or among different income groups. Individual countries will have to decide on the special objectives of their technological and development policies in terms of their own priorities. For the majority of deve-

loping countries, the elimination of mass poverty and unemployment will be high on the list of objectives. It is clear from the above that it will be difficult to advance toward this goal without the elaboration of a major new strategy emphasizing not only control over the transfer of technology, but also the creation of an authentic, indigenous technical capability.

NOTES :

(1) See Charles Cooper, « Science, Technology and Production in the Underdeveloped Countries : An Introduction », *The Journal of Development Studies,* October 1972. See also Osvaldo Sunkel, *External Economic Relations and the Process of Development : Suggestions for an Alternative Analytical Framework,* Discussion paper N° 51, Institute of Development Studies, June 1974.

(2) Consumption « technology » refers to the physical and other properties of goods in relation to the needs that they satisfy. See Frances Stewart, « Technology and Employment in LDCs », *World Development,* March 1974.

(3) See Amartya Sen, « The Concept of Efficiency » in M. Parkin and A. R. Nobay, ed. *Contemporary Issues in Economics,* Manchester University Press, 1975, pp. 192-210.

(4) See Paul Streeten and Michael Lipton, ed. *The Crisis of Indian Planning : Economic Planning in the* 1960*s,* London : Oxford University Press, 1968 ; and Frances Stewart (1974 *op. cit.* The concentration on these foreign goods also leaves less scope for indigenous technological and scientific developments.

(5) See Meir Merhav, *Technology Dependence, Monopoly, and Growth* Oxford : Pergamon Press, 1969, see also Albert Fishlow, « Empty Economic Stages ? », *Economic Journal,* March 1965, pp. 112-125.

(6) This is over and above the disadvantages that apply to developing countries because of the general nature of the trade relationships involved, leading to some form of « unequal exchange ». See Arghiri Emmanuel, *L'échange inégal ; essai sur les antagonismes dans les rapports économiques internationaux,* Paris : F. Maspero, 1972 ; Samir Amin, *Le Développement inégal : essai sur les formations sociales du capitalisme périphérique,* Paris : Ed. de Minuit, 1974 ; and A. Mitra, ed. *Economic Theory and Planning,* Oxford University Press, 1974, pp. 141-150.

(7) See Streeten's distinction between the « communications gap » and the « suitability gap » in Paul Streeten, « Technology Gaps Between Rich and Poor Countries », *Scottish Journal of Political Economy,* November 1972.

(8) The utilization in developing countries of local resources of particular interest to the *developed* capitalist countries has, of course, been a common feature of economic imperialism, e.g., copper mining in Rhodesia.

(9) See John Dunning, ed. *The Multinational Enterprise,* London : Allen & Unwin, 1971, and *Economic Analysis and the Multinational Enterprise,* London : Allen & Unwin 1974 ; Raymond Vernon, *Sovereignty at Bay,* New York : Basic Books 1971 ; Paul Streeten, « The Multinational Corporation and the Nation State », in *The Frontiers of Development Studies,* London : Macmillan, 1972 ; pp. 223-38 ; and Paul Streeten, « The Theory of Development Policy », in Dunning *op. cit.* (1974)

(10) Even if the firm in question has a clear idea as to what it wants to do with its privileges, the government of the developing country may not be able to gauge *ex ante* the real price involved. There is some uncertainty arising also from the complexity of intra-firm trading and transfer pricing used by multinational enterprise baffling the poorly staffed bureaucracies in developing countries — see Dudley Sears, « Big Companies and Small Countries », *Kyklos,* vol. 16, 1963.

(11) Based on OECD, Development Assistance Directorate, *Stock of Private Direct Investment by DAC Countries in developing Countries and* 1967, Paris, 1972, table 1

(12) Based on statistics tabulated in S. Pizer and F. Cutler *United States Business Investments in Foreign Countries,* Washington : United States Department of Commerce, 1960 ; and United States Department of Commerce, *Survey of Current Business,* August 1961, and August 1974.

(14) A strategy of export-based development of the manufacturing sector seemed less desirable because of the implied dependence on the markets of the « centre », the trade barriers facing the traditional items most suitable for export to these markets, and the difficulty of meeting the quality requirements for consumer acceptance of more technologically-sophisticated products. For a discussion of the origins of import substitution policies see I. Little, T. Scitovsky, M. Scott, *Industry and Trade in Some Developing Countries : A Comparative Study*, London : OECD and Oxford University Press, 1970, chapter 2.

(14) See C. Vaitsos, *Transfer of Resources and Preservation of Monopoly Rents*, Economic Development Report N° 168, Centre of International Affairs, Harvard University, 1970, for a full discussion of these issues.

(15) *The role of the patent system in the transfer of technology to developing countries*, United Nations publication, Sales N° E.75.11.D. 6, tables 7 and 12.

(16) For a discussion of the economic implications of the brain drain see « The reverse transfer of technology : its dimensions, economic effects and policy implications » (TD/B/C.6/5).

(17) See Amilcar Herrera, « Social Determinants of Science Policy in Latin America. Explicit Science Policy and Implicit Science Policy », *The Journal of Development Studies*, October 1972, See also the discussion in section F. below.

(18) Unites States Senate, Committee on Finance, *Implications of Multinational Firms for World Trade and Investment fort United States Trade and Labour*, Washington, D. C. : United States Government Printing Office, 1973, p. 557.

(19) *Ibid.*, p. 600 and *Survey of Current Business, op. cit.* December 1973, p. 14.

(20) *Major issues in transfer of technology to developing countries : a study by the UNCTAD secretariat*, United Nations publication, Sales N° E.75.11.D.2.

(21) See P. Streeten and S. Lall, « Main findings of a study of private foreign investment in selected developing countries » (TD/B/C.3/111 and Corr. 1) summarizing the results of an analysis of 159 firms in six developing countries.

(22) See ECAFE, *Interaregional Trade Projections, Effective Protection and Income Distribution, Vol. II, Effective Protection*, United Nations Publication, Sales N° E.73.11.F.12, p. 18 ; Stephen Lewis Jr., *Pakistan Industrialization and Trade Policies*, London : OECD and Oxford University Press, 1970, pp. 84-85 ; and Bela Balassa and associates, *The Structure of Protection in Developing Countries* Baltimore : John Hopkins University Press, 1971.

(23) During the period 1966-1970 when the aggregate United States balance of payments (current plus long-term capital account) as a whole deteriorated, that of transnational corporations improved by $ 2.8 billion leading to the conclusion expressed in the United States Senate study, *op. cit.*, p. 29, that transnationals »... in their transaction with the United States, exert a uniformly large, negative impact on the current accounts of balance of payments of host countries (conversely, of course, they have a favourable impact on the corresponding account of the United States balance of payments) ».

(24) It is worth noting that, apart from Czarist Russia and the United States, present-day developed countries appear to have had significantly lower tariffs than developing countries at comparable stages of development. See Little, Scitovsky, Scott, *op. cit.*, pp. 162-163.

(25) Value added calculations in eight Asian countries have demonstrated in a sizeable number of manufacturing industries that if protection were eliminated the technologies would no longer be viable. See *Intraregional trade projections, effective protection and income distribution, op. cit.*, p. 18.

(26) Cf. Constantine V. Vaitsos, *Intercountry Income Distribution and Transnational Enterprises*, Oxford : Clarendon Press, 1974. p. 123.

(27) See Amartya Sen, (1975), *op. cit.*

(28) In studying high-technology industry in Colombia, for example, one economist found that whereas it took 45,000 pesos to employ one worker in 1957, by 1966 it took 100,000 pesos of 1957 value. See *Towards Full Employment : A Programme for Colombia Prepared by an Inter-Agency Team Organized by The International Labour Office*, Geneva, 1970, p. 113.

(29) See G. K. Helleiner, « Manufactured exports from less developed countries and multinational firms », *Economic Journal*, March 1973.

(30) For a convincing theoretical demonstration of how capital-intensive technology transfer may lead to a reduction of both employment and net output see « Major issues arising from the transfer of technology to developing countries : On some implications of technology transfer for trade, growth and distribution in developing countries », a study prepared by Professor Pranab K. Bardhan of the Delhi School of Economics (TD/B/C.6/5).

(31) See D. Morawetz, « Employment implications of industrialization in developing countries : A survey », *The Economic Journal*, September 1974, for a summary of some of this evidence. See also the excellent studies prepared under the World Employment Programme of the International Labour Office, in particular, A. S. Bhalla, ed. *Technology and employment in industry : a case study approach*, Geneva : ILO, 1975.

(32) Even for a relatively more technologically sophisticated country such as India, a recent review of all existing empirical studies of that country's massive tractorization campaign failed to find solid evidence of a clear over-all advantage compared with older techniques based on animal power. See Amartyr Sen, « A study of Tractorization in India » in his *Employment, Technology and Development*, London : Oxford University Press, 1975, appendix D.

(33) See Keith Griffin, *The Green Revolution ; An Economic Analysis*, Geneva : United Nations Research Institute for Social Development, 1972.

(34) For example of such an experiment in the United Republic of Tanzania, see George MacPherson and Dudley Jackson, « Village Technology for Rural Development — Agricultural Innovation in Tanzania », *International Labour Review*, July 1975, pp. 97-118.

(35) See Frances Stewart, « Choice of Techniques in Developing Countries ». *The Journal of Development Studies*, October 1972, as well as « Technology and Employment in LDC's », *op. cit.*, by the same author.

(36) Thus, Peter Drucker, a business consultant to transnational companies, has pointed out that within the « vast mass of poverty that is India » there is « a sizeable modern economy, comprising ten per cent or more of the Indian population or, 50,000,000 people ». See his *The Age of Discontinuity* New York : Harper & Row, 1969, p. 107, cited by R. Barnet and R. Muller, *Global Reach : The Power of the Multinational Corporations* New York : Simon and Shuster, 1974, p. 169.

(37) Thus, the « brightening » agent in detergents is superfluous for making clothes clean ; automobiles consume more energy per passenger mile than any other form of transportation, ; dacron shirts are uncomfortable in hot climates.

(38) This does not mean that there have not been superficial modifications in packaging and other caracteristics in particular markets. Genuin efforts by Ford, Philips and National Cash Register have been made to develop appropriate products with relatively labour-intensive production technologies, but these appear to be isolated cases. See Stewart (1974) *op. cit.*, pp. 39-40.

(39) See « Systems, including industrial property systems, for improving the national scientific and technological infrastructures of developing countries » (TD/B/C.6/AC.2/4), para. 39.

(40) As described in Barnett and Muller, *op. cit.*, Chapter 2.

(41) There is a great deal of empirical evidence that this has frequently occurred in India See K. K. Subrahmanian, *Import of Capital and Technology : A study of Foreign Collaborations in Indian Industry*, New Delhi : People's Publishing House, 1972.

(42) In the United States, the principal objective of the research programme of 90 per cent of manufacturing corporations is reported to be development of new products and improvement of old. See W. E. Gustafson, « Research and Development, New Products and Productivity Change », *American Economic Review Proceedings*, May 1962.

(43) See David Felix, « Technological dualism in late industrializers : on theory, history and policy ». *Journal of Economic History*, March 1974.

(44) See Charles Cooper, *op. cit.*

RÉSUMÉ

Le développement du caractère asymétrique de la dépendance technologique est dans une large mesure la résultante de la révolution industrielle et du capitalisme, en particulier dans sa forme actuelle. Les relations de domination de l'époque coloniale ont contribué à développer et à perpétuer cette asymétrie.

Le développement de cette asymétrie et ses nombreuses implications ont récemment fait l'objet de débats exhaustifs de la part d'économistes de diverses écoles. Les traits caractéristiques de la dépendance

telle qu'elle existe aujourd'hui ne sauraient être dissociés du processus historique qui est à l'origine de cette asymétrie. Bien que les diverses expériences des pays en voie de développement ne soient pas du tout uniformes, ils ont cependant assez de caractéristiques communes pour que l'on puisse valablement et utilement considérer la dépendance technologique comme un problème global sans évidemment perdre de vue les variations à l'intérieur de l'ensemble.

La première partie de l'article commence avec une description de l'asymétrie, ou déséquilibre, de la dépendance technologique caractéristique des relations inégales entre pays développés et pays en voie de développement. L'inégalité apparaît dans la prédominance de la production des articles de première nécessité, la faiblesse de la production industrielle et l'incidence de ces caractéristiques sur la structure du commerce ; elle se traduit aussi par la présence d'une main-d'œuvre sous-qualifiée, la faiblesse des infrastructures technologiques et l'insuffisance des ressources financières. Tous ces facteurs ont contribué à la réduction de la capacité des pays en voie de développement de contrôler les décisions concernant des problèmes d'importance capital pour leur développement et de formuler des initiatives pour atteindre leurs objectifs de développement. Dans la seconde partie, l'examen des méthodes utilisées par les pays en voie de développement pour combler leur retard dans le domaine industriel révèle clairement que les progrès réalisés depuis la fin de la Seconde Guerre Mondiale sont très limités sinon nuls. Dans leur grande majorité, les pays en voie de développement ont tenté de recréer en leur sein les processus de production et de consommation des pays développés, politique dont le résultat fut non pas l'amélioration substantielle des conditions de vie de la majorité de la population mais plutôt la perpétuation de la dépendance technologique.

L'objet de la discussion précédente n'est pas de montrer que l'importation de la technologie des pays développés est fondamentalement mauvaise ou que la solution réside dans une sorte d'autarcie individuelle ou collective. En fait, lorsque la technologie est nécessaire, il n'y a dans beaucoup de cas d'autre solution que de l'importer des pays développés. Cependant, dans la situation actuelle, les profits tirés de l'industrialisation qui elle-même repose sur la technologie ne sont équitablement distribués ni entre les donataires et les récipiendaires de la technologie ni entre les différentes couches sociales des pays concernés. Il faudrait que ces pays définissent eux-mêmes les objectifs de leur politique en matière de développement et de technologie selon les priorités qu'ils se seront eux-mêmes fixées. Pour la majorité des pays en voie de développement, l'élimination de la pauvreté et du chômage général figurera en bonne place sur la liste des objectifs. Il sera difficile de progresser vers la réalisation de ces objectifs sans l'élaboration d'une nouvelle stratégie qui mettra l'accent non seulement sur le contrôle à exercer sur le transfert de technologie mais aussi sur la création sur place d'une capacité technique authentique.

Transfer of Technology : An Overview of the Tanzania Case

P. Masette Kuuya *

PART I : INTRODUCTION

Current discussions on the « New International Economic Order » have focussed a lot of attention on the role technology can play in transforming the economies of the less developed countries (LDCS). The belief that technology can play such a vital role has mostly been influenced by the incontestable fact that technology developments and innovations over the past two and half centuries have been responsible for much of the advancement in the developed countries. What is contestable though (or even refuted outright), and this is the paradox we are out to discuss, is whether the transfer of some of that technology to the dependences (and Tanzania in particular) has gone anywhere near achieving the same goal. Many observers have already come to the conclusion, and I concur with them, that such transfers, especially in their present form, will never help to transform the dependences to the often longed for and talked about self-reliance.

We should like to point out from the beginning that *neither* the development, application and assimilation of technology in the advanced countries *nor* the lack of it in LDCs have come about by accident. The historic developments and material conditions pertaining in these countries were largely responsible for this development. For example the most crucial landmarks in technological inventions took place in the countries that are now classified as « developed ». The factory system (resulting from a combination of Kay's spinning shuttle, perfected by Hargreaves, Arkwright and Crompton, and of course Jenny's mule together with the steam engine perfected by Newcomen and Watt), the Bessemer Process (used in the production of steel) the Tele and Radio communication systems, and now, automation and the computer systems (to mention but a few), were all great landmarks in technological development. On the other hand, the not-too-aggressive approach towards technological inventions plus colonial exploits and domination were largely responsible for the LDCs predicament. By so saying we are not suggesting that the invention of a particular technology in a country is a necessary and sufficient condition for its successful application. The fact that Britain is now « the sick man of Europe » when she led the world in tech-

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nological inventions and innovation invalidates such a contention (1). But what is nevertheless true is that the scientific and technological level of a country and the institutional set-up that facilitate easy transfers of technology into it would, in most cases, determine the rate at which (and in what form) a particular technology will be assimilated, adapted or improved upon. Countries with advanced levels of technological development have the necessary work-cultures and structures that allow for smooth horizontal mobility of technology. Their long history of technological innovations, especially so in the advanced capitalist countries, has developed technically-biased skills that facilitate not only the acquisition and utilisation of such technologies but also the manipulation of the same to serve local interests or requirements. Even where production is for export (like some of the technology exported to LDCs most of the benefits from the use of those exported technologies accrue to nationals and/or the countries of origin. Few developing countries, least of all Tanzania, can boast of having anything close to this.

One would have expected that since most technologies have universal applicabilities (e.g. a cement plant designed and manufactured in West Germany should produce cement in Tanzania just as in Germany, depending on whether the input mix is correct) users of such technology should be able to reap benefits that are not markedly unequal. Experience in the LDCs has shown that most of the technologies have been used by their exporters to promote their (exporters) exploitative and domineering designs. While technological transfers among developed countries lead to *technological interdependence* (i.e. mutual dependence) and are therefore beneficial to all parties, transfers between developed and LDCs lead to the subordination of the latter by the former.

In this paper we intend to briefly look at the problems attendant to the transfer of technology to LDCs with Tanzania's experience being used to illustrate some of our contentions. Before we embark on this task, we would like to point out here that our views on this subject have been greatly influenced by the works of many development economists. Notwithstanding, should readers find here what already exists in other writings, it is not so much a result of our deliberate efforts to plagiarise other people' works, but rather a result of the propinquity in ideas.

PAR II : THEORETICAL EXPOSE

A brief exposition of our conception of the phase « transfer of technology » might help to make the case we are about to present more easily comprehensible. We will not divert very much from the conventional method of classifying technology into three broad categories (2), namely :

a) technical and commercial information that can be used in research and development of new (or improvement of old) methods of production of goods and services and, in the marketing and purchasing of technologies and their products ;

b) highly trained manpower that can design, develop and carry out research on technology, and make decisions about the efficient utilisation of such technology (engineers, designers, managers, etc...) ;

c) embodied technology or physical assets that are manmade and are used in the transformation of inputs into products and in the use of these products in the development and rendering of services as well as in the generation of further productive capacities.

If the above categorisation is accepted, then the phrase « transfer of technology » should be understood to mean the acquisition, by that country, of what statisticians would call « the combination and permutation » of the above three categories. That is to say the importation of either a or b or c, or a + b, or a + c, or b + c, or a + b + c, into a country would constitute a transfer of technology. Such transfer can either be temporary or permanent. This is an important distinction we would like to make about technological transfers. Our point of view is that any technology that is not assimilated within the importing country either by adaptation and/or improvement to fit in the local resource base and requirements is no real transfer at all. It is what we would prefer to call « pseudo-transfer » of technology. We shall take the example of Coca-Cola technology in Tanzania to make our point. If the formula for producing this beverage is as closely guarded a secret as it is today (3), and the highly skilled manpower together with all machinery were imported, it is hard to see how the technology of producing Coca-Cola in Tanzania could be permanent. Today, a decision by the Coca-Cola multinational to withdraw its expatriate staff, together with a ban on the exportation of ready-made inputs, is enough to cause the Coca-Cola technology to disappear from Tanzania overnight. Such import of technology is a « pseudo-transfer ».

It is our contention that *only* that technology that can be absorbed directly or adapted and/or improved upon, or that which leads to the development of new types of technology that are appropriate to the requirements of a particular country should be imported. The alternative to this is usually a cluster of enclave technologies whose ultimate effect would be to acquire for the importing country a « passport » to dependence and of course its natural concomitant, exploitation.

Before we discuss the mechanics and intricacies involved in the transfer of technology we would like to clear one fallacy, and that is the view held by some people that the stock of technology in the

world is so abundant that all that is required is for one to make a choice from the available alternatives. Far from that. Much as the stock of technology in the world is large, and even increasing, the bulk of it is really relevant only to the advanced economies for which it is developed (4). Since literature abounds which has dealt with this issue more exhaustively, we shall content ourselves with the endorsement of some of the views expressed by some writers that are in line with our thinking. The second General Conference of the United Nations Industrial Development Organisation (UNIDO) held in Lima (March 1975), for example, recommended among other things «...the indigenous development of science and technology in developing countries... » and called for « ...a redeployment of world industrial capacity to increase the present share of technology in developing countries ». Other international organisations (UNCTAD IV, Group of 77, Commonwealth Secretariat, General Assembly VII and VIII Special Sessions etc) (5) together with a number of prominent development economist — Samir Amin, H. Singer, J. Rweyemamu, C. Cooper etc — have echoed similar calls in their literature. All of them are agreed that there is urgent need to :

a) develop local or indigenous technologies and/or capacities ;

b) set-up institutions through which training and/or research could be carried out to achieve (a).

Because occasions have arisen when the phrase « indigenous technology » has been used too loosely, we would like to endeavour to put our own conception across. When discussing indigenous technology, distinction should be made between :

(i) the technology that has existed in a particular society over a long period of time, one generation inheriting it from another. Shadoofs and dykes in Egypt, handlooms in India, spearmaking and backcloth making in Tanzania being examples of this type of indigenous technology ;

(ii) the technology that is developed within a society using modern scientific methods. This type of technology is developed with the use of modern science within the country, with the aim of maximising the use of local resources to develop local capacity.

It is the latter (ii) that we are interested in here. This is so because we think it is dynamic enough to be relevant to (a) and (b) recommended above. Nevertheless, we would not like it to be misconstrued that by saying so we mean to imply that traditional technology has no contribution to make to modern science. We welcome such contribution when it is made. But where technology does not adjust to the times, we feel there is little worthy of glorification about it. It is true, for example, that shadoofs and dykes on the River Nile have served Egyptian peasants for so long a time that these peasants might find

it difficult to treat with respect anybody who holds their technology in contempt. That notwithstanding, we would favour the development, using modern science, of more efficient methods of irrigation for these peasants. Our most considered view, which we hope represents sobriety on our part, is that while we understand the limitation imposed by scarcity of resources, we are totally opposed to society, or any section of it, holding conservative views about technology. For we know that modern technology is not only the engine of growth but also the source of strength for any country. We hope to be able to justify this stand as our case unfolds. Before we do that we would like to briefly discuss what we think are some of the reasons why technology imported into LDCs perpetuates dependence and exploitation as mentioned in the introduction.

Every type of technology has its base. This base being determined by the material and social conditions pertaining in the base country. That is to say, a particular type of technology thrives best under particular conditions. Contrary to what some bourgeois economists claim, technology is *not* neutral. It serves specific purposes in society, mainly in helping the ruling classes to have command over productive processes. To put it in an economist's language, the development of a particular technology is meant to fulfill a particular objective function. The material conditions and the social and economic goals pursued by the society (or the ruling class in that society) being the determinants of that objective function. Cognizance should be taken of the fact that some of these conditions, which determine the objective function, are not easily transferable. This is so because of the simple reason that material and social conditions differ from one country to another. It is for this reason that some technologies fail to take root in some countries while they thrive very well in others. As Prof. Erik P. Hoffmann, a Soviet expert connected with the Columbia University's Russian nstitute in New York, observed « what they fail to realise is that there are cultural aspects to technology. And if you reject those, you may lose the benefits of the technology in the bargain ». The failure, on the part of importers of technologies into LDCs, to take cognizance of this important condition leads to the super-imposition of technology on false bases. Most developing countries, including Tanzania, have been importing technology without first taking care of this prerequisite — the creation of the necessary material conditions and institutional framework under which imported technology could thrive and take root (6).

It is not only the false technological base that is the problem. There is also the problem of misplaced social and economic goals. While in developed countries technologies are developed or imported to supplement what already exists, in LDCs it is the absence or dearth of technology that compels them to import. The problem now arises as to which technologies should be imported first so that others can

be developed or imported to supplement them. Either because of lack of the necessary skills to make the right « first choices », or because of misdirection by interested parties (aggressive salesmanship on the part of owners of technologies), or due to selfish interests of a group of local people technologies are imported on the basis of the so-called « established demand » which most often has a false base. It is a well-known fact that most of the commodities with « established demand » in developing countries are final consumer goods which are consumed by a very small section of the population. This section normally takes its cue, on consumption patterns, from the metropolis. It might be of interest to discuss how this comes about.

Multinational corporations, through their mastery of global distribution and marketing, advertising, product differentiation, helped by colonial legacies such as « the demonstration effect » (the yearn to ape consumption patterns of former colonisers), have shaped the consumption patterns of the small but all important privileged groups in LDCs. In Tanzania, this group of people constitutes only 5 % of the total population (15 m). Despite that it constitutes what one would rightly call the « consuming class » as it is this group which has the necessary purchasing power. Decision makers in this country come from this group. It is they who decide on what to be produced locally. Since the commodity to be produced markedly influences the technology to be used, and since the decisions on both the commodities to be produced and the technology to be used are made by members of this « class », it is unlikely that such decisions would not reflect their « tastes » and « interests ». One may, in passing, ask whether it was by accident that the beer, wine and hard liquor industries plus the cigarettes, smoking pipes and butter industries (to mention but a few) were some of the *first* industries to be established in Tanzania. While, for purposes of workers' mobilisation, it might be necessary for us in LDC to evoke Marx's clarion call, « workers of the world unite... », we are positive in our assertion that trying to emulate consumption patterns of workers in advanced countries, when our countries lack the economic base for such a move, would only lead to the creation of a superficial superstructure. For instance, whereas in countries like Britain, miners and dockworkers normally end up in pubs to down pints of ale (drawn from barrels or cellars) for refreshment after duty or after a meal, in Tanzania beer is a luxury which only a very small section of the population consumes for refreshment (7). We contend that the importation of technology to produce such goods locally, although it leads to increased output and therefore GDP, only helps to perpetuate the « demonstration effect ». We believe that these types of industries will never lead to the organic transformation of production processes that could minimise dependence. On the contrary, they will perpetuate it.

If decisions about what to produce and what technology to use are so influenced, there are other practices which suppliers of technology perpetuate to ensure their continued technological domination. We shall briefly discuss some of these.

There is the problem which most importers of technology in LDCs have to contend with and that is the problem of artificial barriers created by suppliers. Most of the technology in the capitalist world is privately owned. In most cases it is patented and/or secret. In those rare cases where it is free-for-all, prices are inhibitive. The existing legislations on patents and trademarks, which stipulate that imported technology be used unaltered (8), just reinforce monopoly capital's hold on technology. Since the duration and validity of trademarks are infinite, modification and adaptation of such technology in LDCs are difficult to initiate. As a result, those who are genuinely interested in importing technology into LDCs find themselves in such an imperfect market as to have no room for manœuvre. To begin with the technology they purchase will not necessarily be the best available. To make matters worse, the patent and trademark legislations will not allow them to manipulate that technology to serve their own interests.

It is not only through patents and trademarks that artificial barriers are created. There is also the problem of control of technology. In any operation or use of technology, there must be harmony between owners of the unit of production, management and operatives. In most imported technologies, the suppliers of technology control all the three. They normally supply the capital, management and the skilled operatives (engineers, chemists etc...). With this control the suppliers of technology do further their interests at the expense of the importing country. Even in those cases where political pressures are brought to bear on them to localise either ownership and/or operatives, it is done in such a way that there is no doubt as to who benefits most. For example, localised operatives will be the type with least or no inventive capacity. The practice of window-dressing is common enough to need no elaboration.

Arguments have been advanced by apologists of monopoly capital that multinationals offer at one and the same time technology which is a package of crucial inputs such as finance, organising ability (management), machinery and other intermediate goods, and the marketing channels if the commodities are for export. But the point that is missed by these apologists is that it is exactly that type of package (with the attendant barriers and strings) that prevents LDCs from making any headway in technological innovation and development. Most of the package technology *cannot* be unpackaged. In many cases these package imports have explicit stipulations that the recipient must not use another technology that competes with the supplier's wheter the technology is local or foreign. In many cases

they use the technology itself to pull the strings. In what is termed « technological lock-ins », the importer of technology can be « locked-in » (9) to the technology of the original manufacturer where machinery to be used in production are designed in such a way that only inputs and spare parts from the parent manufacturer can be used. How can indigenous technology develop under such terms and conditions of imported technology ? Since it would not be in the interests of exporters of technology to liberalise conditions under which technology is acquired from them, they strive to preserve their advantage by consolidating control over the capacity to generate technology. Would the United States, for example, willingly part with $ 2,760 millions in overseas receipts of royalties and fees earned from the transfer of technology abroad by USA firms (1972), 85-90 % of which went to multinational corporations ? (10).

Another vile aspect of « technological lock-in » in the transfer of technology is the *overpricing* of « locked-in » inputs. It is common practice for manufacturers of technology to use a common marketing ploy of selling cheap the original equipment knowing fully well that they will recoup whatever losses from the sale of spare parts and inputs. In many cases, especially where a monopoly supplier of the technology is involved, not even the original machinery is sold cheap. In their detailed surveys of pricing in Columbia and India, C.V. Vaitsos and M. Kidron respectively, found very stunning cases of overpricing of inputs and spare parts. In Columbia, for example, Vaitsos found that of the 11 subsidiary pharmaceutical firms, inputs were overpriced by 165 %. In India, Kidron reported the case of an India dye-stuff firm which paid up to 200 % of the market price for its inputs (11). Should the product being produced by the subsidiary be for export, then the practice of *under-invoicing* is evoked. Exports will be priced below the real market value which will mean a net loss in capital inflow to the exporting country. The difference is appropriated by the parent company abroad. At this rate of net transfers of revenues from the subsidiary firms to their parent firms abroad, how could developing countries expect to benefit much from the surpluses generated by the use of imported technology ?

These and many other problems attendant to the transfer of technology make it difficult for LDCs to benefit much from imported technologies transfered from advanced (especially capitalist) countries, under existing conditions.

PART III : THE TANZANIA EXPERIENCE

Tanzania like most other former colonies, is a country with all the characteristics of peripheral development. The economy is appended to the industrialised centre countries through the export of the bulk of her products from the monetary sector (processed and non-

processed primary goods) and the importation of much of what she utilises and/or consumes (capital, intermediate and final goods). To produce most of what she exports and to consume or utilise what she imports she needs technology. The dearth of indigenous technology militates that she imports the technology she requires.

Before independence (1961), the importation of technology was almost entirely a preserve of private investors — individual capitalists, companies and multinationals. They imported technology through their economic ventures. Even in cases where the colonial government sponsored or financed projects (mainly economic and social infrastructure) private firms were contracted to import the necessary technology to be used. As is the case with all private economic ventures, the main objective was to maximise profit (12). Thus the technology that minimized their costs and maximised returns in the quickest time possible was prefered. Since their economic activities were mainly directed at the production and processing of raw materials for export, so was the technology they brought in.

After independence, especially so after the Arusha Declaration, the government had a say in most of the investments that were made. But because of the absence of local capacity, foreign firms continued to dominate the importation of technology into the country. In fact most of the projects that were established after 1961 were joint ventures between the government and foreign private firms mainly because the latter was to provide technology (equipment, management and marketing if for export) and part of the investment capital. Due to the fact that the partners in these joint ventures had diffferent objectives and interests to achieve and nurse, there was bound to be a conflict. Whereas the government's main objective and interest was the development of the country and the welfare of the people, that of private/foreign firms was maximisation and repatriation of revenues abroad. As is normally the case with most conflicts, it is the stronger and more established who carries the day. In matters attendant to technology, foreign firms were the stronger of the two partners. We shall demonstrate this when we look at the firms we surveyed.

One of the guidelines to the development planners for Tanzania's First and Second Five Year Plans (1964-69 and 1969-74) was that whenever economically possible, labour intensive technology should be given priority when it came to a choice of technique. Two main reasons were advanced for this. One was the government's desire to fulfill one of its social welfare functions, namely, increasing employment and aggregate consumption. Secondly, it was believed that the smallness of the market necessitated the use of technologies with low output capacity. As most economists are aware, these two reasons have been contradicted by one of the latest economic schools of thought (13) which contends that one could actually achieve the

objective of increasing employment by adopting capital intensive technology. The argument goes that much as labour intensive technology appears to achieve this objective, it does so only in the short-run and therefore is limited in scope and non-dynamic. It is further contented that since capital intensive technology usually produces higher output, the unit cost of production will be lower. As a consequence, profits will be higher. The higher profits from the higher output could then be ploughed back to expand production or be used in setting up new projects. This, it is argued, is a more dynamic process of increasing employment than what labour intensive technology can provide. On the question of capacity under-utilisation due to the smallness of the market, it is argued that it might be cheaper to incur higher costs at the beginning with capacity under-utilisation than the cost that would be incurred when installing new capacity as the market expands.

While it cannot be disputed that in many cases capital intensive technology produces more output, two of our case studies showed that this is not always the case. In any case one has to have full information about the available range of techniques to choose from and the freedom and capacity to make the choice. Or else the issue of choice does not arise. The case studies will bring out many of the points we want to make here.

To simplify things, our analysis of technological transfers into the country will be divided, somewhat arbitrarily, into two main phases. The first is the pre-independence phase dating between 1891 (when the Imperial German Government imposed an administration on Tanganyika Mainland) and 1961. The second phase will be the post-Independence period (1961-1977) althought some people would prefer to split this phase further into the post-independence and pre-Arusha (1961-1967) and the post-Arusha period (1967-1977).

Shakespeare might have wanted us to believe that, « All the world is a stage, And all the men and women merely players », (14) but experience in Tanzania on matters attendant to technological transfers has shown that some men are more players than others. In the first phase (1891-1961) we had, as the stage manager, the colonial administration, with the investors (monopoly capital and individual capitalists) being main players. Tanzanians were mere accessories or watchers to the exploitation of their resources. The investors were also the importers of technology and as we have pointed out, their main objective was to maximise profit throught the exploitation of local resources. Since at that time the main interest was in the production, and processing of raw materials for export to the metropolis, the technology imported was specifically for that purpose. That is to say, the technology that :

a) extracted minerals (gold, diamonds) at least cost ;
b) produced the most demanded raw materials (cotton, sisal, coffee) at least cost ;

c) processed all these primary products (to reduce weight) at least cost ;

d) transported all these products to the main ports (Tanga, Dar Es Salaam) at least cost.

It will thus be observed that the technology imported to Tanzania during this period was concentrated in the mining and agricultural sectors. It comprised burrowing equipment for mining, farm equipment tractors, etc.) for plantations, processing equipment (cotton ginners, coffee curers, sisal decorticators, etc.) and rail engines to haul the rather bulky raw materials long distances to the coast.

In Tanzania most settler plantations were enclaves in a sea of peasant subsistence agriculture. There was no link what-so-ever between the two except for the casual labour that was drawn from the latter by the former. The techniques used in plantations were relatively modern (mechanised, fertilisers, crop-rotation etc.) — which the casual workers with their rustic origins could not assimilate and transfer to their own small holdings. The same was true of the mines, processing plants and transport equipment. Technology used in their operations was too unfamiliar to the indigenous people. Since all the machinery, the technical staff and spare parts were imported there was hardly any way such technology could have taken root in the country. It thus remained enclave technology all the way through.

Mention should also be made of the technology which was imported to sectors other than mining and agriculture. It consisted of technology imported for the provision of services and the production cheaply of some consumer goods. The services produced by this technology went mainly to urban centres where the administrators, who ensured that law and order for the smooth exploitation of local resources prevailed, domiciled. Thus thermal electric plants, water pumps, banks, etc., were introduced to provide services to towns and production centres. The enclave nature of these technologies can best be observed through the services they provided. The smallest minority of the population benefited from these services.

The story of the technology that was used in the production of the limited range of consumer goods was not any different. Not only was the range of products limited but also the scale. After all the demand for manufactures by those with the necessary purchasing capacity (mainly settlers, businessmen and administrators) was very small. These included food products, soap, beer, cooking oil and beverages. The gross output of these accounted for over 75 % of the manufacturing sectors' total output. (Incidentally the manufacturing sector as a whole accounted for only 3.4 % of GDP in 1962). The most plausible explanation as to why they were produced in Tanzania was that they were the type of products which did not pose much of a threat to the market of imported consumer goods. For example, when a Japanese match factory was set up to produce

matches in Tanganyika, the colonial government imposed such a heavy excise duty to protect their market of £ 1,400 worth (1928) of imported matches that the factory collapsed. The same fate was suffered by a local firm which in the early 1930s set up 3 factories to manufacture binder twine (from sisal) for export. While in the former case the British were trying to protect their Tanganyika market for matches, in the latter case they were protecting their home market from a cheap import from Tanganyika. In both cases, there was one thing in common, and that was that Tanganyika had to be denied the technology which might pose a challenge to the interests of the British. Since one of the industries would have produced for a larger section of the population (incidentally peasants also consume matches) and the other manufactured goods for export (instead of exporting merely processed raw materials), weren't these the types of industries whose technology Tanzania needed ?

On the whole, therefore, there was hardly much of industry or technology to speak of at independence. The little that passed for technology was in enclave production units. As one colonial report summarised it in 1949, « Sisal is decorticated, cotton is ginned, rice, maize, sugar and timber are milled, oil of groundnuts, coconut and sesame is expressed, tea is processed, coffee is hulled but exported in the bean, tobacco is cured but exported in the leaf, papain is extracted from pawpaw, and ghee clarified, butter separated from milk, soap is made from local coconut oil and imported caustic Soda. There is a brewery, furniture establishments as well as leather goods, shoes and boots establishments » (15). By 1961, the structure of industry had not changed much from this. It will be observed that apart from the maize, rice, oil and sugar milling, soap and possibly shoe making, there was hardly any other industrial activity that was not enclave in nature. The same is true of technology.

During the second phase (1961-1977) the TANU Government not only emerged as the new stage manager, but also as an active actor in the investment and import of technology play. The newly installed government did not have illusions about the economy it inherited from the colonialists and wanted a structural change.

It was decided from the beginning that structural changes be brought about in the economy through planning. But as is common with most plans in LDCs, the 1st and 2nd Five Year Plans were comprehensive only in as far as they identified priority areas of economic activity. The plans lacked coherence and sense of direction. In fact the first plan looked very much like a shopping list for foreign aid. For when the expected aid (78 % of the entire development budget) was not forthcoming (due to the ruptured relations with the supposed main donor - Britain), the plan was in trouble well before it was through with one year of implementation. But the Plan's problems were not only financial in nature. The proposed projects

seemed to have been randomly picked. As individual projects, they looked impressive, but they were not integrated. There was hardly any interdependence or linkages in proposed projects (16).

One of the first industries to be established (1964) was the cement plant in Dar es Salaam. It was jointly owned by the government and a foreign firm which was an amalgamate of Portland Cement Manufacturers Ltd., and Cementia Planungs und Beratungs A.G. Zurich. The latter also provided the management, at a fee. In addition to the management fee that was to be paid to Cementia Holding (2 swiss-francs-equivalent to T. Shs. 4/20 per tonne before the devaluation of 1975), the management agreement provided for, among other things, the :

1) choice, by the management, of the technique to be used in production of cement ;
2) training of nationals, by the management, to take over all the managerial and technical posts at the expiry of the contract (10 years).

The technology chosen for the Wazo plant was the most modern and capital intensive in East Africa. For example, with its capacity of 350,000 tonnes p.a., it employed less than 600 workers (1974) compared to the labour intensive plant at Tororo (Uganda) which employed over 1000 workers (1972) with a capacity of less than 200,000 tonnes p.a. The technical composition of capital, that is to say, the capital/labour ratios of four East African Plants were as follows (1972) :

Wazo Hill (Dar Es Salaam) : 1.62 (the most modern plant) ;

Tororo (Uganda) : 1.15 ;

Bamburi (Mombasa, Kenya) : 0.87 ;

Athi River (Nairobi, Kenya) : 0.71 (the oldest plant).

Source : Prof. Z. Svejnar (See footnote 18 below for title), p. 13.

Capital/labour ratios, however, tell one too little for them to be used as the basis for a choice of technique. For example, in cement production, we have the wet and dry processes, both of which are widely used all over the world. The dry process is normally used in large rotary kiln installations which not only make substantial savings on fuel, but are also known for their good quality cement and minimisation of waste material (dust) that sometimes causes costly accidents (17). On the other hand the wet process is known for its small kilns, sometimes requiring several of them to constitute one plant. These are particularly suitable in low-consuming markets or in markets with fluctuating demand where some kilns can be closed or opened depending on the demand position. This would not be economic with the larger rotary kilns used in the dry, process.

When still on the issue of K/L ratios, it should be borne in mind that the technique used in any production process is not the only deter-

minant of the level of employment. As Professor Z. Svejnar pointed out, « The differences among plants in the manning of broadly similar equipment may be accounted for partly by differences in the amount of employment in servicing departments such as those providing maintenance, training, medical, recreation and canteen services. These differences in turn may be related to differences in external conditions such as the availability outside the firm of training facilities, transport, maintenance and social services. Differences in the utilisation of equipment and efficiency of management may be another partial explanation » (18).

Granted that the above observations are enough caution against the use of K/L ratios as the sole or main criterion in the choice of technology, the following are the observations we made in our study of the Wazo cement plant.

(a) The technology chosen for Wazo Hill used oil and electricity in the burning process instead of coal. It is granted that at that time (1964) nobody could have predicted the frantic oil price rises (19) of the 1970s. It is also true that at that time an oil refinery plant was planned for the country. But if one was to view this decision in terms of comprehensive planning, one could not be excused for ignoring the fact that Tanzania had large coal deposits which by then were already proven as exploitable.

The limestone deposits at Wazo Hill were estimated to last over 50 years of exploitation. Surely one should have had the oversight to envisage the exploitation, sooner or later, of the coal deposits in the country's southern region of Mbeya. Today, Wazo Hill is pushing ahead with plans to fire the plant's kilns with coal, not because of the need to integrate production with the proposed coal industry (20), but because of the high import bill of inputs into the oil and electricity industries whose high costs are being transmitted to the plant through furnace oil and electricity. It could even be argued that the use of coal in a large and expanding production unit like the Wazo plant would have expedited plans to exploit Tanzania's coal deposits for both local and foreign markets.

Since 14 years after the establishment of the plant, there are hardly any signs of striking oil (despite the intensive drilling and exploration) the choice of a technique that consumed large quantities of oil sentenced the Wazo Hill plant (and the country as a whole) to perpetual dependence on inputs with a very high import content (21). This, as we pointed out earlier, is one of the main characteristics of enclave technologies which perpetuate dependence.

(b) Because the management at the Wazo plant was German, it was reasonable to expect them to import German technology. Nevertheless the choice of the ultra-modern equipment, which not only required specialist training to handle but also needed heavy capital investment, could easily be construed as a design on the part of mana-

gement to maximise capital flight through payments to expatriate technicians and the heavy interest and loan repayments. Since most of the capital investment was foreign (Portland Cement Manufacturers Ltd., 40 %, Cementia Planungs und Beratungs A.G. Zurich 40 %, Smith Mackenzie 10 % and the government through the NDC, only 10 %), the management and technical staff was foreign, many of the inputs were either direct imports (paper bags, spare parts, etc.) or had a high import content, one wonders whether the large foreign exchange payments involved were not too heavy to be compensated by the mere *high output* of the technology, which management kept citing as its main advantage. In any case, even this supposed advantage (of high output) mostly benefited the management.

(c) As we pointed out above, the management fee was paid on the basis of the quantity of cement produced. So the technique that maximised output ipso facto maximised the management fee to be paid. This was paid gross in convertible currency. Was it not in the best interests of management that it should prolong its stay by using a technique which was not easy to handle (22) ? I am made to understand that two of the main reasons that led to management's unceremonial replacement were its resistance to have the terms and management agreement renegotiated, and the breach of contract by management's failure to train Tanzanians for top jobs. Although the agreement stipulated that they train Tanzanians to take-over from them on the expiry of their contract, they never organised any training programme for nationals. As a consequence of which 8 years after (with only 2 years to go) there was only one Tanzanian holding a managerial post (the sales manager) and none on the senior technical staff (engineers, chemists, electricians, etc.).

(d) Lastly but not least, I will briefly elaborate on my earlier contention about technological interdependence and linkage in the production processes. As I have pointed out elsewhere (23) the choice of the technique and the location of the production site at Wazo, although it suited best the interests of the foreign management and the largest share holders, did little to foster interdependence and linkages.

There are two main processes which are common in the production of high quality portland cement. One uses gypsum rock as the primary raw material input, the other uses limestone rock. Although the limestone process is less costly at a plant's level, the gypsum process is more promising especially so if cement production is coupled with the production of sulphuric acid as co-products (24). In addition, the gypsum process require coke as an input. We have already said that Tanzania had coal from which coke could have been acquired. Since the largest gypsum deposits were located in Kilwa where electric power supply is very short indeed, coal would have been the natural choice as a source of fuel and power for the cement and

sulphuric acid plants. When one looks at these and other linkages that could have been forged had the gypsum process been adopted, one is persuaded to believe that Tanzania would have benefited more from this process than the limestone one. In terms of technological interdependence, we would have had the cement technology which had direct linkages with the coal, coke and sulphuric acid technologies. With systematic comprehensive planning, these linkages were not difficult to establish.

In summary, the cement technology that was transferred here served the interests of the foreign management and shareholders. Their choice did not take into consideration long term effects on technological developments in the country but rather their short term interests — the maximisation and repatriation of revenues as quickly as was humanly possible. It is only the government, through a systematic comprehensive plan, that would have made decisions taking into consideration the long term requirements of the country. A foreign management team representing foreign/private interests could not have done so.

Friendship, Mwanza and Kiltex Textile Mills

If we had had the luck to get from these three plants even a quarter of the information we had from Wazo Hill, these would have made the best sample for our study. The three plants are of different technologies, with different sources and different terms. Friendship Textile Mill in Dar Es Salaam (1968) is a labour intensive plant supplied by China (Mainland) on very soft loan terms. The Mwatex plant in Mwanza (1968) on the other hand is jointly owned by Tanzania (80 %) and a French firm Amenital (20 %). The latter provided the technology, consultancy and management services. The plant is modern and capital intensive (French origin). Kiltex Textile Mill was originally privately owned by local and foreign private firms but has since been nationalised. The plant was imported second hand from Britain.

Friendship and Mwatex are the two largest textile mills in Tanzania. While the capital intensive (£ 4 m. T. Shs. 80 m/ =) Mwatex plant employs only 1000 workers and produces 24 millions square yards of cloth per annum, the labour intensive Friendship plant (£ 2.5 m. T. Shs. 50 m/ =) employs over 3000 workers and produces over 24 million square yards of cloth and 1,000 tons of yarn per annum (1972). That is to say by being capital intensive, Mwatex does not have any advantage over Friendship in terms of quantity. If anything, contrary to theory, it is the opposite. In the initial years of production, Mwatex was definitely producing better quantity cloth than Friendship. But with workers in Friendship improving their skills and efficiency, the quality is now almost at par.

The comparison does not stop there. While Mwatex still has quite a number of foreign experts, Friendship, because of the crush

training programme organised by the initial Chinese experts, was fully Tanzanianised by 1971. What is more intriguing is that while Mwatex had been making losses almost all the way through up to 1972, (25), Friendship had been making handsome profits which enabled the plant to embark on an expansion programme that increased the capacity of the plant to 33 million metres of cloth p.a. (see Daily News, Tanzania, 30/12/76). It is true that an expansion programme (which would increase the capacity to 43 m. metres) worth shs. 312 m/ = is planned for Mwatex, but this is with the help of a World Bank loan of shs. 107 m/= (Daily News 5/6/75).

When it comes to the Kiltex textile mill, the investment seems to have been a blunder. The second-hand machinery from Britain had a notorious record of breakdowns. Acording to an accountant of the plant, the machinery was not only a « dump and useless » but it was bought at a very exhorbitant price. It was a question of the foreign exporter trying to squeeze the local importers. Two different lots of management have been brought in (since it was nationalised) but none has managed to reduce the rate of breakdown despite the very much improved maintenance work and quite advanced spare parts manufacture at the plant site. The plant has now reverted to using imported synthetic fibre (which the plant was apparently designed for) to make polyester cloth. While such a measure might be seen as a way of bailing the plant out of its chronic problems, at a macro-level it can be viewed as nothing more than another outlet of the country's foreign exchange earnings.

Our study on the textile mills has blown-up one of the myths — that capital intensive technology produces higher output than labour intensive. At the same time it has vindicated us in our forebodings about some of the technologies we import from capitalist countries. While our study does not prove the appropriateness of Chinese technology to our requirements, it at least shows some of the positive aspects that could be used in future technological transfers.

General Tyres International (T)

This was one of the industries the Kampala Agreement of 1965 allocated to Tanzania as part of an exercise to correct the imbalance in industrial installations among members of the East African Community. The plant was therefore supposed to serve the entire East African market. As its name suggests General Tyres is a multinational which quite happily accepted a minority shareholding with a proviso that it supplied not only the equipment but also management, all raw materials, spare parts and rubber moulders. It is from these inputs that G. T. makes much of its income on the investment. Unlike many other turnkey projects in Tanzania, this firm has a direct relationship with the parent plant. Because it is the parent plant that runs the

Arusha plant, management ensures that it is run as efficiently as possible, firstly, to keep its international image and therefore ward-off the threatened competition from the Kenya upstart, Dunlop and, secondly to maximise revenues on sales of inputs to compensate for the relatively small share of profit and the unusually small management fee.

Unlike other projects, the 7 year old second-hand plant brought in from Holland at shs. 74.7 m/ = operates very smoothly indeed. The products are of very high quality — reputed to be the best in East Africa. The plant's annually declared dividends are very high. Which implies that the investment was real and not a show-piece to carry the General Tyre flat in East Africa. In fact there are no indications that the operation is being subsidised with funds from somewhere else just to keep it going.

All that has been said about GT might appear rosy at first sight but one does not even need close scrutiny to discover the enclave nature of the industry. Not only are most of the inputs imported together with the technology, but also most of the outputs are consumed by high import-content utilities. The vehicles that consume tyres from the plant are all imported. Thus the domestic demand for General Tyres products is a function of the foreign exchange drain. Except for public transport, the people who consume services rendered by G.T. products are the privileged few among the minority 5 % group — private vehicle owners. In any case the technology at the Arusha plant is unlikely to take root in Tanzania in the near future. Not only are backward linkages non-existent but the forward ones are themselves enclave. The tyre making technology will stay so long as Tanzania allows General Tyres (I) to run the show. Since multinationals are not known for commiting economic suicide that easily, we could as well stop dreaming that they would and do something about it.

PART IV : RECOMMENDATIONS AND CONCLUSIONS

What then are some of the measures that a developing country like Tanzania can take to maximise benefits from imported technology ? As it is generally accepted technologies are developed to make man's work easier in the production and/or cosumption of goods and services. It therefore follows that a correct decision about what should be produced and consumed by society goes a long way to facilitate a correct choice of technology to be imported. It is our most considered view that developing countries cannot afford the luxury of importing technology at random (26). Technology like production should be planned and, not in isolation, but as an integral part of the overall development plan. That is to say, whatever technology is imported should be consistent with overall development objectives.

We also concur with those who contend that since many production processes are interdependent, strategies should be worked out on how (27) :

i) to import technology ;
ii) to train personnel to handle the imported technology ;
iii) to assimilate the imported technology ;
iv) to adapt and/or improve on imported technology to fit the local resource base and requirements.

When this is done a link should be established between these four measures in order to minimise « enclave » tendencies of imported technology. In addition there should be established a mechanism through which appropriate technology should be chosen from *known* alternatives. Whichever technology complements national technological development and sustains local investiveness should be given priority. The specific technology to be imported being chosen using, among other things the following parameters that are inherent in technology but are not too commonly used as guides (28) :

i) productivity and efficiency of a particular technology ;
ii) versatility and flexibility i.e. the multiplicity of uses ;
iii) complexity or simplicity of technology and its training requirement (taking into consideration local resource base) ;
iv) commercial life expectance (for equipment) ;
v) use of factors or inputs (again with emphasis on local resources) ;
vi) potential degree of adaptability to local conditions and the social and economic impact expected ;
vii) then finally direct costs (royalties, etc.), terms of other credit and collateral assistance (e.g. marketing of products), delivery dates and guarantees for equipment, etc.

To us therefore, the question of whether a particular technology is capital, or labour intensive is irrelevant. What is relevant is the appropriateness of that technology. Whether it is adaptable to local conditions ; whether, in the long run, it can be assimilated ; whether it is simple enough for the existing skills to handle, whether it is possible to train, within an acceptably short period of time, local skills ; whether it uses to the maximum local inputs, whether it will finally reduce our dependence. The importation of any technology that does not fulfill most of these conditions will be a pseudo-transfer, whether that technology is capital or labour intensive. If in the existing stock of technology there is none that fulfills the requirements, there is more need to develop one that does. Hence the necessity for institutions to carry-out research and development (R & D) on technology which is suitable to LDCs. Whatever technology is finally designated as suitable should possess these properties :

i) it should be self-generating, and
ii) it should be self-sustaining.

The issue that we would like to discuss in passing is what we consider are the technological innovations that are self-generating and self-sustaing and therefore require priority ranking. According to Adolphe Lowe, there exists a group of industrial activities in the field of equipment goods that are capable both of producing other equipment goods and also reproducing themselves. These, according to J. Rweyemamu, «... are the engineering industries which are the progenitors of *all* other machinery and *also* of themselves » (29). We concur with this view. Now that plans are at hand to set-up a steel industry (using local iron and coal from S. Tanzania), the machine tools industries should be a logical sequel as these would provide a « natural » forward linkage. What has to be borne in mind is that this link is not automatic. It has to be forged through planning. In the plan, the industrial activities should be sequenced in such a way that they are not only compatible with the resource base, but are also consistent with the country's overall development programme. This is not possible without restructuring the present institutional framework.

We would therefore like to stress the urgent need for structural changes that should facilitate not only the transfer of technology, its application, adaptation and modification, but also the development of indigenous capacity. As we have said before, LDCs (and Tanzania in particular) do not have the necessary economic structures that can allow for self-generating and self-sustaining technological developments. Since experience has demonstrated that private firms or institutions could not be expected to effect these structural changes, and since developments in advanced countries are such that they work against the development and invention of science and technology in LDCs, the onus falls on the government. The government must therefore take charge of not only establishing the institutions, but also direct the activities of such institutions in accordance with national objectives and goals.

The other problem that the government should directly involve itself with is the planning and training of manpower. This should be done in conformity with the identified priority areas. For example the orientation of science, especially solid or fundamental science, should be influenced by national objectives. That is to say, there is little point in having a department of nuclear physics in a national university when the country's immediate problem is how best to harness hydro and geo-thermal energy from the existing potential. It is not uncommon, for example, to find the highest institutions of learning churning out products (graduates) that are least relevant to the nation's immediate needs. Recently a workshop was organised by the East African Academy in Arusha and one of the themes on which papers were invited from one of the East African Universities was « Nuclear Energy ». Surely research findings on such themes have

little or no practical use in the near future. They end up being of purely academic interest for intellectuals « to fascinate themselves with ». That is why work-shops and conferences are turning out to be mere arenas for academic gymnastics where participants thoroughly enjoy themselves by wallowing in superfluities.

What Tanzania needs are well-staffed research institutions and workshops where our scientists, engineers designers etc., can indulge in serious productive work, hopefully with the end result of a new invention. But as we pointed out the invention of technology is not a necessary and sufficient condition for its successful application. Therefore institutions should be set-up to carry inventions a stage further — their practical application to problem solving in the country.

Last but not least there is the problem of co-ordination which if not well handled can render efforts expanded in different activities less fruitful than would be the case. Here we agree with « The Sussex Group » when they assert, « There must be firm connexions between every link in the technology application chain. Thus :

a) technologists, able to understand the contributions of fundamental research, but familiar with industrial needs and problems, should provide liaison between fundamental and applied research functions ;
b) as close a contact as possible should be encouraged between fundamental research scientists, technologists, applied scientists, extension officers and potential industrial and agricultural users ;
c) liaison and extension officers are also needed to help potential industrial and agricultural users to recognise their technical needs and problems, and to relate applied scientific research to these needs and problems » (30).

With such co-ordination, there is hope for success.

CONCLUSION

In our hastily assembled overview, we have come out with certain observations which we hope we have emphasised strongly enough to need no more recapitulation. We have built our case on the dependency theory and come to two main conclusions :

i) that technological transfers from developed countries can only be useful if they are absorbed internally and used in the promotion of set objectives that are pro-people. That is to say objectives that serve the majority of people in society ;
ii) that technological transfers without our own internal effort cannot possibly lead to the reduction of dependence and promote self-reliance.

With these and other guidelines we have discussed in the paper, we think developing countries and Tanzania in particular can make a headway in the development effort using imported technology.

FOOTNOTES

(1) In 1950, three Soviet scientists registered a process for the dry production of fluorine aluminium, a technique that the French aluminium giant, Pechiney, has now used successfully for 15 years. Yet up to now no Soviet factory has adopted the technique. Also, the Imperial Chemical Industries of England currently employs a vinyl-astate production process developed in the USSR in 1961 yet the technique has never been used in any Soviet plant.

(2) For the definition see IDRC — 060e, *Andean Pact Technology Policies*, Ottawa : International Development Research Centre, 1976.

(3) It is said that one of the most closely guarded industrial secret is the formula used in the manufacture of Coca-Cola. The USSR scientists for years tried to rediscover this formula but failed. They had finally to import American technology to produce Coca-Cola in the USSR. Even in the USA itself, other firms have tried to find the secret formula but failed. But because of their technological base, they managed to produce close substitutes as Pepsi-Cola, Rite-Cola, etc. some of which are giving serious challenge to Coca-Cola. What LDCs lack is the capacity to develop such substitutes on their own.

(4) See H. Park and M. Todaro *Technological Transfer, Labour Absorption and Economic Development*, Oxford Economic Papers, Vol. 21, 1969.

(5) See UN Documents on Transfer of Technology ID-CONF. 3-31 ; ID-CONF. 3-SR. 18 ; ID-CONF. 3-SR. 18-Add 1-REV. 1 and UNDOC E-AC 62-4 TD-190 ; TD-B-593 ; TD-B-595 ; UNCTAD, TD-106, 1971.

(6) It is not only in LDCs where one finds such phenomena. Newsweek (9-2-76) observed, « Over the past few years Russia's leaders have spent billions on Western technology from computer installations to procedures for making fertilisers, from metal-plating to formulas for veterinary medicine ». But despite the fact that the USSR is not a « technological wasteland », it continued, — there are already clear signs that Western technology is not taking root in Russian soil — ». Although Western press reports on developments in the USSR have to be swallowed with a pinch of salt, we would be very surprised if the contrary is the case.

(7) Neither will copying life patterns of our socialist friends offer a better alternative. While workers in the USSR break seals off Vodka bottles and empty contents down their throats like water during work-breaks, their counterparts in Tanzania have water instead to refresh themselves with. Konyagi, which is a locally produced spirit quite close to Vodka, is a « celebrity » that can be afforded only by the topbrass in the country. With locally produced whisky, brandy and gin on the local market, locally made Vodka should be around the corner. Of course we are import substituting !

(8) For a more detailed analysis, see V. S. Vaitsos, « Patents Revisited : Their Function in Developing Countries » in C. Cooper (ed) *Science, Technology and Development*, London : Frank Cass, 1973. Also see J. O. Wellington, *Parents and the Legal Forms : Role in Transfering Technology to Developing Countries With Emphasis on Tanzania*, (Unpublished LIM Thesis) 1975 for a detailed study of the Tanzania case.

(9) See C. E. Barker, M. R. Bhagavan, P. M. Mitschke-Collande & D. V. Weild *in Industrial Production and Transfer of Technology in Tanzania : The Political Economy of Tanzanian Industrial Enterprises.* (Unpublished), 1975, University of Dar Es Salaam, ch. III, p. 6.

(10) United States Senate, Committee of Finance, *Implication of Multinational Firms* for *World Trade and Investment for United States*, Washington : Government Printing Office, 1973, p. 557.

(11) C. V. Vaitsos, *Transfer of Resources and Preservation of Monopoly Rents*, Cambridge, Mass : Harvard University Press, 1970. M. Kidron, *Foreign Investment in India*, Oxford University Press, United Kingdom, 1975. Also quoted in Barker, Bhagavan Mitschke-Collande & Weild *Op. Cit.*, Ch. II, P. S.

(12) As one capitalist economist put it, « A start can be made with the simple assumption that the motive of an individual or a group who set up in business is to make money, and (as a temporary expedient only) that they wish to)make as much money as possible ». David M. Smith, *Industrial location : An Economic Geographic Analysis*, New York : John Wiley & Sons Inc., 1971, p. 181.

(13) See R. B. Sutcliffe, *Industry and Underdevelopment*, London : Addison - Wesley Publishing Company, 1971, Chapter 5.

(14) Whilliam Shakespeare, *The Complete Works of Shakespeare* in « As You Like It », Act. II Scene VII, Spring Books, Mamlyn Publishers, 1958, p. 218.

(15) See Barker, Bhagavan, Mitschke-Collande and D. V. Weild, *Op. Cit.*, p. 5.

(16) For a detailed analysis, See P.M. Kuuya, « Import Substitution As An Industrial Strategy », Economic Research Bureau Paper (ERB Paper) 76.10, Universiy of Dar Es Salaam.

(17) The Collapse of the entire roof of the Tororo Cement factory in 1973 was caused by the solidification of accumulated cement dust. A (rain) drizzle caused the dust to solidify into a solid mass of cement whose weight could not be born by the roof.

(18) Prof. Z. Svejnar, « Some Factors Affecting Employment and Choice of Technology in African Industry : A study Based on a Survey of Thirty-Seven Plants in a Region of Tropical Africa », Geneva : International Labour Office (ILO), 1972.

(19) For a detailed discussion of the effect of oil price changes in the cost of production of cement at the Wazo Hill Plant, See P. M. Kuuya, « Inflation : Tanzania's Dilemma » Economic Research Bureau (ERB Paper) 75.8, University of Dar Es Salaam, 1975.

(20) The State Mining Corporation (STAMICO) is pushing ahead plans to exploit the coal deposits in Mbeya. A railway line is being constructed by the Chinese to join the coal deposits at Ilima (Rungwe) and the iron ore deposits at Liganga (Chunya) to the Main Tazara Railway line.

(21) Although Tanzania has a 750,000 tonnes capacity oil refinery plant that produces, among other things, furnace fuel consumed by the cement plant, the high import content of the refinery's products makes a mockery of any efforts to be less dependent. The refinery is one good example of an enclave investment.

(22) The equipment must have been quite advanced or quite peculiar to German technology for despite the 3 years the new management and technical staff from India have had since they took over, there are hardly any signs that the technique at the plant has been sufficiently mastered by the new experts. The constant machine breakdowns which have led to the plant's output to fall below 75 % of 1973 bears this out.

(23) See P.M. Kuuya « Import Substitution... », *ibid.*

(24) This could have been done by setting up a cement plant with a contact sulphuric acid plant that processed further the sulpher-dioxide discharged from the cement plant.

(25) According to the Minister of Industry's report to Parliament (Daily News 17-7-76) Mwatex made a gross profit of shs. 3.72 m/= in 1974 but this dropped to shs. 2.29 m/= in 1975.

(26) Many projects initiated in Tanzania during the 2nd Five Year Plan period were not planned (e.g. the Tazara Railway). Decisions were made about them as expedience or necessity arose. It is such decisions that are partly responsible for some of the random choice of technology.

(27) See IDRC — 060e, *ibid.*

(28) In some of the developing countries where the machinery for choosing technology is not systemised, the main guidelines that is used in the choices is the last parameter (vii). Tanzania is one of these.

(29) J. Rweyemamu « The formulation of An Industrial Strategy for Tanzania », Mimeo, 1976.

(30) The Sussex Group : *The Sussex Manifesto* : *Science and Technology to Developing Countries During the Second Development Decade*, Institute of Development Studies University of Sussex, England, 1970, p. 12.

RÉSUMÉ

Cet article procède à l'analyse des problèmes du transfert de la technologie aux pays les moins développés avec en exergue le cas tannzanien. L'auteur conçoit le transfert de la technologie comme étant l'acquisition par un pays quelconque de l'une ou d'une combinaison de deux ou trois des catégories suivantes :

a) les renseignements techniques et commerciaux qui peuvent être utilisés dans le cadre de la recherche/développement de nouvelles méthodes de production de biens et services et dans la commercialisation et l'achat des techniques et de leurs produits ;

b) un personnel hautement qualifié capable de concevoir, de développer et d'effectuer la recherche en matière de technologie et de prendre des décisions quant à l'utilisation efficace de cette technologie ;

c) un équipement conçu et réalisé par l'homme incorporant des techniques avancées et pouvant être utilisé à la transformation de biens intermédiaires de production en produits finis, lesquels produits sont utilisés à fournir et à développer les services et à créer de nouvelles capacités de production.

De tels transferts se font à titre temporaire ou permanent, mais quoi qu'il en soit un processus d'assimilation est nécessaire afin de les adapter ou de les améliorer en fonction des ressources et des besoins locaux. S'il en est autrement, l'auteur les qualifie de « pseudo-transferts », de grappes de techniques « enclavées » qui ne seraient pour le pays importateur qu'un passeport vers la dépendance et l'exploitation. C'est la raison pour laquelle les pays en voie de développement doivent s'évertuer à créer et à développer des techniques autochtones et mettre sur pied dans les plus brefs délais des institutions de recherche et de formation pour l'évaluation de ces techniques.

Toute technique est fonction de la base matérielle et des conditions sociales du pays d'où elle est issue. En d'autres termes, la technique *ne peut pas être neutre ;* le développement d'une technique répond à une fonction objective spécifique, les conditions matérielles et les objectifs économiques et sociaux de la société (ou de la classe dirigeante de cette société) étant les déterminantes de cette fonction objective. Bien souvent, ces conditions matérielles et ces objectifs économiques et sociaux ne sont pas transférables d'un pays à l'autre, ce qui explique que des techniques qui ont fait leur preuve dans un pays donné échouent en catastrophe ailleurs. Dans la majorité de pays en voie de développement, y compris en Tanzanie, on a procédé à l'importation des techniques sans s'assurer au préalable de la création des conditions matérielles et du cadre institutionnel nécessaire à l'enracinement et à l'évolution de ces techniques.

Les sociétés multinationales avec leur contrôle du réseau de commercialisation et les moyens publicitaires dont ils disposent ont créé ou encouragé l'essor de modèles de consommation répondant aux besoins d'un groupe infime mais puissant de privilégiés dans les pays sous-développés. En Tanzanie, ce groupe représente à peine 5 % de la population, mais constitue la « classe consommatrice », étant le seul détenteur du pouvoir d'achat nécessaire. Il décide du produit qui doit être fabriqué localement. et il n'est pas étonnant que les décisions soient prises en fonction des goûts et des intérêts de ce groupe.

Parmi les problèmes relatifs à l'importation de la technologie, il y a les barrières artificielles créées par les fournisseurs qui détiennent les brevets et les marques de fabrique dont la durée est indéterminée, ce qui rend toute adaptation extrêmement complexe. L'importateur est donc enfermé dans un carcan technologique qui ne lui laisse aucune marge de manœuvre. D'ailleurs, il n'a aucun contrôle sur les prix qui lui sont imposés par les sociétés exportatrices.

En Tanzanie, avant l'indépendance en 1961, l'importation de la technologie était de l'unique ressort de l'investisseur privé — personnes physiques ou morales ou sociétés multinationales — dont l'objectif principal évidemment était la maximalisation des bénéfices.

Après l'indépendance, et notamment après la déclaration d'Arusha, le gouvernement intervient de plus en plus dans tous les secteurs de l'économie, mais la capacité d'autofinancement locale étant encore très réduite, les sociétés étrangères continuent à dominer le secteur de l'importation de la technologie, La contradiction est flagrante ; tandis que l'objectif principal du gouvernement c'est d'assurer le développement du pays et le bien-être de ses populations, les sociétés étrangères n'ontd'autre but que la maximalisation des bénéfices et le rapatriement de leurs recettes à l'extérieur.

Une des premières industries à être créées (1964) après l'indépendance a été une cimenterie à Dar Es Salaam. Une société mixte a été mise sur pied avec le concours d'une société étrangère et la participation du gouvernement tanzanien. La société étrangère était responsable de la gestion, du choix des techniques, de la formation des ressortissants tanzaniens, etc... La technologie choisie était à forte utilisation de capital et l'une des plus modernes en Afrique de l'Est. Le combustible utilisé était le pétrole et l'électricité plutôt que le charbon dont les gisements sont importants dans le pays ; on n'a tenu aucun compte des liaisons possibles en aval ou en amont de cette industrie.

Parmi les autres exemples étudiés par l'auteur, le cas de General Tyres International, une usine pour la fabrication des pneus, implantée en Tanzanie dans le cadre de la défunte Communauté de l'Afrique de l'Est, ne semble pas mieux conçu. Tous les biens intermédiaires de production sont importés de même que les techniques et, de surcroît, les véhicules qui consomment le produit de cette usine (les pneus) sont

eux-mêmes importés. Il s'ensuit que la demande intérieure pour le produit en question est fonction de l'exode de devises.

S'agissant du problème général du transfert de la technologie, il importe peu qu'elle soit à forte utilisation de capital ou de main-d'œuvre ; ce qui importe, selon l'auteur, c'est que cette technologie soit susceptible d'être assimilée. L'importation de techniques n'est utile que si celles-ci répondent aux besoins des masses populaires et aident à réduire la dépendance dans le cadre d'une stratégie de développement autocentrée.

Conventions de Gestion et Transfert de Technologie au Zaïre
Le cas du cuivre

Hunga Hunkamba*

INTRODUCTION

Quand on examine les stratégies adoptées par les pays en voie de développement pour transformer leurs économies, on constate qu'indépendamment de la philosophie politique en vigueur, l'Etat y joue un rôle prédominant (le secteur des entreprises publiques étant considéré comme l'instrument privilégié de cette action transformatrice de l'Etat) (1).

Il est significatif de noter que même dans les pays actuellement développés, bien que dans les premières théories économiques (Adam Smith, Ricardo...) le processus de croissance ait été étudié dans le contexte d'un système libéral (l'intervention étatique étant considérée comme entravant la croissance) et que le développement de l'Europe aux 18e et 19e siècles se soit réalisé en régime de « laissez-faire », le rôle de l'Etat s'est considérablement accru, surtout après la grande crise de 1930 (2).

Le secteur public zaïrois est très important. Le système colonial belge, caractérisé par la soumission du pouvoir politique au pouvoir économique métropolitain, était dominé par l'initiative privée du capital extérieur. Toutefois, l'Etat y jouait un rôle complémentaire et supplétif important ; surtout dans les années de crise. L'accession du pays à l'indépendance a permis la création des entreprises publiques pour des raisons diverses : affirmations d'indépendance économique (Air Zaïre, Gécamines), réorientation des ressources en fonction des besoins de développement économique (SONAS, CNECI...). En 1970, on peut considérer que l'activité non traditionnelle est assurée pour moitié par les

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agents économiques publics et pour moitié par les agents économiques privés (3).

Mais si, au Zaïre comme d'ailleurs dans beaucoup de pays du Tiers-Monde, l'importance du secteur public — preuve d'une accumulation du capital au niveau de la collectivité (4) — n'est plus à démontrer, il est indispensable d'examiner le rôle de la propriété publique (5) dans le processus de transformation économique face au mode de gestion de certaines entreprises publiques. Ce mode de gestion est caractérisé par l'association — sous forme de convention de gestion (6) — du secteur privé à la gestion d'unités de production dans lesquelles l'Etat détient la totalité ou la majorité de la mise des capitaux et où en principe il détient aussi entièrement ou en majorité le pouvoir des décisions économiques. Ce mode de gestion modifie les données fondamentales habituelles de l'analyse en Economie publique, et notamment la relation propriété et pouvoir de décision. (7)

L'objectif principal poursuivi par l'Etat en signant la convention de gestion est le transfert de technologie que doit réaliser la société privée au profit de l'entreprise publique. Seule l'analyse des cas concrets peut rendre compte de la mesure dans laquelle ce transfert se réalise. On va tenter de le faire en ce qui concerne l'industrie du cuivre au Zaïre en analysant les relations conventionnelles entre l'Etat zaïrois et le groupe de la *Société Générale de Belgique* — via *Société Générale des Minerais* (SGM) — au sein de la *Générale des Carrières et Mines du Zaïre* (GECAMINES), l'entreprise publique zaïroise, chargée de l'exploitation des minerais du Shaba (ex-Katanga), créée en janvier 1967 à la suite de l'appropriation par l'Etat zaïrois de *l'Union Minière du Haut-Katanga* (UMHK).

Pour comprendre ces relations, il faut remonter aux origines de l'UMHK, situer son importance dans l'économie zaïroise aussi bien que dans le holding belge, et examiner les conditions qui ont imposé son appropriation publique et la création de la GECAMINES.

RAPPEL HISTORIQUE

La constitution de l'UMHK en octobre 1906 s'insère dans la mise sur pied des Compagnies concessionnaires chargées de l'exploitation économique du Congo. Depuis mars 1887, la *Compagnie du Congo pour le Commerce et l'Industrie* (C.C.C.I.) avait été créée pour lancer le commerce et l'agriculture et construire le chemin de fer du Bas-Congo.

En avril 1891, la C.C.C.I. avait fondé la *Compagnie du Katanga* pour prendre en charge la colonisation du Katanga. Les objectifs de la Compagnie étaient les suivants : occuper le territoire katangais, explorer le sol et le sous-sol, étudier les voies de communication par terre et par eau, constituer des entreprises de colonisation ou d'exploitation,

créer, et exploiter des services de transports, et organiser une police pour assurer la sécurité. Il s'agissait là d'une œuvre colossale et les avantages accordés à la compagnie étaient amplement à la hauteur de la tâche :

— Cession en pleine propriété d'un tiers de territoire représentant à peu près 20.000.000 d'hectares ;

— Concession des mines pour 99 ans dans le tiers du territoire lui revenant et pour 20 ans dans les deux tiers revenant à l'Etat. Celui-ci recevait en contrepartie 12 % des actions de la compagnie avec droit de nommer un délégué auprès de la *Compagnie du Katanga* et des filiales qu'elle créerait.

Les vingt millions d'hectares de la compagnie ne constituaient pas une seule région, mais se divisaient en plusieurs blocs de 12.500 ha, systématiquement dispersés parmi les blocs analogues revenant à l'Etat. Cette « technique du damier » avait été utilisée pour éviter une valorisation trop concentrée du territoire. Toutefois, il s'avéra impossible de délimiter sur les terres l'échiquier ainsi tracé sur la carte. Pour éviter les embarras d'un partage sur le terrain, l'Etat indépendant du Congo et la *Compagnie du Katanga* mirent sur pied un organisme mixte, le *Comité Spécial du Katanga* (C.S.K.), chargé de la gestion de leur patrimoine commun. Les bénéfices devaient être répartis à concurrence de 2/3 pour l'Etat et de 1/3 pour la Compagnie du Katanga.

C'est en vue d'exploiter les gisements katangais que le C.S.K. créa l'U.M.H.K. au capital de 10.000.000 francs belges, répartis entre 1.242.000 parts sociales et dont la concession accordée d'abord pour trente ans, puis jusqu'au 11 mars 1990 lui conférait un monopole d'accès aux ressources minières du Katanga.

STRUCTURE DU CAPITAL

Les principaux actionnaires de l'U.M.H.K. sont le C.S.K., la *Tanganyika Concessions Ltd* et la *Société Générale de Belgique* (voir tableau 1).

Le C.S.K., avec ses 25,10 % des parts sociales et 35,70 % des droits de vote, est l'actionnaire majoritaire de l'entreprise. Organisme mixte du patrimoine indivis de l'Etat et de la *Compagnie du Katanga*, le Comité est composé de six membres : quatre, dont le Président, qui a une voie prépondérante, sont nommés par l'Etat et deux par la *Compagnie du Katanga*. Cette composition du C.S.K. permet une domination du Comité par les représentants de l'Etat.

La *Tanganyika Concessions Ltd* est le second actionnaire important — le principal actionnaire privé. Sa participation au capital de l'U.M.H.K. s'inscrit dans le cadre des relations existant depuis décembre 1900 entre *Robert Williams* et le C.S.K.

TABLEAU 1

Actionnaires de l'U.M.H.K. jusqu'au 27 Juin 1960[a] (en %)

	Parts sociales	Droits de vote
Comité Spécial du Katanga	25,10	35,70
Tanganyika Concessions Ltd	14,50	20,20
Société Générale de Belgique	4,50	6,90
Compagnie du Katanga	1,50	0,90
Divers	54,40	—

Source : Tableau élaboré à partir des données absolues fournies par CRISP, Morphologie des groupes financiers et P. Joye et R. Lewin (1961).

Note :
(a) Date de la dissolution des pouvoirs concédants par l'autorité coloniale (C.S.K., ...).

A cette époque, *Robert Williams* avait été chargé par le C.S.K. de la prospection minière au Katanga. Les conditions de coopération avaient été définies de la façon suivante :

— les dépenses des recherches minières étaient à charge de *Robert Williams*, le C.S.K. accordant un subside de 3.000 livres, au cas où les frais annuels atteignent 5.000 livres. Cette quote-part du C.S.K consistera dans la suite en un remboursement de la moitié des frais effectivement engagés ;

— les gisements découverts devaient être exploités en commun pour trente ans. Ce terme sera porté dans la suite à 99 ans ;

— les bénéfices retirés de la création des sociétés devaient être répartis à concurrence de 60 % pour le C.S.K. et 40 % pour *Robert Williams*. Les proportions seront, à partir d'octobre 1905, de 80 % pour le C.S.K. et de 20 % pour *Robert Williams;*

— les capitaux pour la création des sociétés devaient être souscrits pour moitié par les soins de chacun des deux partenaires.

En décembre 1901, le C.S.K. avait autorisé le transfert par *Robert Williams* de ses droits et obligations à la *Tanganyika Concessions Ltd*, et avait obtenu le droit de nommer deux administrateurs au sein du Conseil d'Administration de la nouvelle société.

La part directe de la *Société Générale de Belgique* au Capital de l'U.M.H.K. est faible, bien qu'elle « marque... le véritable début de l'intervention de la Société Générale au Congo ». Cela est conforme à la stratégie financière du groupe qui cherche à s'assurer le maximum de profit avec un minimum des risques. L'avantage certain de cette stratégie est de « pouvoir opérer rapidement et facilement un retrait de

capital-argent et de profiter de sa mobilité pour l'orienter vers des secteurs plus rentables, lorsque des signes d'obsolescence du capital industriel fixe se manifestent ». (8)

CONTROLE DE L'ENTREPRISE

Le Conseil d'Administration est l'organe statutaire, qui détient le pouvoir de décision au sein de l'entreprise. Ses membres sont élus par l'Assemblée Générale. Le choix de son Président, qui doit être de nationalité belge, revient au C.S.K. Ses délibérations ne sont valables qu'avec la participation de la moitié de ses membres. Ses décisions sont prises à la majorité absolue des membres présents, la voix du Président étant prépondérante en cas de partage.

La gestion journalière de l'entreprise est assurée par un ou plusieurs administrateurs-délégués, nommés par le Conseil d'Administration. La direction de l'entreprise au Katanga est assurée par un directeur général, également nommé par le Conseil d'Administration. A partir de 1935, une partie des pouvoirs du Conseil d'Administration incombe à un Comité permanent, composé de cinq membres du Conseil et chargé du contrôle permanent de la haute gestion de la société. Dans le même ordre d'idées, les opérations au Katanga seront supervisées par un Comité local.

De ce qui précède, on peut conclure que le contrôle du Conseil d'Administration est indispensable pour s'assurer le pouvoir de décision dans l'entreprise. La composition du Conseil d'Administration jusqu'en 1955 est présentée au tableau 2. Il s'agit de l'analyse de la représentation des principaux actionnaires. Le critère de choix des différentes périodes est la durée pendant laquelle une même personne assume la présidence du Conseil. De 1906 à 1913, on constate une prépondérance relative de la *Tanganyika Concessions Ltd*, qui en 1913-1914 fait place à celle de la *Société Générale de Belgique*. A partir de 1939, l'emprise de la Société Générale est totale.

Il est intéressant de noter que la prépondérance de la T.C.L. ne s'est pas traduite par la prise en main des postes importants dans l'entreprise. Le C.S.K., statutairement habilité à désigner le Président du Conseil, confie le poste au gouverneur de la *Société Générale de Belgique*. L'Administrateur-délégué et le directeur général sont aussi de la Société Générale. Cela s'explique sans doute par le fait que durant cette période, le Conseil n'est pas la source de pouvoir effectif. Celui-ci est détenu par le Comité technique. En effet, à sa création, l'U.M.H.K. ne dispose pas de personnel technique. Les gens de métier belges répugnent « à s'expatrier en ce Congo hostile, bon pour les cerveaux brûlés ». Il faut reconnaître que l'opinion publique belge n'a porté que fort tardivement intérêt à l'expansion coloniale léopoldienne. La T.C.L., par contre, possède une vaste expérience, une masse d'information et un personnel qualifié, au travail au Katanga depuis 1900 et habitué aux conditions de vie locales.

Aussi, en sa séance du 13 décembre 1906, le Conseil d'Administration décide-t-il de faire appel à l'assistance technique de cette Société. Un contrat de gérance est signé entre la T.C.L. et l'U.M.H.K., au terme duquel la T.C.L. est chargée de la direction technique de l'U.M.H.K. pendant une période de dix ans, renouvelable par tacite reconduction. Cette assistance technique est rémunérée par un prélèvement de 5 % des bénéfices de l'U.M.H.K. au profit de la T.C.L. et par une somme forfaitaire annuelle de trois mille francs pour couvrir les frais de bureau (9). Un comité technique, présidé à Londres par *Robert Williams*, assume les prérogatives du Conseil d'Administration. Le représentant de la T.C L. au Katanga est chargé d'exécuter les décisions de ce comité, et possède les pouvoirs les plus étendus en ce qui concerne la gestion de l'entreprise en Afrique.

Les liaisons conventionnelles entre la T.C.L. et l'U.M.H.K. mettent donc sur pied une structure de pouvoir effectif, indépendante du Conseil d'Administration. Durant cette période, le recrutement du personnel technique dépend de la T.C.L. Cela explique la prédominance de l'élément non-belge, essentiellement anglais et sud-africain, parmi le personnel européen. Toutefois, cette dominance de l'U.M.H.K. par la T.C.L. doit être considérée comme provisoire du fait de la nationalité britannique de cette dernière dans une structure coloniale réellement chauviniste. Elle dépend donc largement de l'évolution des milieux professionnels belges vis-à-vis d'une carrière en colonie.

TABLEAU 2

Représentation des principaux actionnaires au Conseil d'Administration de l'U.M.H.K.

	1906-1913 (BAEYENS)	1913-1932 (JADOT)	1932-1939 (CATTIER)	1939-1944 (GALOPIN)	1944-1947 (VAN BREE)	1947-1955 (BLAISE)	A partir de 1955 (GILLET)
C. S. K.[a]	2	2	2	2	2	2	2
Tangan yika Concessions ..	5[b]	6[c]	5	3	2	4	3
Société Générale de Belgique[d] ..	4	7	6	8	10	9	10

Source : Tableau élaboré à partir d'éléments tirés de l'Union Minière du Haut-Katanga 1906-1956 et de Rapports annuels.

La remise en question de la gestion anglaise commence en 1911. Elle est l'œuvre d'hommes politiques belges, agissant par l'intermédiaire des jeunes ingénieurs, dont l'envoi au Katanga avait été encouragé sous forme de stage de 18 à 24 mois, pendant lesquels ils étaient appelés à exécuter une série des travaux manuels et subissaient la loi méprisante des dirigeants anglais.

A partir de 1912, le Conseil d'Administration reprend la direction effective de l'entreprise. Cette reprise se réalise par une révision des liaisons conventionnelles avec la T.C.L. Au Conseil revient de nouveau la définition de la politique générale. Le contrôle de la gestion au Katanga relève du Conseil par l'intermédiaire du Comité technique, composé par *Jean Jadot* (Société Générale de Belgique), *Robert Williams* (T.C.L.) et deux autres membres (l'un nommé par les actionnaires belges et l'autre par la T.C.L.), assistés par deux secrétaires techniques (un Belge et un Anglais). La direction des opérations au Katanga revient au directeur général, nommé par le Conseil d'Administration.

La reprise de la direction de l'entreprise par le Conseil d'Administration, numériquement dominé par la *Société Générale de Belgique*, permet d'établir définitivement la prédominance belge au sein de l'U.M.H.K. A côté du contrôle sur la gestion de l'entreprise, assuré par la présence aux postes de commandement (Conseil d'Administration, Président du Conseil, Comité permanent, Administrateur-délégué, Directeur général) des hommes du groupe qui, en cumulant des fonctions analogues au sein du holding et dans d'autres filiales s'imprégnent continuellement de « l'esprit de la maison », l'emprise de la *Société Générale* s'appuie sur d'autres mécanismes.

Un des mécanismes est l'accroissement par participations indirectes de la part du groupe au capital. En plus de sa participation directe, (1,3 %), les participations de la *Société du Bécéka* (1,5 %) et de la *Compagnie du Katanga* (4,6 %) permettent à la *Société Générale* de contrôler 7,4 % du capital de la *Tanganyika Concessions*. En absorbant en 1928 la *Banque d'Outremer* et en acquérant ainsi le contrôle de la C.C.C.I., la *Société Générale* devient le partenaire de l'Etat au sein du C.S.K. Sans chercher à déterminer ce que lui confère sa participation au capital de la T.C.L., on peut estimer à 14,46 % sa part directe et indirecte au capital de l'U.M.H.K.

Notes :

(a) En plus, le C.S.K., peut nommer deux représentants, qui participent aux délibérations avec voix consultative seulement.

(b) dont le vice-président, en la personne de Robert Williams.

(c) dont le directeur général en Afrique.

(d) dont le président (chaque fois Gouverneur de la Société Générale de Belgique), l'administrateur-délégué et le directeur général en Afrique (sauf pour la période 1913-1932).

N.B. : Les périodes (1906-1913, etc...) correspondent à la présidence de personne dont le nom se trouve entre parenthèses.

Un deuxième type de contrôle consiste à assigner à l'entreprise une fonction dans le cadre de la division du travail au sein du groupe. En effet, pour celui-ci, l'U.M.H.K. constitue la source d'approvisionnement en métaux non-ferreux.

Elle organise l'extraction des minerais, à qui elle fait subir un premier traitement. Ce traitement permet d'attendre des teneurs en cuivre se situant à 98,5 % pour la métallurgie thermique et à 99,5 % pour la métallurgie électrolytique. Il permet aussi la libération partielle des produits associés (cobalt, cadmium, concentrés de zinc) et la récupération des poussières germanifères et des boues électrolytiques (qui contiennent l'or et l'argent).

La fonction de raffinage revient à des filiales situées dans la métropole. La commercialisation revient également à une filiale du groupe. Le groupe assume ainsi à la fois une concentration verticale (depuis les mines jusqu'aux produits semi-finis) et un contrôle des marchés internationaux. Le troisième mécanisme de contrôle s'exerce à travers le crédit à court terme. Celui-ci permet de développer une grande dépendance financière de l'entreprise vis-à-vis du groupe. Jusqu'au moment où elle devient en 1937 capable de s'auto-financer, l'U.M.H.K. dépend entièrement de la Société Générale de Belgique pour son financement à court et moyen terme.

Pour résumer cette analyse sur le contrôle de l'U.M.H.K., on peut dire que le pouvoir de décision, qui peut se situer au sein d'organes statutaires aussi bien qu'en dehors de ceux-ci, n'est pas réparti entre les actionnaires suivant la structure de propriété. Le partage de pouvoir au sein de l'entreprise reflète plutôt les rapports de force existant entre les actionnaires, indépendamment de leur participation au capital. A côté du contrôle par la gestion, il existe d'autres mécanismes, qui permettent d'exercer une influence également prépondérante sur l'entreprise.

CREATION DE LA GECAMINES

L'indépendance, qui consiste en « un transfert de la souveraineté politique et administrative des mains du colonisateur à celles des nationaux » (11), ne se traduit pas nécessairement par une prise en charge des moyens de production par des agents économiques (publics ou privés) s'apparentant au nouvel Etat. Elle modifie la cohérence du système colonial, commandé par « l'intérêt métropolitain » et impose un nouveau type d'alliance avec les nouveaux détenteurs du pouvoir politique. Toutefois, une perception erronée des intérêts dans une nouvelle division des tâches par nationalité rend long et difficile l'accouchement de cette alliance.

A la veille de l'indépendance, le pouvoir colonial légalise la suprématie de fait des groupes financiers métropolitains, en modifiant le

statut des sociétés de droit colonial, à qui est donnée l'opportunité de se placer sous la protection de la légalisation belge et en dissolvant les pouvoirs concédants. Ces aménagements raffermissent la base juridiques des groupes financiers métropolitains dans une structure post-coloniale. Ils rétrécissent, par contre, la marge de manœuvre des nouveaux détenteurs du pouvoir politique. Toutefois, ils leur fournissent une voie aisée pour un consensus national qui élargisse leur assise populaire. Leur remise en question est donc considérée comme s'inséran dans une stratégie globale d'indépendance économique.

L'obligation pour les sociétés de transférer au Congo avant le 1er janvier 1967 leur siège social et administratif et la loi Bakajika organisant un nouveau régime des cessions et concessions constituent des points importants de cette remise en question, qui aboutit, entre autres, à l'appropriation par l'Etat zaïrois de l'U.M.H.K. et à la création de la GECAMINES.

Mais un ensemble complexe des facteurs amène à la recherche d'une formule de coopérative avec les anciens actionnaires privés de l'U.M.H.K., notamment avec le groupe dominant. On va examiner ces facteurs, en termes de contraintes et de choix alternatifs ouverts, du point de vue de l'Etat aussi bien que de celui de la *Société Générale* de Belgique.

POINT DE VUE DE L'ETAT ZAIROIS

Contraintes

L'analyse des contraintes consiste à identifier les facteurs qui poussent vers la recherche d'un partenaire privé. Ces facteurs sont à la fois d'ordre économique, juridique et politique.

La première *contrainte économique* est constituée par l'importance de l'entreprise dans l'économie zaïroise. Cette importance s'analyse d'abord en termes de contribution à la formation de certains agrégats macro-économiques.

Les tableaux 3 à 5 permettent de la dégager. Le tableau 3 présente la contribution relative de l'U.M.H.K. dans le P.I.B. et dans les exportations : en 1966-1967, elle est respectivement de 19,2 % et de 51,6 %. On doit préciser ici qu'à défaut d'une certaine homogénéité dans les séries statistiques, qui permette d'établir des évolutions significatives sur longue durée, on a retenu des moyennes, qui, en s'étendant sur plusieurs années, éliminant les erreurs d'appréciation résultant d'un choix d'une année de référence trop particulière.

TABLEAU 3

Importance relative du cuivre dans l'économie zaïroise (en %)

(Moyennes annuelles)	1951-56	1957-59	1963-64	1966-67
Part des exportations du cuivre :				
1) dans les exportations totales	33(a)	30(a)	43	51,6
2) dans le Produit Intérieur Brut	12,8	10,8	11,0	19,2

Source : Tableau à partir de B. Piret (1971) d'après 1951-1959 Rapport de la Banque Centrale du Congo Belge et Rwanda-Urundi, 1959. 1963-1967 Rapports annuels de la Banque Nationale du Congo, et voir aussi Tableau III. 2 dans Nyembo Shabani (1975, p. 137).

Notes :

(a) Les exportations englobent également le Rwanda-Urundi, mais le PIB pour la même période est uniquement établi pour le Congo. Donc les pourcentages Exportations/PIB sont en réalité moins élevés qu'ils n'apparaissent et la part du cuivre légèrement sous-estimée pour la période (1951-1959).

TABLEAU 4

l'U.M.H.K. dans les recettes ordinaires de l'Etat

(en milliards de Francs Belges)

	1958	1964	1966
Recettes ordinaires	11	9,5	16
Part U.M.H.K.	1,8	3,2	5,9
En % des recettes ordinaires ..	16	34	37

Source : Tableau emprunté à Paul Demunter et Baudouin Piret : « A propos des mécanismes du sous-développement ». Relations Belgique-Zaïre ; p. 27.

TABLEAU 5

l'U.M.H.K. dans les recettes en devises de l'Etat

(millions de Zaïres) (a)

	1963	1964	1965	1966
Recettes en devises	199,4	222,7	213,1	264,4
Part U.M.H.K.	76,6	94,3	105,9	143,2
En % des recettes en devises ..	38,4	42,3	49,7	54,2

Source : Rapport annuel 1967, Banque Nationale du Congo.

Note :

(a) Pour les années antérieures à 1967, montants réévalués sur base de 1 Zaïre à 2 U.S.-$.

L'importance relative croissante de la part du cuivre dans la période post-coloniale est largement due à la chute de la production agricole. La part de l'U.M.H.K. au financement de l'Etat, comme on peut s'en rendre compte aux tableaux 4 et 5, est aussi importante : en 1966, 37 % pour les recettes ordinaires et 54,2 % pour les recettes en devises. Son évolution dépend du prix du cuivre sur le marché mondial, aussi bien que du volume des exportations.

L'importance de l'U.M.H.K. dans l'économie s'entend aussi en termes d'effets d'entraînement. L'U.M.H.K. a suscité la création, dans le pays, d'un réseau d'entreprises périphériques qui la place au centre d'un complexe d'effets aval et amont et dont elle conditionne soit l'offre, soit la demande. A la limite, ce qu'on a appelé « le pôle de développement du Shaba » se confond avec le processus de domination de l'économie de la région par l'U.M.H.K. La conséquence de la dépendance de l'économie vis-à-vis de cette entreprise est qu'il ne faut pas interrompre l'exploitation des minerais ni la commercialisation des produits.

La poursuite des activités des mines au Shaba se heurte au manque de personnel technique national. Jusqu'au 31 mai 1955, le personnel technique zaïrois se présente qualitativement de la façon suivante (voir tableau 6) :

— Manœuvres ..... 42,7 % ;
— Aides ..... 17,5 % ;
— Demi-ouvriers ..... 31,0 % ;
— Ouvriers qualifiés ..... 8,8 %.

L'ossature technique indispensable à la production est constituée par des techniciens étrangers, en majorité belges. A la fin de 1965, parmi les 22.366 agents, il y a 2.249 agents de cadre dont 229 africains. Lors de l'appropriation publique, l'*Union Minière* oblige les techniciens étrangers à opter soit pour le statut *Union Minière* (dans ce cas ils doivent rentrer en Europe) soit pour le statut GECAMINES. Ils se prononcent, dans leur majorité, en faveur de l'*Union Minière.*

La commercialisation indépendante des produits est rendue impossible par l'intégration de l'U.M.H.K, au groupe de la *Société Générale de Belgique.* En effet, une fois le raffinage réalisé par la *Société Métallurgique de Hoboken,* la commercialisation des produits de l'U.M.H.K. était assurée par la S.G.M., qui approvisionnait par priorité les sociétés affiliées. De ce commerce préférentiel, la GECAMINES hérite une structure des clients, composés essentiellement des filiales du groupe. En plus, au moment de la nationalisation, l'*Union Minière* fait savoir qu'elle ferait opposition « par toutes voies de droit aux ventes des produits » de la GECAMINES. Le boycott ainsi préconisé ne peut être utilisé avec succès qu'en cas de non-indemnisation. Toutefois, dans le cas d'espèce, cette menace est, à court terme, contraignante dans la mesure où l'on ne parvient pas à réorienter rapidement ses voies commerciales.

La dépendance de l'entreprise vis-à-vis du groupe de la *Société Générale* est renforcée par la division spatiale des services. Le Shaba héberge des services indispensables à la production et à l'organisation sociale, locale du personnel. Ces services sont d'ailleurs dédoublés par des départements analogues en métropole.

TABLEAU 6

Main-d'œuvre indigène par qualification au 31 *décembre* 1955

Manœuvres	Aides	Demi-Ouvriers	Ouvriers qualifiés	Total
8.879	3.633	6.454	1.840	20.806
en % 42,7	17,5	31	8,8	100

Source : E. Toussaint in Union Minière du Haut-Katanga. Evolution des techniques et des activités sociales 1906-1956 ; pp. 237-241.

L'administration générale et la conception sont uniquement menées en métropole. L'appropriation publique conduit donc à priver la GECAMINES, entre autres, de ses services de comptabilité, de recrutement des techniciens, d'approvisionnement, de ses bureaux d'études.

Les *contraintes légales* proviennent des principes généraux de droit international, qui, tout en affirmant la souveraineté des Etats sur leurs ressources nationales, imposent le paiement d'une indemnisation prompte et équitable en cas d'appropriation publique. L'attitude adoptée ici peut conditionner l'accès ultérieur au marché international des capitaux. Dans le cas zaïrois, les contraintes légales générales sont renforcées par l'existence du Traité belgo-zaïrois du 6 février 1965 qui institutionnalise la concertation entre l'Etat congolais et les anciennes sociétés de droit colonial et exclut une action étatique unilatérale.

Les *contraintes politiques* émanent de la nature d'un Etat et ses options fondamentales. Elles déterminent, en dernière analyse, le choix entre plusieurs alternatives.

Options alternatives

Les options alternatives élargissent le champ des choix disponibles à l'Etat et diminuent, par conséquent, le pouvoir de marchandage des partenaires traditionnels.

Une option alternative générale reste ouverte de façon permanente du fait de l'existence dans le secteur des métaux non-ferreux, d'autres grandes entreprises. Le groupe de la *Société Générale de Belgique* ne jouit donc pas en principe d'un monopole technologique. D'autres grandes firmes multinationales, productrices de cuivre, disposent, à des degrés divers, d'une technologie de pointe, d'un personnel haute-

ment qualifié et, des circuits sophistiqués intégrés d'approvisionnement et de commercialisation.

A côté de l'option alternative générale, il existe toutefois une option alternative spécifique, qui a été effectivement prise en considération et retenue par l'Etat zaïrois.

La GECAMINES est conçue au départ comme une entreprise mixte, avec 60 % de participation étatique, 15 % pour la *Tanganyika Concessions* et le solde pouvant être souscrit par des privés — à l'exclusion du groupe de la *Société Générale de Belgique* —. Son conseil d'administration, dont le président et l'administrateur-délégué seraient Belges, devait être composé de quatre Zaïrois, cinq Belges et un Britannique. La *Tanganyika Concessions* refuse de participer au capital de la GECAMINES, en affirmant « qu'il ne serait de l'intérêt ni de la société, ni de ses actionnaires qu'elle soit associée à un acte illégal de confiscation qui mettrait en danger l'important investissement qu'elle garde dans l'Union Minière du Haut-Katanga. » (12)

L'Etat zaïrois confie alors à la *Compagnie Lambert* un mandat portant sur trois points : (13)

— la recherche des possibilités d'une coopération technique en vue d'assumer la poursuite des activités des mines au Shaba dans le cadre d'un consortium international ;
— la recherche d'une coopération en vue de la commercialisation des produits de la GECAMINES ;
— la recherche d'une participation à concurrence de 40 pour cent dans le capital de la GECAMINES.

Les principaux actionnaires de l'U.M.H.K. (*Société Générale de Belgique, Tanganyika Concessions et Compagnie du Katanga*) menacent de poursuites judiciaires tout consortium international, qui s'associerait à la GECAMINES. (14)

La mission de la *Compagnie Lambert* échoue pour deux raisons principales : La première tient au fait que ce groupe, dont les activités au Zaïre remontent à la fondation de l'Etat indépendant du Congo, ne possède pas d'intérêts importants dans le secteur des métaux non-ferreux. Son rôle se limite donc à servir d'intermédiaire entre l'Etat et les groupes importants de ce secteur. A ce titre, ses relations à la fois familiales et d'affaires avec la branche française des *Rothschilds* le placent dans une position privilégiée (15). Mais on peut penser que sur des points fondamentaux, il n'existe pas de conflit majeur entre le groupe de la *Société Générale de Belgique et les Rothschilds*, qui participent d'ailleurs ensemble à la constitution des capitaux de certaines entreprises. Tel est le cas de la *Compagnie des Mines, Minerais et des Métaux.*

La seconde raison de l'échec est due à la position de la *Société Générale* dans la formation sociale belge. Comme dit Marc Delepeleire, la *Société Générale* est « un Etat puissant dans un pays où l'Etat est

faible » (16). Il faut tout de suite reconnaître que dans l'univers des groupes de pression en Belgique, les holdings « occupent... une place assez particulière, en ce sens que, à la différence des autres groupes, ils n'ont guère d'action visible sur le processus politique ; en particulier, ils n'interviennent pas, du moins de façon directe et en tant que tels, dans la formation de l'opinion publique. Ils constituent d'ailleurs un sous-univers relativement fermé et autonome. Ce sous-univers est cependant forcément en interaction avec l'appareil politique à cause de l'importance de la fonction qu'il incarne dans la société globale et du poids qu'il représente dans le domaine des décisions économiques. » (17). Toutefois, ils peuvent exercer une action politique directe au travers des « porte-paroles dévoués ».

La *Société Générale*, le plus puissant des holdings belges, utilise sa « position dominante, ce quasi-monopole des sources d'information économique, et donc de la capacité de déterminer une politique économique..., pour sa propre survie, pour son épanouissement et pour le profit de ses dirigeants et de ses actionnaires » (18). Dans le conflit issu de l'appropriation publique de l'U.M.H.K., l'harmonie des relations se traduit par une forte convergence de vues et d'intérêts. (19).

POINT DE VUE DU GROUPE DE LA SOCIETE GENERALE DE BELGIQUE

Contraintes

Les contraintes, qui pèsent sur la *Société Générale*, résultent de sa stratégie d'intégration verticale au sein du secteur des métaux non-ferreux :

La concentration verticale implique que le groupe contrôle les sources d'approvisionnement, pour assurer la fourniture sans risques des matières premières aux usines de raffinage. De toutes les sources d'approvisionnement contrôlées par le groupe, la source zaïroise est la plus importante. A l'appropriation de celle-ci par l'Etat (c'est-à-dire au moment où elle échappe au contrôle du groupe), il est indispensable d'arriver — à court et même à moyen termes — à un modus vivendi avec les nouveaux propriétaires.

Le « dividende secondaire » : la notion de « dividende secondaire » exprime « la contribution du filiale dans le chiffre d'affaires d'autres filiales ». (20). En effet, le commerce préférentiel entre sociétés affiliées permet au groupe de fixer ses propres prix. Ainsi « le contrôle sur les matières premières et le manque de concurrence garantissent la réalisation des marges bénéficiaires » au niveau de plusieurs filiales. (21).

Cette nécessité d'assurer le dividende secondaire concerne non seulement les filiales du secteur des métaux non-ferreux, mais aussi

celles opérant dans d'autres secteurs, tels que les transports, les banques, les assurances, etc...

Options alternatives

Face à ces contraintes, les options alternatives sont forcément limitées, si le groupe cherche à sauvegarder son indépendance en matière d'approvisionnement. A moyen et long termes, elles consistent à développer d'autres sources d'approvisionnement.

Dès l'appropriation de l'U.M.H.K., le groupe entreprend la prospection et, dans certains cas, l'exploitation des gisements au Canada, en Iran et en Australie. Mais cela ne réduit pas le problème à court terme. Toutefois les stocks des métaux hors du Zaïre au moment de la création de la GECAMINES, estimées à 150.000 tonnes, donnent au groupe une marge temporelle pour la négociation. (22).

De cette analyse des contraintes et d'options alternatives ouvertes aux deux partenaires, on peut dire que bien que les contraintes pesant sur l'économie zaïroise soient importantes, la présence d'autres grandes entreprises dans le secteur accroît le pouvoir de marchandage de l'Etat, alors que celui du groupe de la *Société Générale* est largement diminué par des exigences d'approvisionnement à court et moyen termes. Toutefois, la solution intervenue sous forme de la convention de coopération technique du 15 février 1967 ne reflète pas ces rapports de force économiques. Le choix de l'ancien groupe dominant comme partenaire au niveau de la gestion de la GECAMINES est déterminé par une rationalité politique imposée à la fois par des contingences immédiates et les options fondamentales de l'Etat.

ANALYSE DES LIAISONS CONVENTIONNELLES (23)

La convention de coopération du 15 février 1967 et les amendements y afférents déterminent :

— 1) la répartition du pouvoir au sein de la GECAMINES ;

— 2) le coût de l'assistance technique de la S.G.M. et l'indemnisation de la S.G.M.

Répartition du pouvoir

Le pouvoir au sein de la GECAMINES est réparti entre le conseil d'administration et la S.G.M., qui agit par l'intermédiaire des hauts cadres belges de l'entreprise zaïroise, hérités pour la plupart de l'U.H M.K.

Le conseil d'administration est exclusivement composé des représentants zaïrois. Il lui appartient de prendre l'initiative de la programmation des activités de l'entreprise, de confier à la S.G.M. l'élaboration des programmes généraux indispensables au fonctionnement et au développement de l'outil de production, et d'apprécier les résultats des

études menées par cette dernière société. Toutefois, ce contrôle du conseil d'administration sur les programmes élaborés par la S.G.M. doit être évalué à sa vraie dimension, étant donné le haut niveau technique des options et la faible expérience des administrateurs zaïrois. Ceux-ci, en effet, sont des personnalités politiques ou syndicales, qui ont pour la plupart occupé des postes ministériels et assumé des mandats dans d'autres entreprises publiques, mais qui ne possèdent aucune expérience sérieuse dans le domaine des métaux non-ferreux. En dernière analyse, il revient donc à la S.G.M. de déterminer les orientations générales de l'entreprise.

Le conseil d'administration ébauchera une tentative pour développer, avec l'assistance de S. A. *Suisse Fiduciaires Associées*, une structure d'information et d'étude indépendante de S.G.M. Cette collaboration avec la société suisse aura principalement pour but de :

1) accomplir en Suisse des travaux de programmation et d'analyse ;
2) organiser l'engagement du personnel technique étranger en Suisse et les stages de perfectionnement du personnel technique zaïrois ;
3) étudier l'évolution du marché mondial du cuivre et de ses dérivés ;
4) rassembler les informations d'ordre financier, économique et technique, et réunir des documents nécessaires à ce sujet ;
5) organiser l'approvisionnement hors du Zaïre.

Cette tentative, désavouée par l'Etat, entraîne l'entrée des représentants de la S.G.M. au conseil d'administration. En effet, celui-ci comprend, à partir de ce moment jusqu'à sa suppression en août 1972, outres ses membres zaïrois, les directeur général et directeur général adjoint, qui font partie du personnel mis à la disposition de la GECAMINES par la S.G.M. Ceux-ci forment, avec le président du conseil, le comité exécutif permanent , qui reprend, dès lors les prérogatives du conseil.

La S.G.M. assume « la direction de l'ensemble des opérations industrielles et commerciales ». Elle est chargée de recruter le personnel technique non africain de la GECAMINES. A ce titre, elle détermine la politique de l'entreprise zaïroise en cette matière, et est seule habilitée à apprécier les connaissances techniques et la compétence des agents qu'elle recrute. Bien qu'œuvrant au sein de la GECAMINES, ceux-ci sont membres du personnel de la S.G.M. D'ailleurs, des mécanismes divers maintiennent cette appartenance :

1) le contrat de concours technique en territoire étranger : ce contrat signé entre la S.G.M. et l'agent met celui-ci à la disposition de la GECAMINES. Il fait partie intégrante du contrat d'emploi signé par l'agent avec la GECAMINES ;

2) le mode de rémunération de ce personnel : les rémunérations, fixées dans le contrat de concours technique, lui sont versées par l'entremise de la S.G.M., qui les doit en tout état de cause. La GECAMINES doit constituer, à cette fin, un fonds de garantie de 600.000 F.B. par agent en effectuant à chaque rapatriement des devises un dépôt de 2 % de la valeur rapatriée. Ce montant, qui correspond à un taux de 130 de l'indice officiel du coût de la vie en Belgique, doit être ajusté en fonction des variations de cet indice. Le fonds de garantie porte intérêt au taux des dépôts bancaires à trois mois pratiqué en Belgique, au profit de la GECAMINES, à qui il doit être restitué à l'expiration de la convention. Mais il sera supprimé par l'accord additionnel du 29 septembre 1969, et sera cédé à la S.G.M ;

3) les garanties en fin de carrière en Afrique : replacement en Europe, etc.

La S.G.M. est également chargée d'assurer le raffinage du cuivre et des métaux associés, leur transformation en produits commerçables ainsi que leur commercialisation.

La procédure de commercialisation se présente comme suit :

1) les produits de la GECAMINES sont livrés à la S.G.M. FOB port d'embarquement africain ;
2) à titre provisoire, la S.G.M. s'en porte acheteur ;
3) le prix qu'elle doit est le prix effectif de vente, et non celui du London Metal Exchange.

Le règlement n'intervient donc qu'après encaissement des factures auprès des clients. Mais le financement du pipe-line (à partir du port d'embarquement africain) est assuré par un système d'avances professionnelles de la S.G.M. au profit de la GECAMINES. Ces avances, effectuées au début de chaque semaine, sont à valoir sur le prix des produits achetés au cours de la semaine précédente. Elles sont calculées « sur base des quantités de produits effectivement livrés à la S.G.M. et en appliquant à ces quantités des teneurs établies sur la pratique des mois antérieurs pour des produits de même nature et au cours des métaux arrêtés de commun accord en fonction de la moyenne arithmétique des cotations S.G.M. pendant le mois calendrier, qui précède le mois d'embarquement.

La S.G.M. a aussi dans ses attributions l'achat et l'expédition des approvisionnements et la souscription des assurances y afférentes. Elle joue donc un rôle important dans le choix du fournisseur, du transporteur et de l'assureur. Il est évidemment possible de trouver tous ces agents au sein du groupe de la *Société Générale de Belgique.*

Les responsabilités de gestion de la S.G.M. sont donc assimilables à ses fonctions antérieures. Elles maintiennent intacts les mécanismes traditionnels de contrôle de la *Société Générale* sur l'exploitation des

mines au Shaba, tels que dégagés précédemment ; le contrôle par la gestion, le contrôle par le crédit à court terme, qui prend ici la forme d'avances provisionnelles.

Coût de l'assistance technique

Le coût de l'assistance technique couvre à la fois la rémunération de l'aide technique de la S.G.M. et à partir de 1969 l'indemnisation des actionnaires privés à l'U.M.H.K.

La convention de coopération technique du 15 février 1967 fixe le taux de cette rémunération à 4,50 % de la valeur totale de la production de la GECAMINES. Le calcul s'effectue sur les décomptes hebdomadaires des recettes. Le solde éventuel est réglé périodiquement en se basant sur les prix des produits de même nature faisant l'objet du décompte hebdomadaire des recettes relatif à la semaine durant laquelle le décompte du solde de la rémunération a lieu. Les honoraires de gestion de la S.G.M. sont nets de tous impôts et taxes zaïrois.

L'avenant du 24 septembre 1969 introduit un taux différent pour chacune des deux périodes qu'il prévoit. Pour la première période de 15 ans, le taux est de 6 % de la valeur de la production de la GECAMINES. Il comprend à la fois l'indemnisation des actionnaires privés de l'U.M.H.K. et la rémunération de l'assistance technique fournie par la S.G.M. Pour la deuxième période de 10 ans et pour les périodes ultérieures éventuelles de 5 ans, il est ramené à 1 %. Il représente uniquement la rémunération de l'assistance technique. Cet avenant détermine la quantité de la production de la GECAMINES, qui doit servir de base au calcul :

— en ce qui concerne le cuivre, la production retenue est de 360.000 tonnes en 1969, avec une progression de 20.000 tonnes pour chacune des années suivantes ;
— pour le cobalt, la production est de 20.000 tonnes en 1969, avec une progression annuelle de 300 tonnes.

EN GUISE DE CONCLUSION

De l'analyse, qui est présenté ci-dessus, il se dégage que si la convention réalise, au niveau de la gestion d'une entreprise publique, l'association du secteur privé au secteur public (et dans le meilleur des mondes, permet beaucoup d'espoirs pour un secteur public en mal de technologie et de bonne gestion), il n'est pas impossible que cette interpénétration des capitaux publics et des intérêts privés aboutisse à une subordination des premiers aux seconds. On constate alors une dépossession (partielle ou totale) par l'Etat de son pouvoir de décision économique (de sa propriété) au profit d'une entreprise privée, qui assume toutes les responsabilités de gestion, alors que l'Etat, qui a réalisé la mise des capitaux, doit assumer tous les risques inhérents à l'entreprise. Dans le cas d'une firme gérante verticalement intégrée (comme

on pu s'en rendre compte), l'entreprise publique est considérée comme une unité organique de l'ensemble multinational.

Les liaisons conventionnelles, en ce qui concerne l'industrie du cuivre au Zaïre, ont permis de maintenir intacts les mécanismes traditionnels de contrôle au profit du groupe de la *Société Générale de Belgique*. Il faut toutefois ajouter que la création de la GECAMINES a permis de mettre fin au monopole d'accès de ce groupe aux richesses minières du Shaba (ex-Katanga) et de mettre sur pied un oligopole à trois composantes, par la création de deux autres entreprises mixtes, la *Société de développement industriel et minier du Zaïre* (SODIMIZA) avec les intérêts japonais, principalement la *Nippon Mining Company*, *et la Société minière de Tenke-Fungurume* (SMTF) avec des partenaires américains, principalement *Amoco Minerals Company et Charter Consolidated Limited*.

NOTES :

(1) A propos du rôle du secteur public dans le développement économique, voir entre autres, C. Bettelheim, *Planification et croissance accélérée*, Paris : Maspero, 1973, pp. 45-66. Il faut toutefois remarquer que très souvent aucune tentative n'est réalisée pour analyser la relation entre le rôle du secteur public et la nature de l'Etat. Voir à ce sujet, S.A. Shah, « Nature de l'Etat et le rôle du secteur public dans le développement économique, quelques remarques préliminaires », IDEP/ET/CS/2365 — 9.

(2) Voir entre autres, J. K. Galbraith, *The New Industrial State*, New-York : The American Library, 1968, pp. 304-313, pp. 314-324. Voir aussi *Traité marxiste d'Economie Politique. Le Capitalisme monopoliste d'Etat*, tome 1, Paris : Editions Sociales, 1971, pp. 17-81.

(3) Le PIB se répartit comme suit : 10 % secteur traditionnel, 46 % entreprises privées et mixtes, 18 % services de l'Etat, 26 % entreprises publiques. La tendance doit être accentuée en faveur du secteur public à la suite des mesures d'appropriation publique du 30 novembre 1973 et du 30 décembre 1974. Mais ce gain du secteur public doit avoir été annulé par les mesures de rétrocession des anciennes entreprises appropriées, aux anciens propriétaires privés, mesures du 30 décembre 1975 et du 17 septembre 1976.

(4) Pour le cas zaïrois pendant la période coloniale, voir J.-P. Peemans, « The rôle of the state into the capital accumulation process : the case of the Congo during the colonial period (1885-1960) », IDEP/Reproduction/354.

(5) La propriété publique est considérée ici comme le pouvoir (qu'a l'Etat) d'affecter les moyens de production à des utilisations données et de disposer des produits obtenus à l'aide de ces moyens de production ». — C. Bettelheim, *Calcul économique et formes de propriété*, Paris : Maspero, 1971, p. 58.

(6) La Convention de gestion d'une entreprise publique est provisoirement définie comme une convention, à titre onéreux, par laquelle les pouvoirs publics confient la gestion d'une entreprise publique à une société privée qui puisse apporter connaissances techniques, compétence, organisation et expérience en gestion des affaires. En fait, dans le cadre de l'analyse, le terme « Convention de gestion » englobe des liaisons conventionnelles plus amples que celles suggérées de façon plus ou moins simpliste par cette définition.

(7) En reprenant C. Bettelheim, op. cit., p. 58, on considère ici que le pouvoir que confère la propriété n'est effectif que quand il s'articule sur une « possession », c'est-à-dire une capacité de mettre en œuvre les moyens de production soit que les propriétaires s'identifient aux agents de la possession, soit que ces derniers soient subordonnés aux premiers.

(8) R. E. Verhaeren, « La Société Générale et l'Union Minière », *La Revue Nouvelle*, (novembre 1972) pp. 371-374.

(9) Voir « Union Minière du Haut-Katanga, 1906-1956 », p. 76.

(10) Voir P. Joye et R. Lewin, *Les trusts au Congo*, Bruxelles : Société Populaire d'Editions, 1961, pp. 282-288.

(11) C. Comeliau, « Le pouvoir économique dans les pays nouvellement indépendants », *Cahiers Economiques et Sociaux*, Vol. III, N° 1 (mars 1965), p. 65.
(12) Voir Tanganyika Concessions Limited. « Déclaration du Président à l'Assemblée Générale du 26 janvier 1967 », p. 3.
(13) Voir à ce sujet, CRISP, Congo 1967.
(14) Voir Belgo-American Development Corporation, *News Release*, New York, 30 janvier 1967, « Major Shareholders to fight confiscation move ».
(15) A propos des relations entre le groupe Lambert et les Rothschilds, voir CRISP, « Repertoire Permanent des groupes financiers et industriels », III, 11/2, pp. 6-7.
(16) M. Delepeleire, « L'intérêt de la « Générale » et l'intérêt général », *La Revue Nouvelle* (novembre 1972), p. 440.
(17) J. Meynaud, Y. Ladrière, F. Perin (et autres), *La Décision politique en Belgique*, Bruxelles : Editions de l'Université de Bruxelles et Editions du CRISP, 1973, p. 109.
(18) M. Delepeleire, *op. cit.*, p. 440.
(19) Voir communiqué du Ministère belge des Affaires étrangères à propos de l'appropriation publique de l'U.M.H.K.
(20) M. De Vroey, *Propriété et pouvoir dans les grandes entreprises*, Bruxelles : CRISP, 1973, p. 141.
(21) Y. De Geest, « La stratégie de la Société Générale dans le secteur des non-ferreux » *La Revue Nouvelle* (novembre 1972), p. 368.
(22) Cela représente plus de 60 % des exportations annuelles belges du Cuivre Zaïrois.
(23) Les liaisons conventionnelles analysées sont celles issues de la convention de coopération technique du 15 février 1967 et ses annexes, modifiées par l'avenant du 24 septembre 1969 et ses annexes.
(24) Pour plus de détails, voir CRISP, T.A. N° 92, « Le Procès Gécomin ».

SUMMARY

Whatever the development strategies adopted by developing countries and irrespective of the political philosophy advocated, the State is playing an increasingly predominant role in moulding the economy and the public sector is becoming the privileged instrument for implementing the State's policy. Even in the developed countries where liberal philosophy held sway in the 18th and 19th centuries, particularly in Europe, the role of the State has grown considerably in importance since the great depression of the thirties.

The public sector is very important in Zaïre. Since Independence, a number of public corporations have been set up for a variety of reasons : asserting economic independence (Air Zaïre, Gecamines) and redirecting resources for economic development (SONAS, CNECI...). As a result, 50 % of all non-traditionnal economic activities were public in 1970.

In his paper, Ilunga Ilunkamba sets out to analyse the role of public ownership in the process of economic transformation and the type of management prevailing in some public corporations. The main feature of this management is that the private sector in fact becomes responsible for the management of production units, although the State is the sole or major shareholder and should, in principle, have, the sole or major say in the process of economic decision-making. The

Government's stated purpose in granting management contracts to the private sector was to ensure the transfer of technology from the private to the public sector. The paper goes on to analyse the case of the copper industry in Zaïre and the contractual relations between the Zaïrian Government and the Société Générale de Belgique within the Gecamines (Quarrying and Mining Corporation), a public body responsible for the exploitation of the mines of Shaba (ex-Katanga), which was set up in January 1967 after the nationalisation of the Union Minière du Haut-Katanga (U.M.H.K.).

The author traces the history of the U.M.H.K. and its various colonial ramifications up to the date of the creation of Gecamines. The Zaïrian Government, for a number of complex reasons, wanted to ensure the corporation of the former private shareholders of the U.M.H.K., in view of the rapid growth of the copper industry in the post-colonial period, due mainly to a drop in agricultural output. Such was the impact of copper on the country's economy that in 1966, the U.M.H.K. accounted for 54.2 % of the total foreign exchange earnings. Evidently, production would depend on the world market prices of copper as well as on the volume of exports. A whole network of peripheral enterprises had been created making the U.M.H.K. the centre of a complex of forward and backward linkage industries, whose supply and demand it was able to control. The « Shaba development pole » was nothing but an extension of the U.M.H.K.'s dominance of the region's economy and, consequently, it was important that the exploitation and marketing of the mineral ores continued uninterruptedly. An additional constraint on the state enterprise was the lack of national technical staff and independent marketing of the mineral products became virtually impossible because of the U.M.H.K.'s link with the Société Générale de Belgique. However, the latter needed the supplies from the Gecamines which, because of the vertical integration established through the years of colonial rule, represented its most important source.

The choice of the Société Générale as a management partner in the new public corporation was due both to short-term political and economic considerations and to the fundamental options of the Government. The Société Générale de Belgique, through the S.G.M. (Société Générale des Minerais) became responsible for the overall policy-making of the public corporation, even though all the members of the Board of Directors happened to be nationals, representatives of the Zaïrian Government. These representatives were political or trade union appointees with no actual experience of the non ferrous metal industry. Nevertheless, they did try to break the stranglehold of the S.G.M. by calling upon a group of Swiss corporations, the S. A. Fiduciaires Associés, to establish an independent information network, mainly to deal with problems of data collection, programming, personnel recruitment, technology and alternative market studies. The

Government disapproved of this initiative and S.G.M. delegates were directly appointed to the Board of Directors, the responsibilities of the S.G.M. being defined as « the management of all industrial and commercial operations ».

The author concludes that through these management contracts, private enterprise was called upon to share in the management of a public corporation, with the result that the interests of the latter were subordinated to those of the former. Whereas the State assumed all the risks as far as capital investment was concerned, private enterprise was given a free hand in management and Gecamines, because of the vertical integration with the S.G.M. became a mere appendage of the multinational corporation which, through various contractual devices, succeeded in keeping all the traditional mechanisms of the copper industry intact.

Notwithstanding, through the establishment of two joint venture corporations in association with Japanese and American interests, Gecamines was making a brave attempt to break the monopoly of access to the mining resources of Shaba (ex-Katanga).

Technology Transfer by Multinational Corporations in Africa : Effects on the Economy

Steven Langdon *

The technological gaps between rich and poor countries have been stressed in much recent writing on development. (1) It has been argued, for instance, that if only the world's *available* technological knowledge could be transferred to less-developed countries, « their socio-economic transformation can be carried out rapidly ». (2) At the same time, the central role of multinational corporations (mnc's) in development and transfer of such knowledge has been recognized. This role, in turn, has been seen as a major justification for less-developed countries' encouraging mnc's to undertake production in their economies (3).

This paper examines the validity of such reasoning in the African context. It suggests : first, that there are some rather particular economic factors that explain the central mnc role in technology transfer ; second, that these factors underlie important problems that mnc technology transfer generates in African economies ; and third, that these problems underlie patterns of political economy in many African states that themselves inhibit and distort broadly-based, widely-shared economic progress. The focus of analysis is primarily the mnc transfer of manufacturing technology ; and evidence is drawn heavily, though not exclusively, from Kenya**.

I. THE ECONOMICS OF KNOWLEDGE TRANSFER

Technology in its broadest sense may be considered to be specialized knowledge related to production ; (4) that knowledge may relate to the process of production (as in innovations in how a given product is made), or to *products* themselves (as in innovations of new products or product modification). In either case, the focus is on knowledge or information.

Knowledge, as Boulding notes, (5) is a peculiar economic commodity, in that once it is developed, it may be passed on without thereby reducing one's own supplies of it. Patent systems establish property

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** The research assistance of Mr. Glen Bailey is gratefully acknowledged in the case of much non-Kenyan evidence.

rights over such knowledge, but that only adds the complications. On the one hand, the sale price a patent owner might establish for his knowledge is indeterminate since he incurs no « production » costs for each licence he sells. While on the other hand, the buyer of the knowledge has, virtually by definition of the commodity highly imperfect information as he makes his purchase ; « its value for the purchaser is not known until he has the information, but then he has in effect acquired it without cost ». (6) The range of prices that might result in any such exchange could therefore be very wide. The lowest acceptable price for the seller could be virtually zero, while the highest acceptable price for the purchaser could be just less than the (probably) high cost of developing the knowledge himself ; in the technology case such costs of reproducing innovation may often be extremely high.

This exchange ambiguity can be overdone. There is *some* competition among sellers of technology, and purchasers can hire consultants to advise on the likely value of different technologies offered. However, there are also *other* ambiguities in knowledge as a commodity. The first is that specialized knowledge is not homogeneous (again virtually by definition) ; its uniqueness gives individual firms a basic for monopoly power in market sales, if that knowledge is embodied in particular differentiated products. This possibility provides firms with large incentives to try to innovate commercially-useful specialized knowledge, through research and development efforts. Again, though, the nature of knowledge complicates this process, since there must always be considerable uncertainty about the potential sucess (and financial cost) of an R and D effort.(7) Only large firms, with diversified R and D activities and high cash flows, seem to be able to accept such uncertainty (8) There is an interplay between these factors which underlies the emergence of very large corporations to dominant market positions in many national economies : innovation has generated monopoly or oligopoly profits, which have offset the uncertainty and financed the cost of further innovation, which in turn has generated more oligopoly profits and a large cash flow, which have... etc. (9)

These large corporations, of course, have become increasingly multinational in their production activities since 1950, and the economics of knowledge can help explain that, too. (10) As Baldwin and others have stressed, (11) specialized knowledge is a very difficult commodity to sell-requiring sophisticated absorptive capacity on the part of a receiving firm, and involving (to be effective) continuing and considerable flows of information that may be very hard to measure for pricing purposes. Therefore large corporations, with the organizational capacity to do so, have commonly found it more profitable to transfer technology through establishing their own subsidiaries abroad. The incentive to do this has been furthered by the possibility of using technological monopolization to generate monopoly-like profits on other parts of the mnc investment package (capital, material inputs, etc.) (12)

To return to the distinctions above, two sorts of such mnc technology transfer may be identified - involving what Helleiner calls *production* technology, and *consumption* technology. (13) The first refers to process knowledge transferred to begin producing existing products in a given country ; the second refers to the transfer of new products and of demand for them to the country - with the technology embodied in the products, and reflected in differentiating characteristics such as brand names.

The mnc transfer of each sort of technology to Africa, this brief discussion would suggest, is clearly less straight forwardly beneficial than might first appear. To begin with, both mnc processes and products have generally been innovated for developed country markets ; yet, for an mnc, transferring those *particular* technologies to a subsidiary in Africa will be virtually *costless* - while modifying products or processes for African conditions would incur extra development cost ; that is a strong incentive for most mnc's simply to reproduce their existing technology in Africa. Second, that technology embodies certain monopoly-power, and maximization of potential monopoly rents is critical to the mnc's ongoing R and D effort ; added to the information imbalance that necessarily affects any African government attempts to bargain with mnc's over technology transfer, this raises the possibility of very high returns going to the mnc. Third, the ongoing mnc R and D effort makes technology transfer a treadmill process ; once a country focuses its economy about mnc-type technology, the future innovations of mnc's relate to its economy too, and it becomes hard not to have to go on purchasing technology over and over again — therefore never really escaping high potential direct costs of the relationship, and the socio-economic effects of mnc technology reproduction. The rest of this paper examines these issues in more detail.

II. ECONOMIC EFFECTS OF MNC TECHNOLOGY TRANSFER IN AFRICA

There are three broad economic questions which are of interest in examining mnc technology transfer in Africa. First, do mnc's in fact transfer technology, in the sense of specialized knowledge, to *Africans* through their operations in the continent ? Second, if they do, is the direct economic cost of this external benefit, in terms of profit outflows, so high that the overall results of mnc operations in Africa nevertheless appear generally negative, particularly when compared with other potential forms of technology transfer ? And third, how should other external effects (14) of mnc operations (the mnc impact on local employment, entrepreneurship, linkages, etc.) be assessed in on overall evaluation of mnc technology transfer ? The section asks each of these questions in turn.

a) *Is technology transferred ?*

If, by and large, mnc's do not make it possible for African nationals to absorb specialized technology knowledge through their subsidiaries, then the economic benefits of mnc technology transfer come into questions ; few longer-run learning effects could be expected.

This question is not easily answered, since there is evidence of cases where mnc investment does rely so heavily on expatriate personnel that Africans are precluded from absorbing the relevant technological knowledge. This has been identified as a problem in the operations of French corporations in Senegal (15). Such a strategy, it has also been suggested, characterized Anglo American's efforts to maintain effective control of Zambia's copper sector, despite majority state shareholding. (16) Similarly, mnc's in Tanzania have been criticized for deliberately frustrating training efforts (17). Nigeria, too, has reported similar problems though the situation does seem very mixed there. (18)

That such blockages are by no means comprehensive on the continent, though, is shown by the Kenyan case. A detailed survey of mnc subsidiaries in that country showed first, that expatriate employment dropped over 1967-72 from 11.3 % to 2.3 % of total employment, and second, that most subsidiaries *were* undertaking training - some of them very extensively and at high, technology-related levels. (19) Some firms interviewed were attempting to restrict sophisticated technological knowledge to their expatriate employees, but most firms — and particularly the larger mnc's, like Unilever, Hoechst, Exxon, Shell and Metal Box — had a much longer-term strategy of fully incorporating Kenyan Africans into their company structure ; long-term training in high-technology facilities overseas was often part of this effort. The spread effects of this specialized training are evident, inter alia, in the higher levels of the Kenya civil service, where former African mnc executives are not uncommon.

This question does probably not, therefore, suggest a key problem in the effects of mnc technology transfer in Africa. Considerable pressures, as in the Kenyan work-permit system, may be necessary to goad subsidiaries into transferring specialized knowledge to Africans But there appear to be no fundamental structural or institutional impediments to the process.

b) *How financially costly is mnc technology transfer ?*

This second question is more important, especially in light of Latin American studies showing large effective mnc profits being surreptitiously generated through transfer pricing. (20) Such high profits show not only monopoly rents on unique technology, but high returns on other parts of the mnc investment package, made possible by technological monopolization.

Unfortunately, similar studies have not been systematically undertaken in black Africa, though there has been evidence suggested of the

various non-dividend channels by which mnc's do receive financial returns from their investments. (21) Some of these channels involve explicit payments for technology, through fees and royalties — these have been quite marked in Nigeria, for instance. (22) But it would be a mistake to interpret such particular figures, as in any sense representative of the price for technology transfer. It is clear that mnc's select channels which are convenient to use for surplus repatriation, and technology fees in any given country may simply be more or less easy to use, depending on tax levels and regulatory procedures. The financial cost of mnc technology transfer is better considered to be the effective profits generated through all channels, in excess of some « normal » opportunity-cost rate of return on subsidiary capital employed.

Average after-tax profit rates in the mnc as a whole, for instance, might be taken as a « normal » return (though in fact they will often reflect world-wide mnc oligopoly power and hence be higher than prevailing international capital market interest rates). Kenyan evidence from 29 reporting manufacturing subsidiaries in 1972 showed after-tax profits plus fees to total 22.8 % of subsidiary capital employed, compared to parent company equivalents of 8.8 %, so this technology transfer price may be very high indeed.

That the excess profits are related to technology transfer is suggested by two aspects of detailed analysis of the Kenyan data : first, statistical analysis shows that those mnc's that do transfer their particular brand-name products (as opposed to producing products developed for Kenya) are significantly more profitable ; second, the importance of process technology transfer is suggested by statistical analysis showing that high capital/labour ratios were associated with increasing subsidiary profitability over the 1967-1972 period. Similarly, detailed study of several individual industries showed that mnc consumption technology transfer, in particular, made mnc subsidiaries much more profitable than their locally-owned counterparts. (23)

Some data is available which suggests the Kenyan case is not atypical. (24) So the financial cost of mnc technology transfer is likely very high (though a plea for more research may be more important to underline). However, even that probable cost is not conclusive in assessing the mnc economic effect. One needs three further sets of facts. First, what is the social value of mnc technology/training transfer ? That would have to be set against the high mnc financial outflows. Second, what is the likely cost of alternative means of technology transfer ? That would have to be compared with the mnc cost. It is conceivable that the first value could be high, and the second calculation not that much lower than the mnc « price ». Third, there are other external effects of mnc technology transfer, and these have to be worked into the analysis too. If these further externalities represent social benefits, as some have claimed, then they may decisively outweigh the financial outflows considered in this subsection ; if they represent social costs, they may be conclusive in a negative economic assessment.

c) *Other externalities : benefits or costs ?* (25).

A wide range of social effects of mnc technology transfer could be discussed, but only three issues can be considered in the confines of this paper. Compared to possible alternatives, how well does mnc technology transfer : (i) contribute to widening employment in Africa ; (ii) induce further linkage investments ; or (iii) encourage indigenous entrepreneurship ? Each of these points is examined in turn.

i.) The criticism has been made (26) that mnc's generally transfer highly-capital-intensive technology (measured in terms of capital/labour ratios), and that mnc subsidiaries therefore *restrict* employment effects through their activity. Other analysts have questioned this, (27) noting there is some evidence that suggests mnc subsidiaries may be *less* capital intensive than locally-owned firms producing identical products. (28) As Stewart stresses, (29) however, such evidence misses the point : that production technology is relatively product specific, and that the particular products transferred by subsidiaries are what underlies mnc capital-intensity in choice of technique ; therefore study of identical product cases is irrelevant. Instead, one must examine choice of consumption techniques by different firms in the context of more Kenyan exidence shows that mnc subsidiaries transfer product demand for shelter, for instance, can be met by anything from mud huts to highrise apartments).

To take the case of basic demand for cleaning aids as an example, Kenyan evidence shows that mnc subsidiaries transfer product demand (via heavy advertising and other promotion) for brand-name detergents and toilet soaps. These products require much more capital-intensive techniques than production of the simpler bar laundry soap undertaken by local soap manufacturers. The successful mnc consumption technology transfer, therefore, which undercuts local laundry soap producers, results in significantly lower employment effects than perpetuation of the local consumption technology would have involved — particularly since the mnc expansion in Kenya has pushed local producers in the direction of similar consumption technology (more standardized, with sophisticated packaging, and using foreign brand names), and consequent capital-intensive production technology (30).

Added to such consumption technology considerations, Kenyan evidence also suggests intra-firm pressures which lead subsidiaries to adopt similar production technology as their parents (as labour-saving in the core production processes, though somewhat more labour-intensive in periphery activities like material handling and storage). The majority of producing subsidiaries are constrained by head office control over their choice of techniques ; and for other subsidiaries, in any event, the need to produce standardized, brand-name products to parent company specifications, often enforced by head office quality-control checks, strongly biases preferences toward capital-intensive, advanced machinery. New product introduction, by which many subsi-

diaries gain competitive advantages, adds to this pressure, since specialized machinery for producing the product has usually been developed in high labour cost economies.

The limitations on industrial employment implied by the details of this evidence must be qualified somewhat. Much parent mnc production technology is originally developed for high levels of output, and may not be economic at the limited output levels characterizing many African economies. Therefore smaller subsidiaries in Kenya are significantly more labour intensive than larger subsidiaries (even allowing for sectoral differences); (31) but the long-run implication of this is that as these subsidiaries grow, their employment may even decrease, as it becomes possible to substitute high-output, capital-intensive technology for the original machinery. This advanced technology, too, is subject to mnc innovative efforts abroad (of the sort that may be both capital and labour saving), (32) which subsidiaries will then adopt in Africa, limiting ongoing employment effects even more.

There is, then, considerable Kenyan evidence collaborating a negative view of mnc employment effects. Across a wide range of industry areas — including soap, shoes, textiles, building materials, food products and beverages — there are signs that mnc consumption technology transfer limits employment effect relative to what might be expected from local alternatives. In these and other industry areas are further signs that mnc production technology transfer limits employment effects, as new labour-saving process innovations are introduced.

There seem to be signs of a similar dynamic at work in other African countries. In Nigeria, mnc investment also concentrates in capital-intensive product sectors, while local alternatives are more concentrated in labour-intensive sectors ; as a result mnc technology transfer has been described as having few employment benefits in the country. (33) In Senegal, too, which has been more heavily reliant on mnc investment for its industrialization, the substantial increase in production in the sixties was marked by lack of growth in employment as capital intensity was increased by firms. (34) The Kenyan evidence, suggesting there are external employment *costs* from mnc technology transfer, may thus represent more than an atypical case.

ii) Wat of mnc linkage effects ? The inducement effects of an investment on further investments have been traditionally stressed in development theory, particular with respect to industrialization. (35) And mnc investment projects might be expected to have such spread effects. That this can not be automatically assumed, however, is suggested by Bell's work in Thailand, (36) which shows that the product-differentiated and sophisticated nature of mnc technology transfer can serve as a severe impediment to local linkages (product differentiation cuts down demand for given material inputs — which vary among subsidiaries — while sophisticated technology inputs must be perfectly standardized).

Similar negative linkage features are evident in analysing Kenyan subsidiaries. This is reflected in the fact that they import virtually all of their machinery, that most of them import over 70 % of their material inputs, and that they have made very few efforts to develop any local African sub-contractors (only one third of firms interviewed did *any* sub-contracting). This weakness is closely related to mnc technology transfer, too. The sophistication of mnc production technology emerges as one important factor : Statistical analysis shows that the more capital-intensive subsidiaries are, the higher a percentage of their material inputs they import (analysing all subsidiaries together, and then allowing for sectoral differences in import patterns). (37) Mnc consumption technology transfer is an even more important factor. Product transfer by subsidiary from parents leads to greater import intensity (78 % of such subsidiaries import over 3/4 of their inputs — compared to only 47 % of those subsidiaries not exclusively tranferring parent products to Kenya). Similarly, the quality control checks of parent companies, implicit in such brand-name import reproduction, are associated with higher import levels in subsidiaries. Overall, advertising efforts — a good proxy for mnc consumption technology transfer efforts — are statistically significant in shaping higher subsidiary imports.

The interplay of these mnc production and consumption technology transfer factors with employment and linkage effects can be shown in a simple Kenyan example. Cotton textile manufacturing companies in Kenya averaged capital/labour ratios in 1972 of well under K £ 1,000, and were able to obtain 75-80 % of their material inputs in East Africa ; one large mnc subsidiary, however, was engaged in consumption technology transfer, through the production and promotion of advanced synthetic textiles ; this involved sophisticated production technology transfer, too — resulting in a capital-intensive K/L ratio of K £ 2,386 — and generated high import-intensity, since 65-95 % of its material inputs had to be imported (much of them from the parent company, at high « transfer » price). This is a clear case of high social and financial costs that can result from mnc technology transfer. (38)

Again, the Kenyan situation does not appear atypical in Africa. Analysis of Nigeria has stressed how low subsidiary linkages are there, (39) and the same point has been emphasized in Senegal. (40) Case studies of Tanzanian mnc projects have criticized the same heavy import intensity. (41) Generally, the standardized and/or differentiated characteristics of mnc products transferred, the related capital intensity of mnc production technology, and the integrated exchange emphasis within mnc firms (which is less related to technology transfer, the subject of this paper) have combined to turn mnc linkage externalities into social costs rather than social benefits, in comparison to potential alternatives.

iii) The mnc impact on indigenous entrepreneurship is also important to consider, given the emphasis placed by some theorists on this factor's key role in the development process. (42)

Again, however, it is rather difficult to discern social *benefits* of mnc technology transfer in this context. Subsidiaries in Africa, for instance, might conceivably be expected to encourage and assist the emergence of small-scale local input supplies for their operations (as the General Motors subsidiary has been described as doing, with important entrepreneurial benefits, in Australia). (43) The evidence, such as it is, suggests otherwise. The low backward linkage effects described above are one sign of this, since they mean few input supplies are even obtained locally. Nor is this entirely a matter of non-availability ; oficials of Kenya's indigenous industrial estates program, for example, have tried to persuade mnc subsidiaries to work with them to develop local input sources from the estates, and have encountered considerable resistance ; (44) subsidiaries seem to see no reason to help encourage such social benefits from their operations — given the complexity of many of the inputs into their consumption technology transfer, and the consequent effort and uncertainty involved in having local entrepreneurs produce them.

The other side of the mnc impact on entrepreneurship involves subsidiaries' competition with local entrepreneurs. And again the Kenyan evidence suggests strongly that negative social effects are the consequence of this impact. Two industries were examined in some detail in that country. In the first, shoe manufacturing, the low-cost efficiency of large-scale production technology transferred by the Bata subsidiary, combined with that firm's promotion efforts, was seriously undercutting small-scale African producers ; some 20 of the 32 enterprises investigated in one rural-urban district (Machakos) were declining — in many cases forcing entrepreneurs, with the skill to manufacture shoes, to nevertheless limit their activity to much lower-turnover shoe repairs. In the second case, soap manufacturing, it was mnc consumption technology transfer which was responsible for marked declines in profitability and/or turnover among local soap firms throughout the country ; very high mnc advertising expenditures to promote detergents and brandname toilet soaps seem to have shifted consumer demand toward such products, as opposed to the simpler cleaning aids made by local firms. (45) In both cases, those local firms that were managing to adapt to mnc competition were doing so by adopting mnc-type production or consumption technology — and were accordingly starting to generate financial outflows for specialized machinery and royalty or licensing fees.

In some sectors where production technology from abroad was especially critical to use, mnc technological monopolization could have even more directly damaging effects on local entrepreneurship. One remarkable Kenyan case involved an indigenous entrepreneur who has discovered a large fluorspar deposit and was seeking to develop it

with mining technology from abroad. Resource mnc's, from Krupp (of Germany), to Lonrho (of the U.K.), to Continental Ore (of the U.S.) refused to provide the technology except through arrangements that would put them in control of the deposit. The eventual outcome was that the resource mnc's and the Kenyan government forced the local entrepreneur out of the project and established an mnc-managed joint venture. (46)

Overall, then, Kenyan evidence suggests mnc technology transfer *undercuts* the growth of indigenous entrepreneurship. And again, signs of similar effects elsewhere in Africa imply Kenya is not atypical. The same conclusion has been drawn on the basis of Tanzanian experience ; (47) it is reflected in complaints among Senegalese businessmen about foreign domination ; (48) and it is evident in Nigeria in analysis of the inequalities of mnc-indigenous competition there. (49)

d) *A preliminary conclusion :*

The implications of this section are : first, that mnc technology transfer to Africa *can* generate social benefits in the shape of spread effects of technological know-how among Africans ; second, that the financial cost of this form of technology transfer is probably very high ; and third, that this form of technology transfer also generates certain social costs, in the shape of employment and linkage limitations, as well as the undercutting of indigenous entrepreneurship.

It may appear, then, that the economic effects of mnc technology transfer are likely to be distinctly negative in the case of most mnc investments. The argument, however, is often made that these effects reflect certain government policies (such as capital subsidies that encourage capital intensity and discourage mnc employment effects) and can be reversed by changes in government policy or by government bargaining efforts with subsidiaries. (50) The next section examines evidence relating to this argument, on a wider political economy level of analysis.

III. THE POLITICAL ECONOMY OF MNC TECHNOLOGY TRANSFER IN AFRICA.

This section first examines mnc-government bargaining, in a brief effort to specify the nature of states relations with mnc's in much of Africa. Then the section attempts to explain such relations and understand their implications through analysing the mnc impact on income distribution and class formation in African countries.

a) *The nature of state-mnc bargaining*

The rationale for emphasizing state bargaining with mnc's is evident in the discussion in Section one above ; the nature of technology transfer is such that a wide range of « prices » might satisfy both supplier and recipient. The low cost to an mnc of transferring the techno-

logy, given that it has already been developed, interacts with the high cost to the recipient country of innovating the technology anew. The resulting price bargain, as Streeten has suggested, is likely to be determined by bargaining skills and strategy. An added incentive for a less-developed country is the possibility of « unpackaging » the technology component from the rest of the mnc investment, so that the potential monopoly rents for technology are not reflected in high returns on mnc capital and material inputs, too ; this perception has motivated government strategy in Latin America. (51) Furthermore, bargaining strategies can be used to try to share subsidiary behavior on externality issues — so positive employment, linkage and entrepreneurship effect *are* generated by mnc technology transfer.

In fact, however, state-mnc bargaining in Africa seems of very limited significance in all these respects. Detailed analysis of Kenyan negotiations over the 1965-73 period shows that mnc's gained most from the bargaining — especially import restrictions or bans against competitors, but also rights to duty-free input imports and government financing ; the Kenyan government obtained far fewer concessions. Mnc techology transfer in Nigeria seems to lead to parallel bargaining gains for subsidiaries there. (52) Similarly, mnc enterprise in Senegal seems to have used relations with the state to win assurances of market protection and advantages in taxes and import duties. (53) In short, bargaining in Africa seems often to have represented a means by which manufacturing mnc's win *privileges* from the state, rather than a constraint by which social priorities or profit limitations are enforced on them by the state.

This has been true even in cases where a number of mnc's have competed against each other for the right to undertake a given import-substitution project. The 1968-69 negotiations between Firestone and Kenya over a tiremanufacturing subsidiary offer a good example. Despite competition from Dunlop and Uniroyal, Firestone bargained out : a virtual monopoly for its new subsidiary ; the right to use its own price formula ; rights to duty-free import of inputs ; government financial participation in the projects ; the right to include technological knowledge as part of its equity capital ; *and* the right to charge ongoing fees on the new factory's sales. Parent limitations on the subsidiary's export rights were also permitted.

Part of such mnc bargaining sucess undoubtedly reflects the power of technological control in negotiations. Transfer of production technology seems especially critical to bargaining success. In Kenya, for instance, intermediate goods producers, which usually employ more sophisticated production technology than consumer goods producers, were significantly more successful than the latter in winning concessions from government during entry negotiations. In Senegal, too, greater mnc influence generated by greater technological skills has been noted. (54)

But another element in outcomes like those for Firestone is the goals of bargaining on the side of the state negotiators. In Kenya, there is virtually no evidence that the state seeks to maximize employment, linkage or entrepreneurial gains from mnc operations ; such articulated state goals as regional decentralization of industry, which could increase such gains, are in *fact* ignored in bargaining. (55) Nor is much outflow-reducing bargaining undertaken. Instead, the Kenyan state emphasizes two sorts of goals : a maximization of capital inflows, to counter balance-of-payments constraints ; and more significant, an increased role for Africans as partners, senior executives or profitable retailers for mnc enterprises. (56) Thus mnc subsidiaries can win privileges by agreeing to share them with a prominent African partner, by clearly incorporating prominent Africans into their management, and/or by establishing retail outlets owned by prominent Africans. In the Firestone case, for instance, a former cabinet minister and one of the governement's civil servant negotiatiors were brought into the subsidiary as senior executives, while the government was given the right to appoint retail tire distributors (including M.P.'s and the Defence Minister's son).

Bargaining thus emerges in Kenya as a key process in establishing a *symbiosis*, or mutually co-operative dependence, between the state and mnc's. The mnc's win privileges, particularly import protection by which they pre-empt African markets from competitors, and can accordingly maximize their monopoly rents from technology transfer ; the state, in turn, gains a share, for those prominent Africans that dominate it, in these high mnc profits. What does *not* happen is significant pressuring of subsidiaries to increase the social benefits and cut the financial costs of mnc technology transfer. This bargaining process, moreover, is what shapes government policy on import substitution, and on effective capital subsidies. So it is also naive to expect exogenous government policy changes that might generate different mnc externalities. Government industrial policy, at least in Kenya, is part of the developing state-mnc symbiosis.

b) *A broader analysis.*

The priorities of many African states in their bargaining with mnc's seem symptomatic of wider patterns of political economy on the continent. And the state symbiosis with mnc's seems to reflect a more fundamental relationship between periphery African economies and the international capitalist economy.

Within many African economies, the nationalist movements which captured state power at independence have used the structure of the state to underwrite their own embourgeoisement. This is reflected across much of Africa in state allocations, regulations and tax systems that seem — often despite the rhetoric of regimes — to generate cumulative privileges for African insiders, who are able to accumulate high

state salaries, to obtain subsidized loans from parastatals, to step into newly « Africanized » business sectors, and to escape significant tax loads. Only a few states, like Tanzania, have initiated serious efforts to restrict the embourgeoisement of their insiders and to shift state allocations in favour of poor rural majorities. In Kenya, for instance, the post-independence pattern of state-dependent capital accumulation and manipulation of privilege, and its shaping of gross inequalities among Africans, has been traced in some detail. (57)

It seems clear that in those countries where this pattern has had some success, in terms of perpetuating itself, the role mnc technology transfer has been a critical factor in the process. There has been a deeper symbiosis implicit in this dynamic ; mnc technology transfer has shaped class formation and income effects in such a way as to facilitate and sustain the emergence of the state-dependent bourgeoisie, while the income distribution and state regulation associated with this emergence have facilitated and sustained the growing role of manufacturing mnc's in the continent. The bargaining evidence above has already suggested the importance of state regulation to mnc success via blocking competitors' market access ; it should be stressed, too, that it is highly unequal income distribution of countries like Kenya, the Ivory Coast, Zaïre, Senegal and Nigeria (58) that provides a market for the consumption technology that mnc's transfer from the higher-income markets for which it was developed (an egalitarian income distribution would generate little demand for automobiles, for instance, where per capita income is 150 Dollar a year !).

On the other side of the symbiosis, the analysis above has also suggested how shares in mnc privileges can hasten insider embourgeoisement ; (59) but this impact must be traced further. The state may be strengthened through its share in mnc surplus — which can be used to channel subsidized loans to insiders, or to defuse periodic political protest by financing minimal gestures (like eliminating lower-level school fees in Kenya). More significantly, it is clear in Kenyan evidence that the nature of mnc production technology transfer helps generate a small, relatively well-paid labour aristocracy in that country, (60) defusing the possibility of working-class political protest ; at the same time, mnc consumption technology transfer, as noted above, weakens the emergence of independent industrialists in the system, pushing local entrepreneurs who do succeed into close relations with the state and/or the mnc sector — this also weakens the strenght of potential political opposition to the regime. The result in Kenya has been well-described by the 1972 ILO Report on that country :

« There is now a closer correlation of interests between the urban elite, the owners of large farms and the larger, expatriate companies... Moreover, such coalitions of interest were, before independence at least, conspicuous, and racially vulnerable to nationalist challenges. Kenyanization has significantly reduced this risk. Moreover, within the circle, the influence of foreign companies appears to be growing rapidly... » (61)

This pattern of internal development in many African political economies should be seen in a wider transnational context. The growing polarization and inequality in such countries seem to reflect the integration of a segment of their economies more fully into transnational capitalist production, by means of mnc technology transfer, while most of the local society remains excluded from any benefits of this process (the consequence of mnc employment and linkage limitations). This is precisely the pattern of evolving capitalist dualism which Latin American dependency theorists have analysed in that continent. (62) Continuing mnc technology innovation perpetuates the transnational core of this system ; and continuing mnc production and consumption technology transfer of these innovations to periphery countries perpetuates and extends the inequalities and structural duality there.

Overall, then, political economy effects of mnc technology transfer may be rather central to the emerging patterns of income distribution and dialectics of political struggle in much of Africa. Such technology transfer seems to focus a symbiosis that furthers and sustains state-dependent embourgeoisement and its inequalities ; it seems to shape class formation that supports these inequalities (or at least accepts them) ; and it seems itself to generate and extend the technological dualism of the periphery by its fuller incorporation of a segment of periphery political economies into the transnational capitalist economy.

IV. CONCLUSION

This paper has ranged rather too quickly over a wide set of issues in assessing the effects on African economies of mnc technology transfer. Much of the evidence drawn on, too, has been Kenyan — and the particular history of settler colonialism and Asian entrepreneurship in that country warns against generalizing Kenyan findings accross the continent. Therefore conclusions must be underlined as tentative.

Nevertheless, some key points do emerge. First, the peculiar economics of knowledge underlies assessement of the mnc in Africa. They suggest why the financial costs of mnc technology transfer to Africa are so high. They also suggest why mnc's generally *reproduce* their technology in Africa ; and this reproduction underlies the limited employment and linkage effects of mnc production and consumption technology transfer, relative to alternatives ; at the same time, it is clear that the success of mnc technology transfer *undercuts* those alternatives, resting, as they do, on indigenous entrepreneurship.

The economics of knowledge also explain why state bargaining might be expected to be a socially beneficial response to mnc technogical monopolization. It is in analysing the realities of such bargaining, though, that the need for a somewhat wider framework becomes evident. For bargaining emerges as a path to mnc privileges rather than

a means of enforcing social priorities. Closer analysis shows a *state-mnc symbiosis* around technology transfer. Such transfer clearly helps perpetuate regimes that are shaping burgeoning internal inequalities ; and those inequalitites make technology transfer commercially lucrative to the mnc's. This symbiosis, in turn, seems the heart of a new transnational dependency relationship into which African economies are being drawn.

In this wider context, it becomes naive for any conclusion to consider the strategies that African governments might best adopt toward mnc technology transfer — given its financial costs and problematic social external effects. For a few countries, like Tanzania, such considerations might be useful (and are reflected in decisions there to rely much less on such technology transfer). But for most African countries, the critical prior question would seem to be how regimes will be established, that in fact *would* determine strategy toward mnc's in terms calculated to serve the interests of poor African majorities. In the dialectics of class struggle by which that question must be answered, the effects of mnc technology transfer are important, but probably not determinant. Mnc technology transfer is generating widening inequalities and structural dualism ; but it is also shaping class formation that, in the medium term, weakens likely political reactions against that polarization.

In the longer run, the political economy effects of the growing mnc role in countries like Kenya, Nigeria, Senegal, the Ivory Coast or Zaïre, are even more uncertain. (63) That can only underline the main plea of this paper : for more probing, systematic, critical and ongoing analysis of the mnc impact in African countries. While mnc investment in that continent is only an aspect of the ongoing dynamic of world capitalist change, it is, for many African countries, clearly a rather central aspect.

NOTES :

(1) See P. Streeten, « Technology Gaps Between Rich and Poor Countries », in *the Frontiers of Development Study*, London, 1972, and S. J. Patel, « The Technological Dependence of Developing Countries, « *Journal of Modern African Studies* », (12, 1, 1974) etc.
(2) *Ibid*, p. 1.
(3) See, for example, G. L. Reuber, *Private Foreign Investment in Development*, Oxford 1973, pp. 185-189 ff.
(4) This follows the approach in Streeten, *op. cit.*
(5) See K. E. Boulding, « The Economics of Knowledge and the Knowledge of Economics », *American Economic Review*, (56, 2, 1966) pp. 1-13.
(6) K. J. Arrow, « Economic Welfare and the Allocation of Resources for Invention », in D. M. Lamberton. ed., *Economics of Information and Knowledge*, Harmondworth : Penguin, 1971, p. 148.
(7) See *Ibid*, *pp.* 141-146.
(8) C. Freeman, *The Economics of Industrial Innovation*, Harmondsworth : Penguin 1974, pp. 215-221 ff.

(9) See R. Kaplinsky, « Technology for Development » *Scienza and Technica*, April 1974, in which the dominance is traced of a small number of large corporations in R & D expenditures in the North Atlantic economies ; eg., the 20 largest firms account for 57 % of such expenditures in the U. S., over 47 % in France and Britain, and over 65 % in Italy and the Netherlands.

(10) See, for instance, H. G. Johnson, « The Efficiency and Welfare Implications of the International Corporation, « in J. H. Dunning, ed., *International Investment*, Harmondsworth : Penguin, 1972, pp. 455-462.

(11) R. E. Baldwin, « International Trade in Inputs and Outputs », *American Economic Review*, (60, 2, 1970) ; see also H. Crockell, « The Transmission of Technology Across National Boundaries », *Business Quarterly*, (Autumm, 1973) ; J. McManus, « The Theory of the International Firm », in G. Paquet, ed. *The Multinational Enterprises and the Nation State*, Don Mills, 1972.

(12) As discussed in C. V. Vaitsos, « Transfer of Resources and Preservation of Monopoly Rents, « Harvard University Development Advisory Service, Report 168, 1970.

(13) G. Helleiner, « The Role of Multinational Corporations in the Less Developed Countries' Trade in Technology », *World Development*, (3, 4, 1975).

(14) By which is meant economic effects — either opportunities or constraints — that are not absorbed by the mnc entrepreneur, but do affect the society. Pollution is the classic damaging externality — while positive externalities can include breaking supply bottlenecks that have prevented other firms' growth.

(15) See R. C. O'Brien, *White Society in Black Africa : The French of Senegal, London*, 1971, chap. 6.

(16) See R. Kaplinsky, « Accumulation and the Tranfer of Technology », *World Development*, forthcoming.

(17) In I. G. Shivji, « Capitalism Unlimited : Public Corporations in Partnership with Multinational Corporations, « *The African Review* », (3, 3, 1973), pp. 336-77.

(18) See UNCTAD, « Major Issues Arising from the Transfer of Technology to Developing Countries », TD/E/AC. 11/10/Rev. 1, April, 1974, p. 19. But see the considerable emphasis on reduction of expatriate levels in W. Tims, *Nigeria :Options for Long-Term Development*, Baltimore, 1974.

(19) These data and others used in this article were generated from an interview survey of 81 mnc subsidiaries in Kenya conducted by the author in the 1972/73 period. A total of 94 subsidiaries was included in the original sample, covering all mnc manufacturing subsidiaries with 50 or more employees, plus most major subsidiaries in commerce, banking, oil distribution, advertising, mineral extraction and transport ; of these 94, some 86 % agreed to the interview, though not all of these were prepared to provide all the information requested. All details of the study are reported in S. W. Langdon, « Multinational Corporations in the Political Economy of Kenya », D. Phil. thesis, University of Sussex, 1976.

(20) See particulary the dramatic data from Colombia, where Vaitsos shows that overpricing of inputs sold from parents to subsidiaries mean effective mnc after-tax returns on capital employed were much higher than reported ; Chudnovsky shows that for a representative group of subsidiaries over 1966-70, transfer pricing meant profits averaged 52 % of net worth instead of the 16 % the reported. See C. V. Vaitsos, « Transfer of Resources and preservation of Monopoly Rents », *op. cit.* ; D. Chudnovsky, « Foreign Manufacturing Firms' Behavior in Colombia », D. Phil. thesis, Oxford, 1973, pp. 128-129.

(21) For transfer-pricing examples, see J. Carlsen, « Danish Private Investment in Kenya », Institute of Development Research, Paper 73, 1, 1973, p. 53 ; International Labour Office, *Employment, Incomes and Equality*, Genève, 1972, pp. 454-455 ; UNCTAD, 1974 *op. cit.*, p. 17 (re : Ethiopia).

(22) See *Ibid.*, pp. 40, 45.

(23) See S. Langdon, « Multinational Corporations, Taste Transfer and Under-development : A case Study from Kenya, « *Review of African Political Economy* », (2, 1975), pp. 24-25.

(24) See, for instance, M. J. H. Yaffey, *Balance of Payments Problems of a Developing Country : Tanzania*, Munich, 1970, p. 186 ; D. J. Morgan, *British Private Investment in East Africa*, London, 1965, p. 15 ff B. Campbell, « Neo-colonialism, Economic Dependence and Political Change : A case Study of Cotton and Textile Production in the Ivory Coast 1960 to 1970, « *Review of African Political Economy* », (2, 1975), pp. 43-52.

(25) Streeten stresses that this is an open question ; referring to wider mnc social effects, he says, « far from being able to quantify these effects, we do not even know, in général, their direction ». See P. Streeten, « The Theory of the Development Policy », in J. H. Dunning, ed., *Economic Analysis and the Multinational Enterprise*, London, 1974, p. 257.

(26) See, for example, G. Arrighi, « International Corporations, Labour Aristocracies, and Economic Development in Tropical Africa, « in R. I. Rhodes, ed., *Imperialism and Underdevelopment*, New York, 1970.
(27) See, for example, W. Chudson, « Africa and the Multinational Enterprise », in H. R. Hahlo et al, eds., *Nationalism and the Multinational Enterprise*, Dobbs Ferry, New York, 1973, pp. 150-153.
(28) See H. Pack, « Employment and Productivity in Kenyan Manufacturing », *Eastern African Economic Review*, (4, 2, Dec. 1972), pp. 29-52 ; outside of the African context, see also F. H. Mason, « Some Observations on the Choice of Technology by Multinational Firms in Developing Countries » ; *Review of Economics and Statistics*, (Aug. 1973) ; L. N. Willmore, « The Performance of Foreign-Owned Firms in Costa Rica », mimeo, Universidad de Costa Rica, June, 1974.
(29) F. Stewart, « Choice of Technique in Developing countries », *Journal of Development Studies*, 1972, pp. 109-112 ff.
(30) For details, see Langdon, *op. cit.*
(31) A Wilcoxon matched pairs statistical test was used to examine data from 10 pairs of subsidiaries, each pair in the same industry, and showed differences in labour intensity by size to be significant at the 019 level (of probability of wrongly rejecting the null hypothesis, in a one-tailed test). On the nature of this approach, see S. Siegel, *Nonparametric Statistics for the Behavioral Sciences*, New York, 1950, pp. 75-83.
(32) See Stewart, *op. cit.*
(33) See L. Schatzel, *Industrialization in Nigeria : A Spatial Analysis*, Munich, 1973, pp. 45, 23.
(34) See World Bank, *Senegal : Tradition , Diversification and Economic Development*, Washington, 1974, p. 154.
(35) See for example, A.O. Hirschman, *The Strategy of Economic Development*, Boston, 1958.
(36) See R. M. Bell, « Backward Linkage and Technology — A Note », Science Policy Research Unit, Sussex, mimeo, 1971.
(37) Multiple regression analysis is used to illustrate this for 30 subsidiaries providing detailed data. A Wilcoxon matched pairs test for 10 industries (see note 31) shows the same relationship.
(38) For Similar evidence in the soap case, see Langdon, *op. cit.* ; for more on the restricted linkage associated with mnc technology transfer in Kenya, see Carlsen, *op. cit.*, pp. 38-39 ; also R. Kaplinsky, « Technological Change and the Multinational Corporations : Some British Multinationals in Kenya », mimeo, 1975, pp. 58-62.
(39) See E. C. Edozien, « Linkages, Direct Foreign Investment and Nigeria's Economic Development », *Nigerian Journal of Economic and Social Studies*, July, 1968, p. 202.
(40) See US Government, Area Handbook for Senegal, 1974, p. 306.
(41) See A Coulson, « The Fertilizer Factory », University of Dar Es Salaam, mimeo, 1972.
(42) See, for example, P. Marris and A. Somerset, *African Businessmen*, London, 1971 ; D. Steele, « Hindrances to the Programme to Encourage the Rise of African Entrepreneurship in Kenya » *Development Trends in Kenya*, University of Edinburgh, 1972.
(43) See E. Penrose, « Foreign Investment and the Growth of the Firm », in J. H. Dunning, *op. cit.*
(44) See K. A. Ng'eny, « Industriael Estate as an Instrument of Economic Development », *East African Management Journal*, (Sept. 1972), pp. 22-24.
(45) For details, see Langdon, *op. cit.* The subsidiaries spent some 6 % of their turnover on advertising compared to less than 1 % spent by local firms.
(46) For details, see S. Langdon, « Export-Oriented Industrialization through the Multinational Corporation — Evidence from Kenya », in L. and R. Idris-Soven, eds., *The World as a company Town : Multinational Corporation and Social Change*, (forthcoming, 1976).
(47) B. Van Arkadie, « Private Foreign Investment : Some Limitations », in P. A. Thomas, ed., *Private Enterprise and the East African Company*, Dar Es Salaam, 1969.
(48) See J. C. de Wilde, *The Development of African Private Enterprise*, Vol. 2, IBRD, 1971, p. 1.
(49) See O. Teriba, E. C. Edozien and M. O. Kayode, « Some Aspects of Ownership and Control structure of Business Enterprise in a Developing Economy : The Nigerian Case », *Nigerian Journal of Economic and Social Studies*, (14, 1, 1972), p. 18.
(50) See Chudson, *op. cit.*, pp. 147-151 ff.
(51) See C. V. Vaitsos, « The Changing Policies of Latin American Governments Toward Economic Development and Direct Foreign Investments », in R. B. Williamson et al, eds., *Latin American-US. Economic Interactions*, Washington, 1974.
(52) See UNCTAD, *op. cit.*, p. 22.

(53) See O'Brien, *op. cit.*, p. 17. See further evidence from Africa in S. R. Dixon-Fyle, « Economic Inducements to Private Foreign Investment in Africa », *Journal of Development Studies*, (IV, 1, 1967).
(54) O'Brien, *op. cit.*, p. 197.
(55) In only one case, out of the many subsidiaries interviewed, did a firm report that its location in Kenya was influenced by state bargaining pressures.
(56) Evidence of this priority elsewhere in Africa is suggested by L. L. Rood, « Foreign Investment in African Manufacturing », *Journal of Modern African Studies*, (13, 1, 1975) pp. 29-33.
(57) See, especially, C. Leys, *Underdevelopment in Kenya*, London, 1975.
(58) See Rood, *op. cit.*, p. 27, for evidence of mnc concentration of attention on Nigeria, Zaïre, Kenya, the Ivory Coast and Ghana.
(59) One notable feature in these benefits is the policy of many larger mnc's in equating salaries to African executives to those paid men in similar positions in Western Europe and North America.
(60) Average monthly earnings in 1972 for wage workers in 24 manufacturing subsidiaries providing details were 611 shillings ($ 90), compared to a statutory minimum in Nairobi of 175 shillings monthly — and 70 shillings in rural areas. For evidence of how such wages have defused union political protest see A. Amsden, *International Firms and Labour in Kenya*, 1945-1970, London, 1971 ; for the same labour aristocracy argument, in Senegal, see L. K. Jakande, ed., *West African Annual*, Lagos, 1973, p. 321-2.
(61) See International Labour Office, *op. cit.*, p. 101.
(62) See O. Sunkel, « Transnational Capitalism and National Desintegration in Latin America », *Social and Economic Studies*, (22, 1, March 1973) ; the usefulness of this framework for African analyses has been tested in some detail in E. M. Godfrey and S. W. Langdon, « Partners in Underdevelopment ? The Transnational Thesis in a Kenyan Context », *Journal of Commonwealth and Comparative Politics* (14, 1, 1976), pp. 42-63.
(63) Leys, *op. cit.*, has at least initiated consideration of such longer-run effects.

RÉSUMÉ

L'écart dans le domaine de la technologie entre pays riches et pays pauvres a été souligné par beaucoup d'auteurs ces temps derniers. L'on a par exemple soutenu qu'il suffirait que les connaissances technologiques actuellement disponibles soient transférées vers les pays moins développés pour que « leur transformation socio-économique s'opère rapidement ». En même temps, le rôle capital des sociétés multinationales dans le développement et le transfert de ces connaissances a été reconnu. Et l'on a considéré ce rôle comme justification de l'attitude des pays les moins développés qui consiste à encourager les multinationales a intervenir dans leur économie.

L'article de Steven Langdon examine la validité de ce raisonnement dans le contexte africain. Il nous dit :

— premièrement, qu'il y a des facteurs économiques particuliers expliquant le rôle capital des multinationales dans le transfert de technologie ;
— deuxièmement, que ces facteurs sont à l'origine de problèmes importants causés par le transfert de technologie par des multinationales vers les économies africaines ;
— et troisièmement, que ces problèmes sont eux-mêmes à la base d'initiatives de politique économique qui elles-mêmes freinent et détournent un progrès économique considérable et équilibré dans beaucoup de pays africains.

La plupart des faits cités à l'appui de la thèse de l'auteur sont tirés du Kenya, en particulier de l'histoire du colonialisme, des colons et celle des hommes d'affaires asiatiques dans ce pays. Ces faits, typiquement kenyans, ne sauraient être généralisés à tout le continent. Ces conclusions doivent donc être nécessairement considérées comme non définitives.

Cependant, quelques points capitaux apparaissent. Tout d'abord l'examen de la conception particulière que les multinationales ont du savoir technologique permet de comprendre leur rôle en Afrique. Nous pouvons ainsi comprendre pourquoi les coûts du transfert de technologie par les multinationales en Afrique sont si élevés, et aussi pourquoi les multinationales *reproduisent* en général leur technologie en Afrique. Cette reproduction est à l'origine de la limitation de l'emploi et aussi de l'effet de dépendance caractéristique du transfert de la technologie de production et de consommation par les multinationales pour ce qui est des alternatives. En même temps, il est clair que le succès du transfert de technologie par les multinationales est préjudiciables à ces alternatives, celles-ci étant basées sur l'initiative locale.

Cette conception économique du savoir explique aussi pourquoi le marchandage par l'Etat peut être considéré comme une réaction socialement payante face au monopole technologique des multinationales. C'est cependant l'analyse des réalités de cette situation qui révèle clairement la nécessité d'un cadre plus élargi. Car cette situation apparaît plutôt comme un moyen de renforcer les privilèges des multinationales que comme un instrument de concrétisation de priorités sociales. Une analyse poussée révèle une symbiose entre l'Etat et les multinationales pour ce qui est du transfert de technologie. Il est clair que ce transfert contribue à perpétuer des régimes qui façonnent des inégalités internes naissantes qui elles-mêmes font du transfert de technologie une opération commerciale rentable pour les multinationales. Cette symbiose semble être au cœur même d'une nouvelle relation de dépendance transnationale dans laquelle soit attirées les économies africaines.

Dans ce contexte élargi, il serait naïf d'examiner dans une conclusion les stratégies que les gouvernements africains pourraient adopter face au transfert de technologie par les multinationales étant donné son coût et les problèmes soulevés par ses conséquences sociales externes. Dans le cas de certains pays comme la Tanzanie, ce genre de considérations pourrait être utile (et apparaît d'ailleurs clairement dans la décision de compter beaucoup moins qu'ailleurs sur le transfert de technologie). Mais pour la plupart des pays africains, la question critique prioritaire serait de savoir comment établir un régime qui déterminerait réellement face aux multinationales une stratégie destinée à servir les intérêts de la majorité pauvre des Africains. Dans la dialectique

de la lutte des classes qui doit nécessairement mener à une réponse à cette question, les effets du transfert de technologie par les multinationales sont importants mais probablement pas déterminants. Le transfert de technologie par les multinationales est actuellement à l'origine d'inégalités croissantes et de dualisme structural, mais elle engendre aussi la formation de classes sociales ce qui à moyen terme affaiblit toute possibilité de réaction politique contre cette polarisation.

En fin de compte, les effets sur la politique économique du rôle croissant des multinationales dans des pays comme le Kenya, le Nigéria, le Sénégal, la Côte d'Ivoire ou le Zaïre sont même moins certains ; ce qui ne fait d'ailleurs que confirmer l'appel lancé dans cette communication en faveur d'une analyse plus fouillée, plus systématique, plus critique et soutenue de l'impact des multinationales dans les pays africains. Alors que les investissements des multinationales dans ce continent ne sont qu'un aspect du changement dynamique du système capitaliste mondial, ils constituent néanmoins pour beaucoup de pays africains, un aspect central et primordial de leur vie.

The Role of the Family, Kinship and Rural / Urban Migration in the Processing of Solid Waste in Cairo

Sherif Mahmoud El-Hakim *

I. INTRODUCTION AND ABSTRACT

This paper (1) is directed mainly at issues seldom discussed by sociologists but which are current in the recent concern for the urban environment and the formation of social policy strategies.

Quite unlike the cities of Europe and North America, Cairo has no publicly organised solid waste disposal system. Instead, and with little cost to the public, the waste from the dwellings of the eight million people of Cairo is almost entirely digested within the city itself.

This paper describes how such economic and ecological efficiency is achieved trough kinship solidarity, migration and cross-ethnic relations. In cooperation with a community of migrants originally from the Western Desert ; squatter communities systematically sort the urban domestic waste into marketable components and raise pigs. A steady influx of new migrants absorbs the increasing volume of waste due to the expanding city and replaces retiring vertically mobile old migrants. Development strategies and the issue of the human costs of the system is discussed in the final section of the paper.

II. THE PROBLEM OF SOLID WASTE

On the average no matter what way of life is involved, each person generates a daily quota of waste which must be disposed of. Since cities are densely populated by millions of people, removing this waste has become one of the most costly and problematic of public operations. The rates for domestic waste production vary depending on what is consumed and therefore depend generally on the standard of living and the level of technology of the society. In such cities as London or New York, the average rate of production of waste has been increasing more and more over the years. Such production has been increasing at a rate of 2 % per capita each year and has reached a mean of 317,520.00 Kilograms per 1,000 inhabitants annually for urban

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areas in the United States (El-Hakim and Markoff 1973). In Cairo it is estimated that some 4000 tons of waste is removed daily or some 1,460,000 tons annually (Al-Ahram 22-9-1976).

The greatest problem that waste presents is not only its physical removal from where people live but in its final disposal : dealing with the millions of tons of waste once collected. For example, not counting factory and commercial wastes, New York City must destroy some 12,000 tons of domestic refuse everyday or 4.3 million tons per year at an enormous cost in tax funds. Typically such ecologically dissatisfying operations as in incineration, land filling and simple ocean dumping has been the usual means of destroying what garbage city people produce (Muhich, 1968 ; Michaels, 1968). It is from this perspective that the city of Cairo is unique : because of extensive recycling almost no destruction of waste is necessary.

III. THE SYSTEM IN CAIRO

For analytical purposes three main types of solid waste may be distinguished : public area wastes, bulk waste, and domestic waste. In Cairo each of these kinds of wastes are treated separately.

Municipal waste collection operations are directed only towards the public areas of the city — the streets, alleys and parks. This cleaning operation is carried out by regular salaried employees. The rubble and dust collected is loaded onto trucks and dumped while the organic waste from gardens, parks, market places and public rubbish bins, is taken to the city — owned composting factory which produces organic fertiliser. Unless such waste is dumped in public areas, this municipal operation does *not* deal with the wastes produced by the homes of the eight million people of Cairo.

The bulky items which households want to get rid of, such as broken pieces of furniture, piles of unwanted papers and magazines and nasty mattresses, are not as would be supposed thrown away but in fact are sold to local itinerant dealers who wander about the different quarters of Cairo with hand pushed carts. These dealers are called *rubabikya* dealers (a corrupted version of the Italian words for old clothes). Rubabikya has its own market channels, and through a succession of different middlemen and repair craftsmen, the various items which compose rubabikya eventually return again to the consumers market.

The waste that does not pass as rubabikya, generally consisting of that which has little or no direct market value as house hold sweepings, dirty rags or kitchen refuse, cannot remain for long before becoming foul smelling and must be disposed of rather urgently. Like

many of the older crafts in Cairo once dominated by specialist guilds, the collection of such domestic waste is organised by two separate but symbiotically dependent ethnic groups : ***Zabaline*** and ***Wâhiya***.

IV. THE ETHNIC GROUPS

The Zabaline are some 40,000 squatters who live in about ten separate rusty shanty towns which satellite the city on its desolate fringes. They collect the refuse from the dwellings of Cairo via the Wahiya : a smaller community of refuse brokers who live in the city itself. The brokers control the rights to the city's domestic refuse and rent them to the Zabaline who earn their living by sorting the waste and breeding pigs. The wahiya are Moslem migrants originally from the Western Desert Oasis of Dakhla (and in particular from only three villages there) ; the Zabaline are Christian migrants originally from the Coptic villages around Assiut in Upper Egypt.

The Wahiya, who live in their own quarters in Cairo, congregate in particular Coffee houses, and maintain their own association (called Rabtit el Wahiya) which is registered with the Ministry of Social Affairs, purchase the rights to the refuse from the owners of buildings. When new buildings are constructed individual brokers compete with each other by offering the owners sums of money to be recognised as the legitimate contractors for the hauling of all future refuse.

Commissions of responsibilities obtained in this way range in price from one hundred Egyptian Pounds to several thousands depending on the type of future tenants the building are likely to have — the higher the socio-economic standard, the richer is the content of the waste, and consequently, the more desirable is the building. With the recent expansion of construction in Cairo since the 1973 war, however, there has been a tendancy towards minimising the extent of this competitive bidding by brokers pre-arranging territorial allocations among themselves before approaching owners. Nevertheless, such arrangements only reduce the prices required of the brokers which, even so, remain substantial.

In return for this investment, the brokers sell refuse by renting collection rights (measured in terms of cart loads) to the Zabaline, and simultaneously collect a monthly fee from each apartment or dwelling whose waste is removed. In addition, they may choose to sell their brokers' rights to other brokers at a profit. Refuse from a building, as it were, becomes established as the *property* of the broker and remains as such even if the building itself passes on to other owners.

Because it takes some 250 appartments to fill one Zabal's cart with waste (2), brokers maintain rights to more than one building and prefer that the buildings they aquire be within the same neighborhood.

An extreme example of this is the one wahawi who controls most of a certain suburb and rents rights for the routes of twelve carts. His gross income is estimated to be some five hundred Egyptian Pounds : approximately three pounds monthly for each of the twelve carts (3 x 12) plus an estimated fee of fifteen Piasters monthly from each appartment (15 x 300 x 12).

Since such property rights to the garbage from buildings are not likely to be defendable in Cairo's courts of law, disputes among brokers over jurisdictional rights are handled informally within the context of the migrants Oasis Community's social organisation in the city. Conflicts are resolved through such mechanisms as informal councils of arbitration and, in extreme cases, stick fights and patrilineage solidarity. In the event of death, a broker's rights are inherited by his next of kin (Primogeniture being the usual practise), and only when the building is demolished do such rights elapse. A new building on the same site is open again for aquisition by the highest bidder-tradition and the threat of violence keeping non-oasis people at bay.

In contrast to the community of brokers, and because of the nature of their specialisation which requires them to live amidst the 10,000 cubic meters of refuse they collect everyday and the pigs they breed, the Zabaline are despised and forced to live in the more desolate fringes of the city. Whenever the urban sprawl reaches the vicinity of their communities, it is inevitable that their new neighbors have them evicted by the city authorities. In this way the Zabaline have seldom been able to live in the same locations for longer than three or four years. They are forced to squat temporarily in shelters of tin in areas which with few exceptions are not supplied by water, electricity, fire protection or any other essential service (3). City authorities do not seem to realise how essential the Zabaline are.

It is the Zabaline who provide the labour necessary for the systematic removal and processing of Cairo's domestic waste. They earn their living by intensively extracting from the refuse such items as tin, glass, paper, plastic, rags and bones on which hundreds of craft workshops and factories within the city depend as raw material. Approximately 2000 tons of paper is extracted every month to be reprocessed into some 1500 tons of recycled paper and card board ; Cotton and wool rags are reprocessed for upholstery and blankets respectively ; tin is pressed and soldered into vessels, rivets, childrens toys and even spare parts for machinery ; glass and plastic is recycled ; bones are used to make glue, paints, and high grade carbon for sugar refining. The intensity of this sorting operation can be appreciated by the fact that spent dry cell batteries are systematically cracked open for the carbon rods within them and their casings which are melted into Zinc ingots. The organic matter from the waste food in the refuse is fed to the pigs which they breed for the meat and sausage market. What

the pigs don't eat and their droppings is then turned into a compost which is sold for agricultural purposes. All these products return to the city through merchant bulkers and middlemen who have good contacts in the market and who make substantial profits.

The central organization and productive unit within the Zabaline Communities is the patriarchal monogamous nuclear family managing a Zeriba or pig yard with attached dwelling quarters. The women and children care for the pigs and sort the refuse, storing the extracted components within the confines of the Zeriba adjacent to their sleeping quarters. The men and older children drive the donkey carts to the parts of the city where they have rented rights to collect refuse.

The Zeriba's main cash commodity is pigs. The species breeded by the Zabaline produce five litters every two years. The litters range in size from 10 to 20 and are sold for meat after eight months when each pig approximately weighs 40 Kilograms. Excluding income from sorting raw materials, and taking into account a 25 % loss rate, it is estimated that the annual gross income of a Zeriba with only ten sows is two thousand Egyptian Pounds (4). The smallest community of Zabaline, Baragil, consists of about 60 Zeribas, the largest community, that of El Mokkatam, consists of some 2000 Zeribas. In total, almost 10 tons of pigs are sold daily by the Zabaline.

V. ZABALINE/WAHIYA RELATIONS AND THE EXPANDING CITY

It is pig breeding, therefore, that daily and reliably forces the Zabal into the city to make his rounds collecting domestic waste. An interruption of this activity of collection threatens the Zabal's productive capital. The Zeriba's economic viability depends upon a constant supply of refuse obtained through the offices of the oasis refuse brokers.

All Zabaline donkey carts are standard in size and require 250 dwelling units to fill. Most Zeribas maintain more than one cart if they have the pigs and most important the labour to absorb the additional waste. To obtain the collection rights necessary to fill a cart, the Zabal must make a lump sum down payment to a broker and then pay a monthly royalty. The amounts payed in this way vary depending on the socio-economic nature of the collection route and the amount of work envolved (distances between buildings). The down payment amounts to a few hundred Pounds, the monthly royalty ranges between two and six Egyptian Pounds for each cart.

Once established, such collection rights may be inherited and/or bought and sold by the Zabaline among themselves. Unlike brokers who may sell their rights to each other without the consent of the concerned Zabaline a Zabal may not sell his collection route without the permission of the broker who receives a commission on all such transactions. Because buildings are demolished and new ones are

erected in the vicinity of given routes it is not uncommon for a Zabal, operating only one cart, to deal with more than one broker at the same time.

As the Cairo metropolis expands the extension of the sanitation services provided by the Zabaline is *not* planned for by city authorities. The extension of such services is initiated by the brokers and is carried out organically. When brokers acquire additionnal buildings, they seek out Zabaline who wish to expand their operations, relying on the people with whom they already have contractual relations. Since there is a very great demand for pork (much more, in fact than would be supposed in a pre-dominantly Moslem country), and labour is the only constraint which prevents Zeriba expansion Zeriba owners seek out partners from among their kin and/or old acquaintances from the village. Occasionally villagers may migrate to Cairo and seek out fellow villagers with established Zeribas in the hope of receiving their patronage. Established Zabals use their connections with the Wahiya and merchant middle men, their technical knowhow, and their resources (cash and animals) to help set up new Zeribas. In return for setting up Zeribas, the established Zabals become partners and maintain interests in the production of such Zeribas.

Over the years, such partnerships become quite involved and complex as the following history suggests :

Some thirty five years ago a certain farmer sold his possessions and left his village to join an aquaintance and become a Zabal at Choubra on the outskirts of Cairo. Through the technical help of this friend, he set up an independent Zeriba with the capital he brought with him. As the city extended itself to Choubra the community the farmer had joined was evicted in 1954. Part of the community settled at Embaba but the costs of moving and re-establishing forced the farmer into a partnership with an established Zabal already at the new location. In 1971 the community was again evicted and moved from Embaba to Baragil. This move did not affect the partnership. Today, aside from owning a tenament building at Embaba, the farmer has interests in his own Zeriba and two others - those of his two married sons. His partner, the older Zabal, has partnerships in thirteen Zeribas and is now trading as a wholesaler.

Just as older Zabals become partners by setting up new Zeribas, new Zabals in turn become partners in further Zeribas. Zeribas breed Zeribas, as it were, and partnerships become entangled. In this way the waste from newly built up areas is absorbed by new migrants (and to a lesser extent descendants of old migrants) running new Zeribas established on partnerships with older Zabals.

This pattern of expansion and selective recruitment of labour on kinship and village lines, together with the relative permanence of the contractual relationships between brokers and Zabals (and their heirs), gives rise to a particular pattern of cross ethnic relationship. The relationship between the Zabaline and Wahiya is focussed on a

lineage and residential basis : given clusters of related, co-resident and economically interdependent Zabaline, are attached by contracts to given clusters of related and co-resident brokers. Such a pattern of relationship is further maintained by the endogamous marriages taking place within each of the ethnic groups, and the manner in which the contractual relations themselves are inherited.

IV. DISCUSSION

The system described is a rather unique solution to the problem of urban waste. It is not only radically different from the publically financed solutions common to modern Western cities and neighboring Arab states, but it is also much more economically and ecologically efficient.

The system provides each of the two ethnic groups involved with a means of livelihood and rapid vertical mobility. The expanding city provides both groups with opportunities of increased wealth : the brokers are ever increasing their territories, and the Zabaline, by setting up partnerships and new Zeribas, are soon able to become merchant bulkers and wholesalers. The wealth accumulated by both groups is invested in real estate either within the city itself or in their places of origin where many retire. Such opportunity is not normally open to other rural/urban migrants.

On this basis, it would seem that for a society with a great deal of unemployment, inefficient bureaucratic organization, and lack of raw materials, such a labour intensive solution to the problem of domestic waste is appropriate. It must be recognized however that the Coptic squatters, who provide all of the labour input to the system, also pay the greatest human costs in terms of the exceptionally high infant mortality rates and the low standards of living which are forced upon them by periodic evictions. Only 40 % of all live born children survive the first year (5). Furthermore, because they are confined to live for temporary periods in only desolate parts of the fringes of the city, no municipal services such as health centers, schools, water or electricity is extended to them. Their homes, of necessity, cannot be anything other than temporary shelters.

These conditions can be alleviated by infusing the morphology of the system into an adequate architectural planning scheme at the urban level. Such planning would foster the current system by giving the squatters permanent rights to appropriate lands and make possible for more permanent dwelling structures and the extension of essential and related services (as veterinary clinics). Such planning could also include the gradual mechanisation of the collecting carts, the attraction and relocation of craft workshops and sister factories to the vicinity of these settlements where raw materials are directly available. Encouraging relocation of this kind would cut costs by reducing transportation expenses and exploitation by middle men.

The alternative to such a strategy of developing the existing system is the direct importation of the modern technologies currently employed in Europe and the United States. This would clearly disrupt an entire social system and arrest the great number of workshops and industries that have become dependent on the recycling of refuse. Widespread unemployment would result among the groups envolved. Furthermore, the public sector would have to manage the phenomenal task of domestic waste collection — a task that would prove too difficult and expensive to carry out reliably and efficiently. The municipality is now barely able to cope with the waste from public areas alone given the constraint of budgeting, the apparent difficulties in the recruitment of labour, and absenteeism.

Nevertheless, in an article entitled « At last we admit the importance of science, technology, and foreign expertise for the problem of garbage » ; the Governorate of Cairo is reported by *Al-Ahram* (22-9-1976) to have been recently negotiating the importation of such technologies as incinerators, and factories for the production of building materials out of solid waste, from Austria, West Germany and Belgium.

FOOTNOTES

(1) I Would like to thank Professor Cynthia Nelson and in particular Dr. Aity Sulieman who encouraged and took a great interest in this work. I am also greatful to Architect Planner Omar El-Hakim and my students W. M. Mabrouk, J. Attiya and L. Arafa who provided many helpful comments and suggestions. Based on this work, a documentary film showing the cycle and recycle of domestic waste in Cairo was jointly produced by Mr. Jarl Munch (Norwegian Television) and Mr. Ib Rene (Dansk Radio) and the camaraman Mr. Peter Sturkin. Partial support was recerved from the Research and Conference Grant Program of the American University in Cairo.

(2) This approximate figure is based on the field observation of three carts in the process of collection. Empty carts were followed until full and the buildings serviced were enumerated. The routes of the carts followed were in upper/middle income areas.

(3) The importance of fire protection in such communities can be appreciated by the fact that recently two major fires swept the Mokkatam community and destroyed over a third of the settlement and several paper storage facilities.

(4) This is a very conservative estimate based on the current 24 piasters/Kilo on the hoof whole sale price which the middlemen pay and the lowest litter size of 10. Most pig yards observed had more than 20 pigs.

(5) This figure was obtained from Dr. Gamal Adly, a physician with six years experience among the Zabaline.

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RÉSUMÉ

Cet article traite principalement de sujets rarement abordés par les sociologues, mais qui sont bien actuels dans le cadre des problèmes soulevés par l'environnement urbain et l'adoption de stratégies de politique sociale.

Contrairement aux villes d'Europe et d'Amérique du Nord, le Caire n'a pas de système public d'évacuation des ordures. Ainsi, et à peu de frais pour le public, les ordures provenant des habitations des huit millions de Cairotes sont presque entièrement digérées à l'intérieur de la cité elle-même.

Cette communication se propose de montrer comment une telle efficacité écologique et une telle économie peut s'obtenir, par la solidarité parentale, les migrations, et les relations interethniques. Avec la coopération d'une communauté d'immigrants originaires du Désert Occidental, des communautés de squatters transforment systématiquement les objects trouvés dans les ordures en marchandises commercialisables et élèvent des porcs. Un apport régulier de nouveaux immigrants absorbe le volume croissant d'ordures provenant de la cité en expansion et remplace les anciens immigrants à qui leur mobilité verticale aura permis d'intégrer totalement la vie de la cité.

Il s'agit là d'une solution tout à fait unique au problème des ordures ménagères. C'est une solution non seulement radicalement différente des solutions financées par les services publics et qui sont communes aux villes modernes d'Occident et des pays arabes voisins. C'est une solution beaucoup plus efficace au point de vue tant économique qu'écologique. Il semble bien que pour une société où le taux de chômage est si élevé, l'organisation bureaucratique si inefficace et les matières premières rares, ce genre de solution, basée sur l'utilisation intensive de la main-d'œuvre, est tout à fait convenable. Les coûts humains élevés et les mauvaises conditions de vie engendrés par le système peuvent être allégées par la transformation de la morphologie du système à l'aide d'un plan architectural au niveau urbain.

L'alternative à cette stratégie de développement du système actuel consiste à importer directement les technologies modernes actuellement utilisées en Europe et aux Etats-Unis comme le Gouvernorat du Caire a l'intention de le faire. Mais cette solution disloquerait tout un système social et interromperait le travail d'un grand nombre d'ateliers et d'industries qui en sont venues à dépendre du recyclage des ordures. En outre, le secteur public aurait à s'occuper du ramassage des ordures ménagères, tâche dont l'exécution sérieuse et efficace serait trop difficile et trop coûteuse.

Document

The Kuwait Declaration on Technical Cooperation amongst Developing Countries

As part of the preparations for the UN Conference on Technical Cooperation amongst Developing Countries (TCDC), the UNDP convened in Kuwait from 31 *May to* 5 *June* 1977 *a Panel of Consultants for « developing and synthesizing the main issues to be examined » at the World Conference on TCDC to be held in Argentina in* 1978. *The Panel of Consultants whose names are listed below produced two documents. The first one is called the Kuwait Declaration which we are publishing here. The second document is a longer report of the discussion that took place in Kuwait. The report is being processed by the UNDP Secretariat and it is expected to find its way as one of the official documents, for the* 1978 *World Conference in Buenos Aires, Argentina.*

TEXT OF THE KUWAIT DECLARATION

1. Gathered here in the City of Kuwait as individuals in search of solutions to the problems of devlopment and conscious of the opportunities that will be offered by the United Nations Conference on Technical Co-operation among Developing Countries to be held in 1978, we declare that :
2. TCDC is a historical imperative brought about by the need for a new international order. It is a conscious, systematic and politically motivated process developed to create a framework of multiple links between developing countries. Many steps have already been taken in this direction. TCDC may be facilitated, or hindered, but it cannot be stopped.
3. The process of TCDC cannot be seen in isolation either in space or time. It must be recognized that traditional technical assistance (TA) has generally reinforced earlier forms of dependence. This has in effect tended to stifling of self-reliant national capabilities in developing countries. It has also led to incorporating developing countries into a scientific technical and economic system dominated by the highly industrialized world. Such experience has made it evident that self-reliant national capabilities responsive to national objectives and requirements are fundamental prerequisites for viable development.

4. Self-reliance is not autarky. It is the will and capacity for autonomous decision-making and execution in all areas of society and economy. Science and technology are essential elements of a self-reliant capability. They constitute both an approach and an instrument for orienting and shaping the whole spectrum of economic and social activity.
5. Major qualitative changes in the content and flow of technical co-operation are required to support the process of TCDC. Vertical flows from industrialized to developing countries must be restructured and new horizontal flows among developing countries must be promoted. This double challenge is an integral part of the establishment of a new international order. The creativity thus generated will benefit all countries, industrialized and developing alike.
6. TCDC must emerge from the conviction within developing countries that it is both necessary and attainable ; it is a relevant input into decision making on development. Certain general and operative principles should inspire the application of TCDC. Among them :
   a) TCDC as an integral element of the development efforts of developing countries, is the primary responsibility of the developing countries themselves ;
   b) TCDC should not relieve the industrialized countries from discharging their responsibilities towards the development of developing countries. On the contrary, industrialized countries should substantially increase their contribution to development and to the implementation of structural changes of the international system ;
   c) TCDC should be implemented in such a manner as to generate balanced and sovereign relations among participants in which the traditional concept of donor and recipient is eliminated ;
   d) TCDC should be an instrument of complementarity, recognizing the many differences among developing countries and the particular contributions that can be made to the overall objectives of TCDC ;
   e) TCDC should be built upon the active exercise of solidarity in the search for mutual interests. There are areas and subjects in which relevant technical co-operation can only stem from other developing countries. The problems involved do not exist in industrialized countries nor do they dispose of the technical tools to tackle them ;
   f) The demand for TCDC must be actively organized and stimulated. Unless specific public policies and concrete measures directed to this end are adopted, the inertia of traditional links will prevail. These policies will constitute an important factor in limiting the outflow of technical and professional capacities ;

g) TCDC must promote problem-oriented and production oriented endeavours directed towards providing alternative solutions to concrete situations. It should be built upon the analyses of both positive and negative experiences ;

h) Traditional project evaluation concepts, cost benefit analysis and criteria for defining the relevance of projects must be modified to take into account the social benefits to be derived from TCDC as well as the respective interests of the parties to the TCDC relationship ;

i) TCDC must promote and sustain networks of information and of co-operation and for co-operation between specialized institutions and organisations of developing countries ;

j) The environmental dimension of development should be an integral part of TCDC implementation ;

k) Education is a critical requirement for TCDC. Historical patterns of dependence have added cultural and attitudinal barriers that must be overcome for the full potential of TCDC to be realized ;

l) TCDC must consciously aim at reaching the largest number of people. It will take root only if it can create roots. It must respond to the multiple needs and potentialities stemming from the numerous professional, technical, voluntary associations and other forms of non-governmental organizations within developing countries.

7. There is already a wide variety of existing experience, knowledge and capacities available in developing countries. They must be identified, organized, promoted and utilized, to respond to particular needs expressed. The mobilization of people and institutions through self-help and full awareness of their capacities is essential for the success of TCDC, self-reliance should then emerge as a reality in the practice of development.

8. The international community, in particular developed countries should facilitate the progress and achievement of TCDC to become a purposeful and dynamic process. This support should permit the latent indigenous skills, talents and competence embedded in the developing world to find full self expression. Such capacities will then rightfully contribute to the establishment of an equitable international order.

9. No single mechanism or institution can deal with a historical process of such magnitude and complexity.

10. The following two dimensions are vital to the process of supporting national capability :

a) Re-orienting traditional technical assistance programs and practices - both multilateral and bilateral, through basic changes in approach, concept and practice. Provision of skills and technologies, readily available with public and private commercial companies of the industrialized countries to developing countries, in a traditional way, must be replaced by identification and evaluation by the developing countries, jointly with their multilateral/bilateral partners, of all available techniques/technologies. The developing country concerned will then select the one regarded most appropriate by it.

b) The expert-equipment training package as the basic instrumentality of TA must be replaced by selective acquisition of individual elements of the package. New flexible instruments should permit and encourage genuine technical co-operation through joint innovation and learning from mistakes.

11. The complementary task of TCDC could call for new institutional arrangements outside the UN family, but closely associated with it. The distinctive feature of these arrangements would be that they are structurally controlled and managed by the developing countries. Nevertheless, there is a possibility for participation and financing of these arrangements by any industrialized country, which subscribes to the premise that programs of TCDC must be controlled by the developing countries themselves. These arrangements should be built on existing institutions in developing countries. Through the involvement of these institutions in TCDC, their capabilities will be enhanced and expanded. The impetus and and growth of these institutional arrangements for TCDC must come from the developing countries themselves. The existing structure for TCDC in the UNDP should play a useful backstopping role in this process.

12. It is the belief of this gathering that the UN Conference on TCDC to be held in 1978 in Argentina will be a decisive event in the evolution of a new international order. The success of this Conference will depend on the conviction and perseverance with which all participating countries, developing and industrialized, prepare themselves to deal with the major issues underlying the whole concept of TCDC. This Conference should also be seen as an opportunity for the world community to help release the latent creativity of two billion people thus opening new horizons for mankind.

Kuwait
5 June 1977

Déclaration de Koweit sur la Coopération Technique parmi les Nations en Développement

Dans le cadre des préparatifs pour la Conférence sur la Coopération Technique parmi les Pays en Développement (CTPD), le PNUD a réuni du 31 *mai au* 5 *juin* 1977 *à Koweit un groupe de consultants pour discuter du thème suivant : « Développement et Synthèse des points principaux de l'ordre du jour » de la Conférence Mondiale sur la CTPD, prévue pour* 1978 *en Argentine. Le groupe de consultants, dont les noms figurent sur la liste ci-dessous, a produit deux documents : Le premier de ces documents s'intitule « Déclaration de Koweit » et c'est lui que nous publions ici ; le second document est un rapport plus long sur les débats qui ont eu lieu à Koweit. Le rapport est actuellement au Secrétariat du PNUD et sera probablement l'un des documents officiels de la Conférence Mondiale de Buenos Aires, Argentine en* 1978.

TEXTE DE LA DECLARATION DE KOWEIT*

1. Réunis ici à Koweit pour chercher une solution aux problèmes du développement, et conscients des possibilités qu'offre la Conférence des Nations Unies sur la Coopération Technique parmi les Pays en Développement, prévue pour 1978, nous déclarons que :
2. La CTPD est un impératif historique né de la nécessité d'un nouvel ordre international. C'est un processus conscient, systématiquement et politiquement motivé, développé en vue de la création d'un cadre de liens multiples entre pays en développement. Beaucoup de dispositions ont déjà été prises dans ce sens. La CTPD peut être facilitée ou ralentie, elle ne saurait être arrêtée.
3. La CTPD est un processus qui ne peut être isolé ni dans l'espace, ni dans le temps. C'est un fait que l'assistance technique traditionnelle a, en général pour effet de renforcer les anciennes formes de dépendance, ce qui contribue à étouffer dans l'œuf les possibilités d'une politique nationale de développement autocentré dans les pays en développement. Une autre conséquence de l'assistance technique traditionnelle, c'est l'incorporation des pays en développement dans un système économique scientifique et technique dominé par le monde industrialisé. Sur la base de cette expérience, il est évident que des capacités nationales d'un développement autocentré orienté vers les exigences et les objectifs nationaux constituent les conditions de bases pour un développement viable.

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* Le texte original de la Déclaration de Koweit est en anglais ; la version française est une traduction du CODESRIA et non pas la traduction officielle des Nations Unies.

4. Le développement autocentré, ce n'est pas l'autarcie. C'est la volonté et la capacité de prendre des décisions et de les appliquer dans tous les domaines de la société et de l'économie. La science et la technologie sont les éléments essentiels d'un développement autocentré. Elles constituent en même temps une approche et un instrument en vue de donner orientation et forme à un nombre considérable d'activités économiques et sociales.
5. D'importantes modifications qualitatives dans le contenu et le rythme de coopération technique sont nécessaires pour mener à bien le processus de la CTPD. Le courant vertical qui prend naissance dans les pays industrialisés et va en direction des pays en développement doit être restructuré et de nouvelles formes d'échanges horizontales entre pays en développement doivent être développés. Cette double exigence fait partie intégrante de la création d'un nouvel ordre international. La créativité ainsi libérée profitera à tous les pays, industrialisés et en développement.
6. La CTPD doit naître de la conviction au sein même des pays en développement qu'elle est à la fois nécessaire et possible. Elle constitue un investissement important dans la prise de décisions concernant le développement. Un certain nombre de principes généraux et opérationnels devraient inspirer la mise en application de la CTPD, dont :
   a) La CTPD en tant que partie intégrante des efforts de développement des pays en développement est avant tout sous la responsabilité des pays en développement eux-mêmes ;
   b) La CTPD ne décharge pas les pays industrialisés de leurs responsabilités quant au développement des pays en développement. Tout au contraire les pays industrialisés doivent augmenter d'une manière substantielle leur contribution au développement et à la mise en œuvre de changement de structure du système international ;
   c) La CTPD doit être appliquée de manière à favoriser l'instauration de relations équilibrées et souveraines entre les pays qui y participent, abrogeant ainsi les notions traditionnelles de donateurs et destinataires d'aide ;
   d) La CTPD doit être un instrument de complémentarité, reconnaissant les nombreuses différences parmi les pays en développement et les contributions particulières pouvant être faites en vue des objectifs généraux de la CTPD ;
   e) La CTPD doit être basée sur l'exercice actif de la solidarité en vue de l'intérêt réciproque. Il existe des domaines où la coopération technique ne peut provenir que d'autres pays en développement. Certains problèmes n'existent pas pour les pays industrialisés et ces derniers ne disposent pas des instruments techniques pour les résoudre.

f) Les efforts en vue de la CTPD doivent être activement organisés et stimulés. L'inertie des liens traditionnels risque de se perpétuer si une politique gouvernementale spécifique et des mesures concrètes ne sont pas adoptées à cette fin. Cette politique constituera un facteur important pour limiter la fuite des capacités techniques et professionnelles vers l'étranger ;

g) La CTPD doit favoriser toute intiative qui, s'inspirant de la nature des problèmes existants et tenant compte des objectifs de production, envisage des variantes de solutions dans le cadre de situations concrètes. Elle doit se fonder sur l'analyse des expériences tant positives que négatives ;

h) Les méthodes traditionnelles d'évaluation des projets, d'analyse coûts-bénéfices et les critères utilisés pour définir la pertinence d'un projet doivent être modifiés en tenant compte des avantages sociaux que procurera la CTPD ainsi que des intérêts respectifs des parties dans les relations de CTPD ;

i) La CTPD doit promouvoir et soutenir des résaux d'information et de coopération en vue de la coordination entre institutions spécialisées et organisations des pays en développement ;

j) L'aspect « environnement » du développement doit constituer une partie intégrante de la CTPD ;

k) L'éducation constitue une exigence critique pour la CTPD. Les modèles historiques de dépendance ont créé des barrières culturelles et psychologiques qui doivent être dépassées pour que la CTPD puisse se réaliser pleinement ;

l) La CTPD doit consciemment viser le plus grand nombre de gens. Elle ne prendra racine que si elle peut elle-même créer des racines. Elle doit répondre aux multiples besoins et potentialités des nombreuses associations bénévoles, professionnelles, techniques et autres formes d'organisations non-gouvernementales des pays en développement ;

7. Il existe déjà une grande variété d'expériences, de connaissances et de possibilités dans les pays en développement. Tout ceci doit être identifié, organisé, encouragé et utilisé pour répondre aux besoins particuliers toutes les fois qu'ils s'expriment. La mobilisation des personnes et des institutions par leurs propres efforts et la nette prise de concience de leurs capacités est essentielle pour le succès de la CTPD. Ainsi une politique de développement autocentré apparaîtra comme une réalité dans la pratique.

8. La communauté internationale, en particulier les pays développés doivent faciliter les progrès de la CTPD pour en faire un processus dynamique et aux objectifs clairs. Cette assistance prêtée à la

CTPD permettra aux talents, capacités et compétences qui se trouvent à l'état latent dans le monde en développement de se développer de la manière la plus complète, contribuant ainsi à l'établissement d'un ordre international équitable.

9. Aucun mécanisme ou institution ne peut sans autre concours, mener à bien un processus historique d'une telle importance et d'une telle complexité.

10. Les deux aspects suivants sont essentiels pour le processus de l'aide aux capacité nationales :

    a) La réorientation des programmes et pratiques de l'assistance technique traditionnelle multilatérale et bilatérale par un changement fondamental dans l'approche, la conception et la pratique. Le transfert traditionnel des techniques et des compétences que les pays industrialisés ont jusqu'ici effectué « de bon cœur » doit être remplacé par l'identification et l'évaluation par les pays en développement et en collaboration avec leurs partenaires (dans les relations multilatérales ou bilatérales), de toutes les techniques et compétences disponibles. Le pays en voie de développement concerné choisira alors celles qu'il considère comme la plus appropriée à ses besoins ;

    b) L'instrument de base utilisé par l'assistance technique traditionnelle dans le cadre de la formation a été, jusqu'à présent, des accords forfaitaires équipements/experts ; il faudrait le remplacer par un système d'acquisition sélective d'éléments indépendants. Il importe donc d'envisager de nouveaux instruments plus souples afin de permettre et d'encourager une coopération technique véritable fondée sur l'innovation commune tout en tirant les leçons des erreurs passées.

11. La tâche complémentaire de la CTPD pourrait exiger la création de nouvelles institutions en dehors de la famille des Nations Unies mais étroitement associées à cette famille, le signe distinctif de ces institutions étant qu'elles seraient structurellement contrôlées et administrées par les pays en développement. Cependant, l'on peut aussi envisager la participation à ces institutions de pays industrialisés et leur financement par de tels pays, ce qui n'est pas contradictoire avec le principe selon lequel les programmes de CTPD doivent être contrôlés par les pays en développement eux-mêmes. Ces institutions doivent se greffer sur des institutions existant déjà dans des pays en développement. Les capacités de ces institutions seront augmentées et élargies par leur participation à la CTPD. L'initiative et le développement de ces institutions doivent provenir des pays en développement eux-mêmes. Les structures actuellement existantes au sein du PNUD devront jouer un rôle utile dans ce processus.

12. Nous croyons que la Conférence des Nations Unies sur la CTPD prévue pour l'année 1978 en Argentine aura une influence décisive sur l'évolution du nouvel ordre international. Le succès de cette Conférence dépendra de la conviction et de la persévérance avec lesquelles tous les pays en développement et les pays industrialisés se préparent pour résoudre les grands problèmes de la CTPD. Cette Conférence doit aussi être considérée par la Communauté mondiale comme une bonne occasion pour aider à libérer la créativité latente de deux milliards de personnes, ouvrant ainsi de nouveaux horizons pour l'humanité.

Koweit
5 Juin 1977

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BOOK REVIEWS – REVUE DES LIVRES

Elizabeth O'Kelly : *Aid and Self-Help : A General Guide to Overseas Aid.* London : Charles Knight, 1973. *x*, 140 *p., ill.*

Reviewed by Mark W. Delancey*

The author describes this short book as an attempt to assist the general public and overseas volunteers in understanding why foreign aid given in time of disaster is often as great as the factor which prompted the aid. She also argues that developing countries should be allowed to plan and direct their development programs, that there should be stress on self-help and co-operative effort in development plans, and that mechanization should be avoided wherever possible in those countries that have a surplus of labourers.

The book is divided into three sections - a discussion of international aid in time of man-made and natural disasters, a description of overseas aid in non-disaster situation and a case study of a self-help co-operatives program that the author planned and directed for several years in Bamenda Province of the then British Cameroons. An appendix lists the names and addresses of organizations involved in overseas aid programs.

Elizabeth O'Kelly has been intimately involved with aid projects for a long period, eleven years as a community development officer in the British colonial administration of Cameroon, three years in Sarawak as an advisor on women's institutes and almost two years in Viet Nam as a director of a refugee organization. The book is largely a product of her experience, and it profits from the lessons she has learned.

O'Kelly differentiates between natural disasters, such as earthquake, and man-made disasters, such as civil wars. In natural disaster the rich and powerful suffer as greatly as the poor and powerless, but in man-made disasters the rich are usually able to escape the consequences. One suspects that the rich take a keener interest in aid operations for natural disasters. Of greater importance, argues the author, the political and propaganda aspects of man-made disasters make relief aid much more difficult and unappreciated. Certainly, the problems involved in the relief operations during the Biafran situation illustrate this. In natural disasters a quick assessment of the damage can be made, needs assessed and appropriate action taken ; in man-made disasters these steps are often rendered difficult by the political overtones. This dichotomy is rather weak. The famine in Ethiopia was a natural disaster, but, the initial reactions of the Selassie government had, in purpose and effects, results not unlike those O'Kelly describes as pertaining to man-made disasters.

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The author makes several important points about disaster aid - the need to understand the sensitivities of host government officials, the need for professionally-skilled volunteers rather than simply another pair of untrained hands, and the inappropriateness of most material aid sent from abroad as part of disaster relief efforts. Her proposal for the establishment of a « two-tier relief corps » (national units in each country and an international, mobile unit at the United Nations) is an excellent idea deserving very serious consideration.

In general, the section of the book on disaster relief is worth reading.

The second section of the book is much weaker and less useful than the first. The discussion of foreign aid in non-disaster situations is an attempt to cover too many subjects (or a subject too complicated) in too few pages. O'Kelly considers the problems of world population growth (p. 38) and environmental destruction (p. 39) in one paragraph each. The political aspects of aid are considered so briefly as to lend an appearance of naiveté. In an eight-page chapter on the importance of social and religious customs she attempts to point out those cultural aspects of Asia and Africa which differ from those of Europe and might affect development projects. In so doing in such a short chapter the author uses sweeping generalizations and stereotypes, with all of the error that such a procedure must incur. She violates by demonstration her major premise, that one should understand the culture of the people with whom one is working.

In this chapter and in the one titled « Personnel for work Overseas » the reader is given some insights into the attitudes of an ex-British colonial officer, a certain ethnocentrism blended with strong paternalism, a regret that colonial days have passed away, and — sadly — an occasional lack of understanding of the peoples with whom she has worked for many years. In a later chapter she writes that young men in Cameroon work for short periods on plantations « to earn enough money to buy a wife ». (p. 100). That misinterpretation of African marriage customs — « to buy a wife » — was disposed of long ago. Research into labour longevity at the Cameroon plantations indicates that men stay an average of six years and that the « target worker » concept is not applicable.

Much of this section reads like a primer for volunteers embarking on overseas duty. Yet, because of its brevity and the sweeping generalizations it contains, it will be of little use to such people. This rapid trip around the world of strange customs cannot assist the volunteer assigned to India, Viet Nam or Cameroon ; a thirty or forty page chapter on each country might do so. There are projects suggested for volunteers in rural areas. These are thought-provoking, but the author imparts too little about the needs and problems of each project to allow a volunteer to read and then go to work.

In the third section of the book, « A Project in the Cameroon », O'Kelly describes and analyses her attempts to develop corn mill

societies in Bamenda Province in the 1950s. The author effectively illustrates several of the points she made in the previous parts of the book — the importance of careful planning and the need for understanding the culture of the people involved, the concept of self-help and involvement of those the project is to aid in the actual running of the project, the value of co-operative effort, the need for small-scale projects in proportion to community needs, and the avoidance of complicated technologies and overwhelming doses of mechanization. However, it appears that one of O'Kelly's cardinal principles was neglected in this case ; there is no indication that the people of Cameroon were involved in the planning of the project. Yet, on the dust-cover we are told that this book is « a plea that the developing countries should be allowed to determine their own development in their own way and at their own pace ». O'Kelly has given us an example of a well-meaning, but paternalistic, colonial officer laying a project on « her people ». The project seemed to work, and therefore it is deemed successful in the eyes of its originator.

Unfortunately, a valuable opportunity for long-term evaluation of a development project has been missed in this study. Here is an undertaking begun in 1952. The author's direction of the project ends in 1960 or 1961, and so, too, her description of the project virtually ends at this point. The time just prior to independence, independence and the years since that time are discussed in two and one-quarter pages ! Did the corn mill societies last ? Did the co-operative stores idea take hold and provide services throughout the Bamenda area ? To use a term common in the literature today, did these innovations become « institutionalized » ? Did they really take hold and become a part of the people's culture ? Perhaps the author could not afford a trip to Cameroon to observe the results of her project some years after she had turned it over to Cameroon leadership, but she certainly could have made some sort of inquiry. The brief comments she gives us on this important aspect are very disappointing.

Overall, then, the book is unsatisfactory. The most serious criticism is the brevity of the book, or one might argue that it is the over-ambitious task the author has set for herself. The section on disaster relief is the most useful part of the book ; the other sections are weak. However, O'Kelly does make some important comments on aid and the aid process. Her argument for small-scale projects, in tune with local needs and culture, and her demand for local leadership must be considered as critical elements in successful development projects. This is a study of the micro-aspects of aid, and that is one aspect of aid studies that has been too often missing. She does not consider the other end of the scale, the macro-aspects of aid. There is no discussion of aid and its role in the current international environment. Do the micro-aspects of aid really matter in a world organized and structured as the world is today ?

Mamadou Dia : *Islam Sociétés Africaines et Culture Industrielle*
Dakar/Abidjan : Les Nouvelles Editions Africaines, 1975

Critique de Michel Darnaud*

L'Islam révèle une structure diachronique et synchronique précise, à savoir une dimension historique, temporelle, l'Arabie, et un contexte socio-culturel et structural, le Coran, déterminé par une idéologie religieuse. Cependant, son actualisation au sein d'une société de type capitaliste, ou en voie de développement, n'est-elle pas une contradiction ? Le système collectiviste qui caractérise les sociétés traditionnelles permet l'adaptation de l'Islam au sein de certains modes de vie et de pensée. Inversement, l'individualisme propre aux sociétés industrielles capitalistes s'oppose à la dimension horizontale égalitariste des relations sociales de l'Islam, ce qui explique la prédominance de la structure d'inégalité des relations verticales de la religion catholique.

La thèse de Mamadou Dia repose sur la possibilité d'adaptation de l'Islam aux sociétés africaines en voie de développement. Il privilégie la religion musulmane, au détriment par exemple du catholicisme, comme facteur de progrès et d'évolution. Cependant, le contexte sociologique, politique et économique de référence se situe au Sénégal, ce qui explique que sa démonstration s'applique plus particulièrement à ce type de pays, mais est plus contestable ailleurs, notamment en Afrique de l'Est. Ainsi, loin d'être retrograde ou un frein au développement national d'une société en évolution, l'Islam est un facteur de changement positif, lorsqu'il est appliqué d'une certaine façon. C'est sur ce point que portera notre critique. D'autre part, un concept est ambigu, celui de culture industrielle. Il semble à l'image même de la politique des dirigeants africains. Dans une optique capitaliste, l'industrie constitue une arme efficace d'exploitation et de domination, donc de soumission. Dans une optique socialiste ou marxiste, elle permet théoriquement l'amélioration des cultures et de la productivité, au service de tous.

L'Islam permet l'instauration d'une cité terrestre et céleste, en complémentarité avec un système de pensée collectif, c'est dire qu'il est un fondement capital de la sociabilité, donc source également, de progrès. La tradition islamique considère l'oppression comme une transgression, car elle est un humanisme, une collectivité ouverte où la tolérance permet le développement de la personnalité, même si elle apparaît une antinomie entre l'humanisme et le monothéisme, en réalité dialectique. Si l'homme est une temporalité, il n'en est pas moins une réalité concrète, reconnue par Dieu, après l'acceptation du contrat de réciprocité. Mais le raisonnement de Mamadou Dia,

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tout comme la création possible d'une telle cité, n'est-il pas utopique, les règles en sont-elles applicables réellement, surtout dans le contexte des sociétés africaines en voie de développement ? En effet, n'y a-t-il pas des problèmes économiques de survie qui passent en priorité face à la prescription sociale et culturelle ? Rétorquer, d'autre part, que la loi coranique permet des dérogations, c'est transgresser par interprétation personnelle ou culturelle, une échelle de valeur, un système de signes, car le conformisme doit être de rigueur. Le problème du jeûne pendant le mois du Ramadan ne remet-il pas en cause le rythme de vie propre au fonctionnement et au rendement de la société industrielle ? Les libations et sacrifices sont-ils justifiés si l'on tient compte du salaire moyen d'un paysan et du prix considérable du mouton au moment de la Tabaski, sans compter l'achat d'habits neufs, en respect au Prophète, et les réceptions familiales.

De nombreux problèmes sociaux et économiques apparaissent alors en ruinant parfois l'économie de subsistance. Le pélerinage à la Mecque qui confère le titre prestigieux de « El Hadj » ne crée-t-il pas un système d'obligations propre à accentuer les inégalités sociales préexistantes ? Qui peut se permettre de prononcer le « Labaïka Allahoumma Labaïka » (me voici Seigneur, me voici présent) si ce n'est les privilégiés et les endettés ? Est-ce bien l'égalité absolue dans l'humilité et dans le dénuement devant Dieu, dont parle Mamadou Dia ? Et le « Zakkat » contribution obligatoire à un nécessiteux, l'équivalent de la charité chrétienne, ne relève-t-il pas d'une autosatisfaction à bon compte, à travers l'aspect de fidélité au serment ?

L'accession à la destinée éternelle est donc jalonnée de prescriptions et de tabous qui n'en sont pas moins inégaux selon les appartenances sociales. Elle ne fait que re-produire, sur le plan mystique, l'inégalité de base particulièrement celle que l'on trouve comme corrolaire à la société industrielle, basée sur le profit et le rendement, dans une optique capitaliste. Car le système d'échange et de réciprocité est bien le but primordial dans la relation, même si l'Islam vise à atteindre l'homme total, humaniste, ambivalent dans ses composantes matérielles et spirituelles. Ainsi, il est douteux contrairement à ce qu'affirme l'auteur, que l'Islam soit un facteur d'égalité dans une société en voie de développement. Sa nécessaire dépendance avec les sociétés capitalistes en fait plus un support qu'un élément de contestation.

LA PENSEE ET LES INSTITUTIONS

Pour Mamadou Dia, l'Islam est plus qu'une idéologie, c'est aussi une institution, une culture, une pensée, associant spiritualité et temporalité, profane et sacré, à travers la parole du Coran. Sa logique dialectique en fait le positif de la relation. Mais les lois religieuses, les normes mystiques qui le régissent, le rendent dépendant

d'un certain cadre, figé dans un formalisme incontestable. Et cela, malgré les tentatives modernistes de rénovation de la « Charia », le droit séculaire calqué sur la philosophie grecque, ou et cela est plus criticable, emprunté à un système d'idées occidentales sans concordance avec les réalités du monde islamique. Le vrai problème consiste à réaliser une synthèse avec des matériaux nouveaux, sans renier le passé, la tradition, l'histoire. Il résulte d'une évaluation actuelle de la vie moderne, de ses normes et de ses institutions, à la lumière d'une nouvelle formulation des principes fondamentaux. Il n'en demeure pas moins que contrairement à la religion chrétienne qui s'est adaptée et remise en cause, plus ou moins forcée par l'idéologie capitaliste, la doctrine musulmane est plus difficilement adaptable à la modernité, ce qui explique sa sclérose des valeurs dynamiques, donc sa méfiance à être acceptée et introduite dans une société industrielle existante, ou en voie d'exister. Il s'agit alors, contrairement à ce que dit l'auteur, du problème consistant à savoir s'il faut maintenir l'Islam ou le reléguer comme anti-scientifique, comme frein au développement socio-économique, les exemples des pays capitalistes musulmans (Arabie...) ou socialistes musulmans (Afrique du Nord) nous incitant à réfléchir sur le pourquoi et le comment de son adaptation.

L'Islam véhicule avec lui un système d'institutions politiques, sociales, économiques et culturelles déterminé, basé sur la prépondérance de l'esprit, au détriment de la matérialité, de l'idéal sur la réalité. Il aspire à la création d'une théocratie démocratique, comme le pensait Rousseau, fondée sur le double principe de la séparation de l'exécutif et du législatif, et la subordination de celui-ci à celui-là. Le Khalife, contrairement à ce qui se passe actuellement, et comme l'auteur nous le rappelle, ne doit posséder aucun pouvoir législatif, religieux ou temporel. Sa tâche est de guider moralement, donc spirituellement le peuple et de le protéger dans la loi coranique. Mais il n'en demeure pas moins tributaire des décisions de son peuple. Il existe donc une coordination sociale, économique, religieuse et politique. C'est le Coran et la Sounna qui obligent le musulman à dénoncer tout excès, tout abus de pouvoir, par la parole, et s'il le faut, par la force. C'est précisément cette unité dans la complémentarité qui garantit l'indivisibilité. Le fondement de base devient alors la démocratie au sens où l'entendait Rousseau car la société s'intéresse aussi au rapport social et économique de ses membres. Toutes les institutions sont du ressort du Coran et de la Sounna. Est-ce le cas aujourd'hui, dans les sociétés islamiques ?

La survivance d'anciens principes consistant à maintenir la cohésion tribale comme la polygamie, est criticable dans la société industrielle en voie de développement. De là ce paradoxe entre le permis, le possible et l'impossible. Par exemple, le maintient du sentiment d'infériorité chez la femme, sa coupure tant physique (vie cloitrée, voile...) que psychique (absence de dialogue, mépris...) du monde

public est incompatible avec l'émancipation et la participation dans la société nouvelle. Cela n'empêche pas le mari d'avoir un ensemble de devoirs, de prescriptions coraniques envers ses femmes matériellement et moralement. Le système du prêt, en principe sans intérêt pour les nécessiteux, est nationalisé par l'Etat contre les capitalistes usuriers. Le Khalife Omar a montré l'exemple en développant cette institution du prêt sans intérêt, par le Trésor Public ; la transaction commerciale est alors honnête. On s'interroge pourtant sur le devenir d'une telle institution coranique à travers les nombreux exemples des pays africains en voie de développement industriel, pour savoir si la théorie politique, économique et social du Coran est compatible avec le système socio-économique actuel, quel que soit les pays, traditionalistes ou en voie de développement. Est-ce possible de conclure avec Al Maverdi que le Zakkat tend fondamentalement à éliminer la lutte des classes, et à augmenter la prospérité générale dans l'intérêt de tous ? De même, Mamadou Dia peut-il affirmer que les sociétés occidentales se méfient de la poussée de l'Islam car, si elles possèdent la première composante, l'efficacité, il lui manque la seconde, la spiritualité. La solution proposée par l'Islam est-elle la meilleure dans le contexte industriel actuel, et surtout, est-il mieux adapté aux circonstances ? La recherche dynamique, indispensable, devant déboucher sur des méthodes d'adaptation reste à faire, et l'unification des possibilités, des idéologies différentes en faisceau commun pour construire ensemble n'a pas commencée. La société musulmane ne peut se limiter ou se réduire à l'orientalisme ou à l'arabisme. Mais la confrontation des cultures permettra une synthèse efficace, en tout cas indispensable, pour son application. Une sociologie prospective de l'Islam doit commencer par une sociologie du monde musulman, c'est-à-dire par son contexte de références socio-économiques et culturelles.

ISLAM ET SOCIETES AFRICAINES

L'Islam, dans sa rivalité avec la religion catholique occidentale, s'est imposé presque partout en Afrique. Cela explique sa violence nécessaire à la résurrection d'états théocratiques disparus ou menacés par la présence européenne. C'est à l'époque des grands royaumes noirs que l'Islam connaît un succès foudroyant. C'est cependant l'Islam berbère d'Afrique du Nord qui demeure la souche principale, sans oublier ses influences étrangères du monachisme chrétien, de la philosophie hindoue, de la théorie plotinienne. C'est avec Ibn Arabi, le divorce entre la théologie mystique et la mystique ascétique, respectueuse des normes islamiques. Cette dernière s'imposera comme référence avec une prédominance du merveilleux, du surnaturel, qui entraînera un blocage socio-économique momentané, contrairement au désir du Prophète, et à l'exemple de l'empire Ottoman au XVI[e] siècle. Le mouvement des marabouts, ou Morabi, né pour répandre la foi et la

spiritualité et œuvrer à la suppression des inégalités sociales se transformera vite en maraboutisme, mélange de croyances populaires et religieuses. Cependant, il n'en demeure pas moins que, malgré ses abus, l'Islam doit, pour Mamadou Dia, s'adapter nécessairement au monde noir et non pas l'inverse. On peut alors se demander jusqu'où l'on peut aller, et au nom de quoi, selon quels critères de références ?

Les nombreux problèmes aujourd'hui, ne sont donc pas étrangers à cette base sur-déterminée dès le départ. Pourtant, le terrain d'entente fut la participation du contrat de respect nature/culture/surnature, dans une philosophie humaniste de l'être. Ce contrat de réciprocité monde des vivants/monde des morts, est une complémentarité garantissant une sécurité mentale et sociale sur laquelle se greffe l'Islam. Les liens communautaires, loin d'être une aliénation, rattachent le groupe à la nature, d'une part, et les membres entre eux d'autre part, mais cela ne peut se faire sans la stricte application de fidélité envers la tradition, sauvegardant ainsi les valeurs de civilisation transmises par les institutions, les initiations, rites et mythes. On peut mettre en cause l'adaptation comme le suggère Mamadou Dia, dans l'espace et dans le temps, selon les régions et/ou les ethnies, ce qui met en doute l'unification par la religion islamique et son extension au sein des sociétés industrielles scientifiques et rationalistes. Le problème d'une religion monothéiste actuelle reste posé, même si, primitivement, elle existait, selon les savants de l'Ecole de Vienne. La religion au contraire, correspond à un certain degré dans l'évolution humaine, le fruit d'une maturité évoluée. On se demande alors pourquoi l'auteur érige une religion particulière comme l'Islam, en religion universelle et qu'est-ce qui justifie son application au sein de société africaine industrielle ?

Car le contexte socio-culturel permet la sélection d'un type de religion qui peut être dépassée avec l'avancement de la technologie, par exemple, ou l'acculturation, qu'elle soit occidentale ou orientale. La stricte application du Coran, de la Chahada : « Tu n'aimeras que Dieu » implique la cessation du culte des ancêtres et autres dieux ou divinités coutumières. Cela implique une révision complète du code, de la philosophie, du symbolisme. L'Afrique n'en est pas encore là. L'Islam a apporté une religion simplifiée, synthèse des diversités traditionnelles et universelles. Reste à savoir si, au niveau individuel de la prise de conscience, cela est possible dans les sociétés industrielles. Et chaque Africain se fait une idée particulière de la légitimité, et de l'honnêteté de son marabout, c'est-à-dire du représentant principal et du support idéologique de l'Islam. Le système de mendicité obligatoire par les petits talibés envers leur société n'est guère une référence. D'autre part, ce n'est pas l'architecture musulmane qui convertira les Africains. Cela serait plus une conséquence qu'une cause. Même si, dans une certaine mesure, elle a engendré des « villes » anciennement villages, devenus urbanisés, une nouvelle discipline

dans les activités économiques et sociales, ainsi que les interdits (alcool, bijoux d'or et vêtements de soie chez les hommes, scarifications et mortifications...) et les prescriptions (propreté, esthétique corporelle, prières quotidiennes...). L'Islam cependant a sauvegardé l'essence des cultures traditionnelles africaines en introduisant un dogme universel, cette affirmation de Mamadou Dia nous semble quelque peu en contradiction avec sa conformité à l'Islam.

ISLAM ET EVOLUTION DES SOCIETES AFRICAINES

Nous pouvons nous demander dans quelle mesure l'Islam a-t-il été un frein ou un stimulant au progrès matériel des sociétés africaines ? Lorsque la colonisation fait son apparition, l'Islam est ré-utilisé comme religion et perçu comme une répression, car il est au service, alors, du système colonial. Il ne s'agit pas moins d'une soumission au régime, et non à Dieu. L'Islam soumis engendre la routine, la passivité, l'indolence. De même, ce n'est pas l'apparition à ce moment là des techniques modernes qui ouvriront la voie du progrès, du développement. Elles entraîneront l'abandon des techniques traditionnelles, ce qui explique la négativité de son évolution. On en viendra même à discréditer l'Islam comme inefficace, tout comme les sociétés africaines, rétrogrades ! Il ne faut pas oublier que l'Islam colonial, c'est l'Islam marchand et que l'idéologie sous-jacente est utilisée pour le capitalisme. Ainsi, tout ce qui est rattaché à l'Islam marchand, techniques modernes, innovations multiples, a ignoré la structure de participation collective effective des populations. Cela explique que les unités économiques implantées en Afrique soient très éloignées des réalités socio-culturelles et économiques. Le dogme islamique doit être respecté, collectivement, c'est ce qui fait sa force. Une ré-interprétation profonde comme le pense Mamadou Dia, dans un sens comme dans l'autre est vouée à l'échec. Le conformisme doit être de rigueur, ce qui n'empêche le développement social et économique, à l'image des sociétés socialistes nord-africaines. On sait cependant, que l'Islam de la décolonisation reçoit un lourd héritage, il doit reconnaître ses insuffisances et ses faiblesses. La base de cette rénovation, c'est la réforme de l'enseignement scolastique, ouvert à tous, sans discrimination sociale ou culturelle. Cela entraîne une re-définition de toute l'organisation sociale. L'Islam noir doit être un auxiliaire de la politique du développement et diriger le citoyen qui ne percevra plus la technique comme contrainte mais comme progrès. L'Islam noir devient un système de don-contre-don, avec une mentalité participationiste. Il s'attache particulièrement au domaine social, le plus touché par l'industrialisation capitaliste, le chômage, la débauche, le vagabondage, la délinquance. L'Islam possède une triple responsabilité : envers la collectivité musulmane, envers les nations africaines, envers l'humanité toute entière. L'Islam dans cette optique n'est pas

un frein au développement, mais un facteur de progrès spirituel et matériel, de transformations économiques et sociales. Il repose sur une mentalité socialiste de collectivisme.

ISLAM ET CULTURE INDUSTRIELLE

Pour Mamadou Dia, la société industrielle est à l'opposé des sociétés historiques, elle est scientifique, prométhéenne, dynamique, dominée par le rendement, la rationalité, la quantité. Elle est l'homo œconomicus. Le progrès devient alors synonyme d'augmentation de la productivité, du rendement accru. Le passé ne compte pas, face au futur du devenir. Essentiellement urbaine, cette nouvelle société détermine, par la création des villes, une répartition de la population active, sans ménagement pour l'environnemet géographique et humain. Aussi, la civilisation qu'elle engendre éloigne-t-elle les hommes de la tradition, en attentant à leur dignité, et les communications qu'elle développe visent plutôt à faciliter son trafic, en brisant la relation de réciprocité naturelle, et en éliminant toute culture autre que la sienne. Mais l'industrie nous répond Mamadou Dia, permet une certaine liberté à l'homme dans ses choix et le progrès dans les sciences s'accompagne d'une participation active. Cependant, la culture industrielle de demain exige un renouvellement total des conceptions et des méthodes d'organisation économique et sociale, et une re-définition des des rapports entre sociétés industrielles et sociétés en voie de développement.

La société marxiste, dans cette optique, répond le mieux à cette assimilation de la technologie au peuple. La participation complète de toute la population active est nécessaire ainsi que la création d'une économie de gratuité engendrant, paradoxalement, la rentabilité. Il faudrait repenser la structure sociale de toute la société, ce qui semble impossible dans la voie nouvelle empruntée par les sociétés musulmanes d'Afrique noire, à l'image du capitalisme occidental. Seule une adaptation de la pédagogie, c'est-à-dire l'instrument de la socialisation, aux techniques nouvelles dans un contexte en perpétuel changement, sera positive, dans une prospective à long terme. Le problème des jeunes pose aussi une énigme dans et par leur réaction comportementable au renouveau de l'Islam. C'est par eux que s'effectuera ou non le changement. Il ne suffit plus d'évoquer la richesse de la tradition, et l'ancestralité de la culture islamique pour influencer et convaincre, pas plus qu'une attitude apologétique ou polémique. Le problème qui se pose au monde musulman trouvera sa réponse non dans le passé et ses archétypes mais dans la possibilité de participation à la re-création, à la re-présentation d'une culture et d'une économie adéquates. Il lui faut se réadapter psychologiquement, économiquement, sociologiquement, et culturellement, car il faut bien reconnaître aujourd'hui, un certain nombre d'entraves au monde musulman, même si certains

pays ont réalisé un compromis entre l'imitation et la création, entre la modernité et l'authenticité. Il faut faire surgir des motivations propres à déclencher des réactions au travail, par la création d'infrastructures motivantes. C'est dire que l'Islam doit embrasser toutes les activités humaines dans une optique dynamique.

La culture industrielle n'est donc pas, pour Mamadou Dia, contradictoire, à la civilisation musulmane, sa dialectique au contraire, débouche sur l'adaptation d'une modernité dans un élan prométhéen. Est-ce possible cependant comme l'auteur semble le croire, d'élaborer des rapports de types nouveaux dans une société islamique en modernisation, et peut-on délibérément instaurer un autre système de valeurs et de références, sans tenir compte de la conjoncture internationale capitaliste qui dirige son évolution ? Ces lignes de force sont-elles alors l'apanage de la rénovation de l'Islam, ou conditionnées par l'idéologie capitaliste ? La difficulté consiste à se libérer d'une aliénation pour s'enfermer dans une autre, d'autant plus dangereuse qu'elle a été librement acceptée et non plus imposée par les colons. Le système de récupération idéologique est corrolaire, omniprésent, reste à savoir qui en a conscience.

L'ouvrage de Mamadou Dia est un catalyseur à une réaction, celle de savoir si oui ou non l'Islam est un facteur de progrès et si, d'autre part, il n'est pas en contradiction avec la modernité. Aussi, les nombreux problèmes qu'il soulève sont essentiels car ce n'est pas seulement le Sénégal qui est visé et remis en cause, mais toutes les sociétés africaines en voie de développement. Il n'est pas possible de répondre positivement ou négativement car personne ne dispose des armes de l'affirmation, mais la remise en question d'un certain nombre de faits engendre une interrogation, qui, à elle seule, constitue l'intérêt de l'ouvrage, car c'est le devenir de tout un peuple qui est mis à jour à travers la dialectique de l'évolution.

FOCUS ON RESEARCH AND TRAINING INSTITUTES

AFRICAN TRAINING AND RESEARCH CENTRE IN ADMINISTRATION FOR DEVELOPMENT TANGIER, MOROCCO

I. *Background*

The African Training and Research Centre in Administration for Development (CAFRAD) originated from a Moroccan Government initiative.

In the General Conference of UNESCO held in 1962, a draft resolution was submitted on Moroccan initiative, requesting assistance from UNESCO in establishing a « regional centre to study current problems in Administration and its relation to African economic and social development ». The resolution was signed by ten other African States covering the major sub-regions of the Continent.

CAFRAD's legal existence began on 13 May 1964, and derived from a Provisional Bilateral Agreement between UNESCO and the Moroccan Government, establishing headquarters in Tangier and providing for the preliminary UNESCO funding. The first meeting of the Governing Board, held in July 1964, provisionally determined CAFRAD's objectives and its general organizational framework. In December 1967 a Permanent Multilateral Agreement, replacing the provisional one, was signed by eleven Member States. Under this Agreement the Centre was characterized as an « African regional institution » open to the membership of all African States, hosted by the Moroccan Government and located at Tangier. From its very inception, CAFRAD was conceived as an *African institution*, owned, funded, governed and operated by its sponsor beneficiaries.

II. *Membership*

CAFRAD now enjoys the membership of thirty African States : Algeria, Botswana, Burundi, Cameroon, Central African Empire, Chad, Gabon, Gambia, Ghana, Ivory Coast, Kenya, Liberia, Libya, Mauritania, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Upper Volta, Zaïre, and Zambia.

III. *Objectives*

According to the December 1967 Agreement, the objectives of CAFRAD were defined as follows

— to undertake, promote and co-ordinate comparative studies and research on administrative problems connected with social and economic development in Africa ;

— to organize scientific meetings, seminars and in-service training courses for high-ranking officials from the public and private sectors in African countries who play a significant role in development ;

— to compile, analyze, and disseminate documentation on the structure, organization and administrative methods of the different African countries ;

— to publish appropriate material ;

— to act as host and as a scientific liaison body for the particular benifit of institutions and schools of administration, universities, and, more generally ,any other agencies whose activities come within the scope of the competence of the Centre.

IV. *Organizational Structure*

1°) *The Governing Board,* composed of one representative from each Member State, is empowered to ensure the operation of CAFRAD, to determine outlines of its program, to prepare its budget and to make and maintain contacts with other organizations ; appoints, among others, the Director-General of the Centre, fixes the amount of the annual contributions from Member States, accepts any other contributions, gifts and legacies from Governments, public or private institutions, and private individuals. The United Nations, UNDP, UNESCO and ECA attend the meetings of the Governing Board as observers.

2°) *The Director-General* is responsible for the execution of the decisions and directives of the Governing Board, for the presentation of the Budget, the regulation of general administrative matters, and the execution of the Center's program, appoints members of the staff, prepares administrative financial and staff regulations for approval by the Governing Board.

3°) *The Scientific Council,* composed of two to four members appointed by the Governing Board on the recommendation of the Director-General from specialists who are not members of the staff of CAFRAD and have recognized competence in the field of public administration in Africa considers the program of CAFRAD before its submission by the Director-General to the Governing Board. The United Nations, UNESCO and ECA participate in the meetings of the Scientific Council.

V. *Resources*

The resources of CAFRAD are made up of annual contributions from Member States fixed by the Governing Board and any other contributions from other sources including gifts and legacies ; and assistance from the United Nations Development Program which will come to end in 1978.

Apart from Member States' annual contributions, and UNESCO's contribution to the operation of CAFRAD from the beginning, the Centre has so far benefited from a yearly token subvention offered by the African Development Bank, and bilateral aid received in the form of experts and short-term consultants, and the provision of books and documentation for CAFRAD Library. Such aid has been received from the United States of America, Great Britain, Canada, France, The Netherlands, Sweden, and the German Federal Republic. The resources of CAFRAD are further increased by various grants from the Commonwealth Fund for Technical Co-operation, the International Development Research Centre of Canada, and the Friedrich Ebert Foundation of the Federal Republic of Germany.

VI. *Relations With International/Governmental Organizations*

As a problem and action-oriented institution CAFRAD is concerned with the professionalization of public and development administration and management in Africa. In functional terms this means establishing and maintaining the closest links between CAFRAD and world organizations in the field of public administration and management, and making the best possible use of such contacts. CAFRAD is co-ordinating its overall activities with those of the Public Administration and Finance Division of the United Nations, with UNESCO, and with their respective projects in Africa. More especially, CAFRAD is co-operating with the ECA and both organizations joined hands in September 1973 in an all-African United Nations Program of Public Administration which CAFRAD is taking a leading role in implementing. CAFRAD is also co-operating with other government agencies, organizations and institutions as appropriate ; the Centre is also an Executive Member of the African Association for Public Administration and Management and enjoys a close working relationship with other professional organisations such as the Institute for Economic Development and Planning (IDEP), the British Institute for Management, the International Union for Local Authorities (IULA), the International Institute for Administrative Sciences (IIAS), the American Society for Training and Development (ASTD), the Institute of Social Studies, The Hague, the Institut National d'Administration Publique in Paris, and the Arab Organization for Administrative Sciences.

VII. *Activities*

CAFRAD is an integrated institution providing training, research, consultancy, and information services. Such activities are carried out by the : (I) Training of Trainers Program ; (II) Human Resources Development Program ; (III) Top Management Program ; (IV) Project Management Program : (V) Urban and Rural Development Program ; and (VI) Library and Documentation Centre.

Each of the above programs provides training and research support for senior African administrators and managers, and for national training institutions, such as IPAS, ENAS and Management Centre. 1976/1977 research projects included :

1°) Administrative Reform — African Case Studies ;
2°) Status of Institutionalization of Career Policies and Guidance in Africa ;
3°) Integrated Urban and Rural Development ;
4°) The Public Management of Urban Squatter Communities ;
5°) Preparation and Execution of the Budget in Morocco ;
6°) Analysis of the Training undertaken by Senior Servants in Selected Francophone African Countries ;
7°) Collection of Data for preparing a manual on management training institutes in Africa ;
8°) Administrative implications of the New International Economic Order (documentary research) ;
9°) CAFRAD Thesaurus of Administrative Information Descriptors ;
10°) African Government Documents ;
11°) The Establishment of an Administrative Training Materials Clearing House ;
12°) Managing Public Enterprises in Africa — towards improved performance ;
13°) Follow-up survey of the Implementation of the Recommendations of the 1974 African Training Policies Conference ;
14°) Improving the capabilities of the African National Training Institutes (IPAS and ENAs) ;
15°) African Integrated Network of Administrative Information.

VIII. *Publications*

CAFRAD publishes a half-yearly bilingual *Journal of African Administrative Studies ;* a half-yearly trilingual newsletter the *CAFRAD News ;* and a quarterly trilingual *African Administrative Abstracts.*

Other publications include occasional bibliographies, research monographes, and an Information Bulletin.

CENTRE FOR SOCIAL, CULTURAL AND ENVIRONMENTAL STUDIES

University of Benin, Nigeria

The Centre for Social, Cultural and Environmental Studies of the University of Benin, Nigeria, is a non-profit, academic institution devoted to research and dissemination of information concerning population and other related topics. The Centre which was started during the 1975-1976 Academic year, shall eventually be organized in three main departments :

(I) Department of Social Studies ;
(II) Department of Cultural Studies
(III) Department of Environmental Studies.

Department of Social Studies : The Department of Social Studies shall be engaged in research on all aspects of population studies including Demography, Occupational Structure, Employment and Unemployment.

Department of Cultural Studies : :The Department of Cultural Studies shall undertake research into African Music, Dance, Ethnography, History and other facets of Culture. Central to the activities of this department is the cultural centre for the performing arts.

Department of Environmental Studies : The Department of Environmental Studies shall be involved in research relating to man and his environment and this includes Environmental Sanitation and Diseases, Rural and Urban Housing, Social Facilities etc.

At present, the Centre is headed by Professor P.O. Sada, a geographer. There are, in addition, four other full-time research fel lows ; a social demographer, two sociologists and a scholar of labour and industrial relations. Seven associate research fellows from various faculties of the University (Medicine, Engineering, Economists, etc.) complete the full list of personnel currently working in the Centre.

Major Research Projects which have been completed and some on-going ones includes the following :

1°) Population, Migration, Employment and living conditions in Benin ;
2°) Some Socio-economic characteristics of attendance of family-planning clinics in Benin City ;
3°) Rural — Urban Migration in Bendel State : A Case study of selected Communities in the State ;
4°) The determinants of In- Migration and the Adjustment of Migrants to Benin, Nigeria ;
5°) Some Factors Influencing the Adoption of Modern Agricultural Practices.

As a forum for reporting findings from the above-named research projects and for discussing related theories and methodology, the Seminar conducts monthly seminars to which the University Community and members of the Government Secretariat are specially invited. In future the Centre will publish these discussions as occasional monographs.

CODESRIA'S PROGRAMME
(JULY – DECEMBER 1977)

A. WORKSHOPS

Sepecial Problems of Landlocked and Least Developed Countries. Co-ordinator : Mr. Samir Amin	July, Lusaka, ZAMBIA.
Science, Technology and Development in Africa.	November, Ibadan, NIGERIA.
Africa and the New International Economic Order. Co-ordinator : Mr. Benachenhou	December, Algiers, ALGERIA.
Relationship between Agricultural and Industrial Dvelopment in Africa and Latin America. CODESRIA/CLACSO Programme.	December, Dakar, SENEGAL or Lima, PERU.

B. PUBLICATIONS

a) Africa Development

Vol. II N° 3 (July-September) : Planning and Financing for Development
» » N° 4 (October-December) : Culture and Development.

Themes for 1978

N° 1 : Problems of Landlocked and Least Developed Countries
N° 2 : Africa and the New International Economic Order
N° 3 : Economic History of Africa
N° 4 : The Public Sector and Development in Africa

b) Africa Development Research Annual, Vol. III, December 1977

c) Books

In press :

Class, Race and Imperialism in Southern Africa
Edited by Dr. Abdalla S. Bujra and Dr. Nathan Shamuyarira.
CODESRIA/IDEP Publication.

International Trade and Imperialism by Dr. Oscar Braun.
CODESRIA/CLACSO Publication.

In preparation :

Industrialization and Income Distribution in Africa,
edited by Mr. Justinian Rweyemamu. To be submitted to publisher in 1977.

Interdisciplinary Approaches to Development Planning,
edited by Mr. Abderrahmane Remili.

Reports of National Working Groups of Tanzania, Ghana.

Four reports of research groups on Urbanisation and Rural Development in Cameroun, Tanzania, Abidjan, Zaire.
CODESRIA/CERDAS Publications.

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Published by Codesria Dakar, and printed by G.I.A.
9, Rue Thiers, DAKAR — B.P. 51