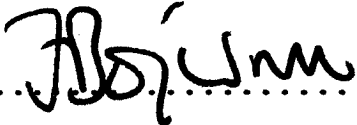


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TECHNOLOGY AND THE LEGAL FRAMEWORK OF
ITS TRANSFER IN ZAMBIA

BY

236504

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D E C L A R A T I O N

This dissertation represents my own work and that it has not previously been submitted for a degree at this or another University.

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A P P R O V A L

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ABSTRACT

In Zambia industrial development is a recent phenomenon. Development was introduced into Zambia by the British South Africa Company at the close of last century; with copper mining emerging as the most important economic activity in the country, eventually resulting in the development of a limited "export enclave" type of economy which was inherited at independence.

The emergence of the export enclave and the colonial Government's inability to plan and formulate effective economic policies militated against any development in the whole of Zambia apart from the Copperbelt and the line of rail. Consequently at independence Zambia was still under developed with a lot of people displaced from rural areas to urban areas and making the provision of jobs to the urban dwellers the greatest problem that Zambia had to face.

The government therefore embarked on the process of diversifying the economy with the hope of encouraging the setting up of manufacturing industries.

Manufacturing industries could not pick up on the ground that Zambia lacked a class of local professional managers, capable of controlling manufacturing enterprises. Zambia lacks know-how and has to look elsewhere for the supply of entrepreneurship, management and know-how.

To achieve the necessary diversification of the economy, some aspects of technology transfer had to be incorporated in the economic programme of the country.

The problems of underdevelopment and the economic background of Zambia, and the steps Zambia has taken in securing foreign technology and the attempts made to control the terms under which technology is acquired and the reaction of the international community to the whole question of the technology transfer form the subject matter of this dissertation. Since each country's approach to, and concept of technology transfer vary from that of the other it is not surprising that Zambia has opted to use the Industrial Development Act (now repealed) and the Investment Act as mechanisms through which to control the transfers as opposed to using the widely used method of patent laws.

This dissertation looks at the legal framework of technology transfer in Zambia with a view to determining whether there exists an effective legal system, capable of ensuring technology transfer under fair and reasonable terms, and the determining of whether or not the existence of an appropriate legal framework necessarily constitutes a panacea to all the problems associated with technology transfer.

This dissertation looks at the conditions under which technology was transferred before and after the enactment of the Industrial Development Act of 1977, with a view to determining

whether there were any differences between the conditions imposed during each period. The main body of the study concerns itself with Zambia's reaction to technology transfer, and with the attempts that have been made and continue to be made by the international community, and the various groups' reactions to technology transfer. Deliberate emphasis is given to the international legal framework, in particular the Paris Convention which is the basic instrument that regulates patent legislation for most countries of the world, and the main legal instruments of international cooperation in the field of legal protection of industrial property and technology transfer.

The reason for this is to determine whether the various international instruments have a role to play in ensuring that technology transfer takes place under fair, and reasonable terms. This is with a view to confirming what has often been stated that development of national economy in less developed countries (LDCS) greatly depends upon the condition under which they acquire foreign technology and specifically those deriving from Patent rights.

The points on which the whole study revolves include:

- (a) that technology transfer is essential for industrialization;
- (b) that the existence of an appropriate legal framework does not necessarily constitute a panacea to all the problems associated with technology transfer;
- (c) that a more permanent solution lies in Zambia's ability to acquire its own trained manpower. Training is

advocated and emphasized as a critical factor if technology transfer capable of adaptation is going to be realized and help to attain the declared objective of national restructuring and the diversification of the economy;

- (d) that where efforts are being made to regulate the conditions under which technology is acquired, the institutional framework intended for the purpose should be made into a multi-disciplinary group and this group should have access to all relevant documentation and in particular patent documents; and
- (e) since technology transfer arrangements transcend national borders and to be effectively controlled it is important that the international community cooperate in eliminating all restrictive conditions that find themselves in all transfer of technology arrangements.

In Zambia it has long been recognized that components of development are man, money and machines (embodied technology). Each is essential and no two can succeed without the third. Yet in Zambia, up to now this critical mixture is difficult to attain. At various forums it has been and continues to be argued that the basic problem to tackle for the international community is the one sided relationship under

which the possession of know-how and capital resources is unequally distributed. The third of these critical elements-man, has not received enough attention, particularly as regards training.

It may be worth mentioning here that Zambian technical education is weak. The education system has not been guided by Zambia's manpower needs and has failed to provide Zambia with the education and skills needed to build and develop the country. The dissertation ends by urging the Zambian government to take up the challenge of transforming the Zambian people into a skilled work force, capable of achieving coherent development through the aid of technology transfer. The study also urges the government to undertake studies in the field of technology transfer in Zambia and to make all technology transfer agreements more accessible to the public. It is only through publications of all the agreements that Zambia has entered into that will make Zambians aware of the conditions attached to the use of various technologies. In this way it is hoped similar mistakes could be avoided in future.

ABBREVIATIONS

1.	E.C.A.	-	Economic Commission for Africa
2.	E.E.C.	-	European Economic Community
3.	F A O	-	Food and Agriculture Organization
4.	ESARIPO	-	Industrial Property Organization for African English Speaking Africa
5.	GATT	-	General Agreement on Tariffs and Trade
6.	INDECO	-	Industrial Development Corporation Limited
7.	DC	-	Developed country
8.	DCS	-	Developed countries
9.	LDC	-	Less Developed country
10.	LDCS	-	Less Developed countries
11.	UN	-	United Nations
12.	UNCTAD	-	United Nations Conference on Trade and Development
13.	UNIDO	-	United Nations Industrial Development Organization
14.	U N I P	-	United National Independence Party
15.	N.R.	-	Northern Rhodesia
16.	S.R.	-	Southern Rhodesia
17.	O.E.C.D.	-	Organization for Economic Co-operation and Development
18.	WIPO	-	World Intellectual Property Organization
19.	P T A	-	Preferential Trade Area for Eastern and Southern Africa

20.	O.A.P.I.	-	African Intellectual Property Organization
21.	P C I	-	Patent Cooperation Treaty
22.	E.P.O.	-	European Patent Office
23.	ZIMCO	-	Zambia Industrial and Mining Corporation Limited
24.	MNCS	-	Multinational Corporations
25.	IDA	-	Industrial Development Act of 1977 of Zambia
26.	I M F	-	International Monetary Fund
27.	I L O	-	International Labour Organization
28.	UNESCO	-	United Nation Education and Scientific Council
29.	UNCITRAL	-	United Nations Commission on International Trade Law
30.	B.S.A.C.O.	-	British South Africa Company
31.	GDP	-	Gross Domestic Product
32.	UNCCD	-	United Nations Commission on Commerce and Development

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 Zambia and eight industrialized
 countries in 1978.

TERMINOLOGY

Northern Rhodesia and Zambia are used interchangeably so are the words LDCS and Developing countries and so are the words DCS and Industrialized countries.

P R E F A C E

The issue of technology transfer from developed to developing countries hinges on the conditionalities attached to the transfer. The aim of a developing country is to control both the supplier of technology and also the technology itself. Control over the application of technology is easy to achieve. Control of technology and the terms under which it can be acquired can be achieved only to a limited extent through contractual provisions. Technology is basically a private right belonging to its purveyors. Consequently when considering the question of technology transfer one is tempted to adopt a general approach.

The author looks at the whole question of technology transfer from two angles, general and host country's point of view, and has found it irresistible not to conclude that technology transfer to LDCS can best be achieved through international cooperation like through the adoption of the international code of conduct on the transfer of technology.¹ and that such measures have got their own limitation and that a more permanent solution is first for the country to acquire its own trained manpower as a basic instrument in negotiating for technology transfer arrangements, and utilization of local resources.

The author wishes to express his special thanks to Dr John Mulwila, his faculty supervisor who made useful criticisms of and suggestions for the draft text and I am most grateful to him.

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Needless to say, all are absolved from any responsibility for the ways in which the author has made use of their help.

FOOTNOTE

1. UNCTAD has been advocating for a code of conduct on the transfer of technology. The draft code is contained in UNCTAD document TD/CODE TOT/41 1983.

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CHAPTER ONE

ECONOMIC BACKGROUND OF ZAMBIA

(a) Analysis of the Problem

The Zambian economy is under-developed. Consequently it has become necessary to classify Zambia into rural and urban areas.¹ The urban area represents the area along the main line of rail and the area around the Copperbelt. The urban area represents cash economy and offers moderately decent standard of living.² The rural area relates to that portion of Zambia which does not lie within the Copperbelt area or along the main line of rail. The rural area is predominantly backward and the inhabitants are engaged in subsistence farming, and in most cases living well below the poverty datum line.³

When compared to other developing countries in the subregion and taking the per capita income as an indicator of development, Zambia is said to be relatively developed. In table 1 per capita GDP in Zambia is shown to be more than four times as great as the three neighbouring countries for which comparable figures were available.

TABLE 1 Gross Domestic Product Comparisons: Zambia and seven other African countries in 1970⁴

Country	GDP Percapita (US \$)
Zambia	421
Zaire	89
Tanzania	97
Malawi	74
Kenya	143
Nigeria	145
Ghana	267
Ivory Coast	347

TABLE 2 GDP Comparisons: Zambia and eight industrialized countries in 1978⁴

Country	GDP Percapita (US \$)
Zambia	480
Switzerland	12,100
Sweden	10,210
Denmark	9,920
United States of America	9,590
Germany Fed. Rep.	9,580
Norway	9,510
Canada	9,180
Belgium	9,090

The reality of Zambia's under-development is however made apparent in table 2, where Zambian per capita (1978) is shown to be almost thirty seven times less than that of the industrialised countries.

Lack of data on the extent of under-development makes it difficult to discuss and illustrate this point fully. The indicators of under-development in Zambia include, (a) the unemployment among the youth, lack of technology, finance, equipment, skills, under utilization of resources like land, and the poor standard of living and lack of adequate medical facilities. Various Commissions, and Scholars have looked at the question of unemployment⁵, lack of skills⁶, lack of technology and finance⁷ and the poor standards of living of the Zambian people.⁸ Consequently we are not going to repeat their findings and recommendations here.

Further we feel this is not the place for full discussion of causes of under-development in Zambia, but we can sketch a number of interlocking possibilities that had cumulative effects over time.

Without anticipating too much of the subsequent discussion we can immediately observe that by "development" in the Zambian context is meant the creation of a nationally integrated economy, closely linked to urbanization, that is capable of withstanding external pressure, that can facilitate the acquisition of skills, and ensure an adequate and rising standard of living in terms of food, clothing, shelter, education and medical facilities.

In this context we can first observe that in Zambia development is a recent phenomenon. It was introduced in the country by the British South Africa Company at the close of last century.⁹ The search for minerals was the main motive for the British South Africa company's drive in Zambia.¹⁰ However, from the start the British South Africa Company had no intention of making any heavy investment in Northern Rhodesia.¹¹ The Company's behaviour is best understood from its background.

The B.S.A.CO. was incorporated by Charter in London in 1880.¹² It came into this part of Africa at the close of last Century, combining the role of a commercial venture and that of Government.¹³

The Company's claim to the territory and the mineral wealth emanates from a military conquest and a series of agreements known as concessions which were alleged to have been entered into between its representatives and the Litunga of Barotse Land¹³ (now Western Province of Zambia), the Bemba of Northern Province¹⁵ and the Ngoni of Eastern Province.¹⁶ By 1883 the company's claim to the mineral right was given legal recognition, when it was issued with "certificates of claim" recognising B.S.A.CO.s claim to mineral rights in Northern Rhodesia.¹⁷

By 1912 formal recognition of the company right was re-affirmed when the first formal legislation to regulate mining

was passed. The preamble to the legislation in part read:

"The right of searching and mining for and disposing of all minerals and mineral oils in Northern Rhodesia notwithstanding the dominion or right which any person, company syndicate or Partnership may possess in and to the soil on or under which such minerals and mineral oils are found or situated is vested in the British South Africa Company."¹⁸

The company administered Northern Rhodesia as a government and as a commercial enterprise until 1924 when the Devonshire Agreement took effect.¹⁹ Under the Devonshire agreement the B.S.A.CO. assigned and transferred to the Crown all such interests and rights in land as it claimed to have acquired by virtue of concessions save for certain pieces of land and minerals.²⁰

As we have seen above the B.S.A.CO. had acquired mineral and administrative rights over Zambia. Admittedly the Company started laying the foundation for future development of Northern Rhodesia, most importantly the rail that went from the Cape to the Northern border of Northern Rhodesia was completed in 1909.²¹ European settlers, encouraged by the Company, which among other things was anxious to acquire revenue through the sale of land, began farming in the area adjacent to the rail road referred to as the "line of rail".²²

Africans along the line of rail were dispossessed of their land.²³ This marked the beginning of the plural Society that has emerged in Zambia. As Basil Davidson observed, Africans in Northern Rhodesia were considered like trees, rivers, soil

climate and other features of the natural environment.²⁴
Like these resources they were at the mercy of the white settlers.

To defray administrative expenses the B.S.A.CO. levied taxes on white settlers and Africans alike, but as the venture was not a success, the B.S.A.CO. accumulated a deficit of £1¹/₂ million in administrative expenses and by 1924 sought successfully to transfer administrative responsibility to the colonial office.²⁵

By 1923 copper mining had emerged as the most important economic activity in the country, leading to the development of a limited "export enclave type of economy" which was inherited at independence.²⁶ This development was due to the discovery by mining engineers of rich sulfide ores a hundred feet below the surface in the area near the Katanga border, and the technological breakthrough in which floatation method of concentration was developed for the exploitation of sulfide.²⁷ These factors also coincided with the development of the Motor industry and the demand for copper in all electrical industries.

With the full development of mining activities in Northern Rhodesia, the B.S.A.CO. was relieved of its administrative responsibilities and was able to concentrate its energies and its capital on mining activities. It revised its concession policy, which had limited the size of economic enterprises and began to encourage the activities of large, powerful organizations on what has become known as the

Copperbelt.²⁸

The B.S.A.CO. together with the two mining giants, the Anglo-American Corporation Limited and the Rhodesia Selection Trust Limited, to a greater extent, influenced the direction of development of the Copperbelt towns. Worthy of mention here were the closed townships arrangements which affected the commercial and industrial developments of Kitwe, Chingola and Mufulira.²⁹

Under the agreement between the government and the mining companies trade in the closed towns was restricted for 20 years. The restrictions applied to both blacks and whites. The announcement for the closed towns read thus:

"A public township will be created on land to be resumed by the government from the Rhokana Corporation Limited. Plots will be disposed of by the Government on lease for a period of 99 years on the usual terms so far as the lease is concerned. There will be no restriction on the acquisition of land for residential or professional purposes but the number of sites which will be made available for trade purposes will be limited."³¹

The same General Notice No. 397 of 1935 even though its intended purpose was to regulate trade, also militated against any development in the area.

Further, legal provisions were used to support the establishing of Ndola as an industrial city as evidenced by paragraph four of the General Notice No. 397 which read:

"Since it was government policy to develop Ndola as the commercial and distributive centre of the Copperbelt, the trading plots to be sold in Nkana were to be for specific retail business purposes. Further no additional trading plots were to be offered for sale in the new township for a period of 20 years."

Related to the economic development of Northern Rhodesia were those mining rights contained in the 1912 legislation to which reference has already been made. By the 1940s white settlers were up in arms against the 1912 legislation.³³ They wanted to put an end to a situation where royalties were paid to a company which had nothing to do with the administration of the country, so that royalties could be paid to the Government. By 1950 an agreement was reached between the Secretary of State for the colonies, the Northern Rhodesia Government and the B.S.A.CO. The B.S.A.CO. agreed to surrender all the claims to the mineral rights to the Northern Rhodesia Government, but the surrender would be effective as from September 30, 1986.³⁴

The 1950 Agreement among other things empowered the company to retain for its own benefit the balance of up to 80 per cent of any revenue it collected in form of royalties, free of tax or duty and this extended to the company's mineral rights or the revenue therefrom.

For the period of the agreement no legislation could be enacted to contravene it and the Northern Rhodesia Government together with the Imperial Government under took to respect and enforce the provisions of the agreement.

By 1958, through the Mining Ordinance 1958, the preamble to proclamation No. 5 of 1912 was dropped, with the effect that the B.S.A.CO. was still the beneficial owner of mineral rights with the residual rights vested in the government.³⁵ This meant that mining ventures could still not be developed without the consent of the B.S.A.CO.

The copper industry in Zambia therefore developed as a foreign-owned and controlled enclave. Technology, finance, equipment and skills were all imported. In return all the copper was exported together with much of the profit. Baldwin estimates that over 17 per cent of income earned within Northern Rhodesia was remitted abroad in form of net profits, net interests and net dividends.³⁶

The mining laws coupled with the nature of political control in Northern Rhodesia until independence, combined to minimise the developmental impact of copper mining upon the people and the country and to promote a highly unequal distribution of income.³⁷

At independence, the Zambian Government could not tolerate the 1950 Agreement. Consequently the B.S.A.CO. was compelled to enter into an agreement under which it renounced the mineral rights and surrendered the same to the Government at a fee of £4 million, of which the Zambian Government paid £2 million and the other £2 million was paid by the British Government.³⁸

Finally the struggle to gain control over the mineral rights ended in 1969 with the passing of the Mines and Minerals Act, Act No. 46 of 1969 now repealed by Act No. 31 of 1976. The Act vested all the mineral rights in Zambia in the State, with the Government reserving the right to participate in any mining venture on terms formulated and dictated by it.³⁹

In short, this was how the Mining Companies lost the rights they had acquired from the B.S.A.CO. in perpetuity to the Zambian Government.

(b) Colonial Policy Generally

Among the interlocking possibilities that had cumulative effect over time on Zambia's economic development is the question of policy pursued by the colonial government.

We have seen that until 1924 Northern Rhodesia was ruled and administered by the British South Africa Company. The policy pursued by the British South Africa Company was perceived as to assist and serve foreign investors and white settlers who operated in Northern Rhodesia.⁴⁰ The promotion of development benefiting the Africans in Northern Rhodesia was not a major policy goal of the company or of the colonial administration.

After company rule, the colonial government made no serious efforts to create a self-sufficient or self sustaining economy in Northern Rhodesia. For rest of the colonial period

the mining companies dictated the course and pace of economic development in Zambia.

"The colonial government did not move in although they were convinced that the Mining companies were not doing enough for general development of the country."⁴¹

Prospecting and mining of minerals depended upon the policy of the B.S.A.CO., rather than upon the policy of the Government. Consequently resources and policies aimed at promoting development emphasized the growth of those sectors of the economy where wealth could most readily be extracted, and made to to add to the prosperity of the colonizer.⁴²

It is not therefore surprising that industries aimed at import substitution were not developed in Zambia. Instead Zambia was reserved the role of a market for the British investors in South Africa and Southern Rhodesia.⁴³

The commercial activity that was developed during the colonial period was copper mining and here, too, it is noteworthy that the copper was exported in its raw form to be processed into finished products outside the country.⁴⁴

The involvement of the colonial government in the economic activity of the country took the form of establishing laws and taxation policies that gave the mines the latitude and assistance they needed to extract copper most profitably. Consequently the policy of the government was stated in the following terms:-

"The Government believes that the economic development will be accomplished mainly through the private enterprise of the individual cultivator or business man or corporation and that Government activity should therefore in

general be limited to maintaining infrastructure, including research and extension services. Nevertheless, private enterprise will often require a measure of direct Government assistance, especially in the early stages of the establishment of new industry and of the expansion of economic development which private enterprise is unlikely to be willing to undertake. It is the Policy of the Government so far as possible to assist private enterprise in the former class of activity and to undertake the latter class of activity as direct Government investment.⁴⁵

The assistance to the private enterprise by the colonial government was limited to white settlers. The need to protect white settlers' interests necessitated an active discouragement of Africans from engaging in certain economic ventures. The manifestation of this deliberate government policy was in the manner in which the government allocated resources, in particular land, pricing system, licensing policies, labour regulations, the education policies and the alike.

(i) Land Tenure

Land tenure was based upon the Northern Rhodesia Order in Council, 1911.⁴⁶ This led to the creation of Native Reserves. Africans were only allowed 4.5 acres of cultivable land.⁴⁷ and we generally governed by customary law.⁴⁸ The white settlers entitlement to land was unlimited and they were free to acquire either leasehold or freehold titles to land, as long as the land fell outside the Native Reserves and the Native Trust Land.⁴⁹

In all there were three categories of land, state land, to which only the white settlers were entitled, the Native Reserves and Native Trustland.

The difficulty created by the land tenure was that the pattern of white settlement and the accompanying infrastructure, namely, the line of rail and the feeder roads constituting the transport infrastructure left most rural areas remote from urban centres and thus from the main market area for their agricultural produce.⁵⁰ Agriculture by White settlers tended to develop along the line of rail and within the reach of markets at minimal cost.⁵¹

(ii) Pricing System

The policy of the colonial government worked in a direct way to curtail the capacity of African farmers to compete in the market place with Europeans.⁵² The policies relating to maize provide one of a number of examples that might be cited.

With the establishment of the Copperbelt, Africans were provided with a market where they could sell their produce. in 1930 Africans sold about 30,000 bags of maize to traders and in 1935 they sold 100,000. This increase is said to have been accomplished without government encouragement or assistance.⁵³ In the same period the European production rose from 168,000 to 211,000 respectively.⁵⁴ The increased African output did not warrant any cause for alarm, but with the economic slump that affected the Copper Industry as from 1932,

white farmers expressed fear that African competition was not conducive to their economic survival.⁵⁵ Consequently the Government moved in and in 1936 the Maize Control Board was established.⁵⁶

The purpose of the Board was to protect European interests.⁵⁷

The Board's mandate was to purchase and sell maize at fixed prices, and allocated one-quarter of marketable maize to Europeans, and the remainder was divided into quotas. If either of the two groups did not fill its quota, the other could do so. Any excess had to be sold on the world market, well below the national price.⁵⁸

The underlying consequence or the intended effect of the maize Control Board, under the declining market was to penalize not the white settlers but the African farmers.

Similar measures were introduced like the creation of the Cattle Control Board, with the sole purpose of restricting Africans from entering into a cash economy.⁵⁹

(iii) Labour Regulations and Taxation

The retardation of agriculture almost in every sector meant Africans could not pay hut tax, and had to seek employment in the mines.⁶⁰

The effect of such labour as well as taxation policies are not difficult to see. Coupled with discriminatory marketing policies this had the effect of diverting able-bodied males from

agriculture, consequently leading to a reduction in the actual and potential for cash and food crop development from village economy.⁶¹

Retardation of African Agriculture accelerated the drift of people from rural to urban areas in search of employment,⁶² thereby making the provision of jobs and incomes to the displaced people the biggest problem in post independent Zambia.

(iv) Licensing Policy

The policy pursued by the colonial government of separate development was effected through licensing laws and the various municipal Corporations Ordinances, and the Townships Ordinance.

By separate development is meant a situation whereby the indigenous people of Northern Rhodesia were barred from integrating with their European counter parts, who were very developed businesswise.⁶³

The economic implication of the above policy was that non whites had to be restricted in their business dealings. The method employed to effect this was through licensing and allocation of business premises.

The Municipal Councils, or simply the local authorities decided on the allocation of business premises and the granting of licences within their respective areas and in so doing they wittingly discriminated against non Europeans.⁶⁴

Further the business premises that the township councils

had to allocate were in two categories; category one related to public markets which were intended to cater for natives, and category two related to private plots for settlers, mainly whites and to a limited extent Asians.⁶⁵

The private plots were further classified into first and second class stands. First class areas were located near European residential areas and had to cater for whites only. Second class areas catered for African tastes and were more or less near African residential areas.⁶⁶ The second class areas were also open to Indians. Consequently Indians and Africans were set on competition and Africans with less experience in business lost out. As a result, at independence, Zambia was left without any qualified African entrepreneurs. Thus the utilization of local raw materials, the training of the managerial staff, the acquisition of technology for specific Zambian needs and the orientation of industrial production to the people's needs had all to be established from scratch.⁶⁷

(v) Educational Policy

Educational work was first started by Missionaries in Barotseland (now Western Province of Zambia),⁶⁸ In 1907 the Barotse National School was founded.⁷⁹ In 1925 a sub-department of native education was created a year after the B.S.A. Company rule ended and the administration of the territory passed on to the colonial office.

In 1930 a department of African Education was created, to cater for the African education, including the building of new schools. The enrolment in such schools rose on the average by over 20 percent, per annum.⁶⁹ But very little effort was put in creating secondary schools and other institutions of higher learning for Africans. Meanwhile for Europeans' schooling was compulsory from the ages of 7 to 15 and further opportunities existed for continuing their education to top classes until 1964, when the education system was integrated.

On each non African child at school the Federal Government spent about £90 per annum as compared to £11 spent on the African child who fell under the Ministry of Education of Northern Rhodesia.⁷⁰

The big difference in terms of the expenditure per school child for different races is indicative of what importance the government attached to the two separate system of education that existed in Zambia.

Apart from the two education systems that existed in Zambia, the other feature of the Zambian education which is worthy of mention here is the weakness of technical training. Weaknesses were more apparent in the fields of agriculture and technical education.⁷¹

Prior to 1964 there were only two technical colleges namely Hodgson in Lusaka and the Copperbelt Technical Foundation college in Ndola.

Due to high standards demanded to qualify to the two colleges, there were very few students who could make it, reflecting the weak base of secondary education in Zambia. Consequently the colleges were only able to offer courses in building trades, and blacksmith, hence duplicated the facilities the Mines were already offering to students apprenticed in the industry.⁷²

The developments in the education systems could not therefore be said to have been guided by Zambia's manpower needs. The education system in our view had failed to provide Zambia with the education and skills needed to build and develop the country. It is not surprising therefore that at the time of independence, there were in Zambia just over 1,200 Africans with secondary school certificates, and only 104 Africans with University degrees,⁷³

This really portrays a very gloomy picture when the same is contrasted to the manpower needs of the country.⁷⁴

The lack or shortage of information on scientific and technical personnel also presents an acute problem for Zambia.⁹⁰ Dresang had made a point that the lack of technical information and the paucity of trained African scientists and technicians is even more critical because of the importance of mining activities to the Zambian economy.⁷⁵

The shortages of mechanics, electricians and other skilled tradesmen are far more serious than say, shortages of graduates in other fields.

(c) Industrial Policy

The Industrial policy pursued by the government of Northern Rhodesia was purely that of laissez-faire. In other words the government pursued a policy of non-intervention in the commercial activities of the country.

We have seen above that the mines were left in the hands of the B.S.A.Co. and the Mining Companies. Like the mines, the development of secondary industries was left in the hands of the private sector.

Even before colonial rule was established in Zambia, Zambia lay within the Congo Basin Free Trade Area. The Congo Free Trade area was created by an international treaty which dates back to the General Act of the Conference of Berlin of February 26, 1885, and the Brussels Act of 1890.⁷⁶

The Congo Free Trade Area Treaty provided for complete free trade within the Congo Basin Area.⁷⁷ The area covered by the treaty extended beyond the Congo Basin Proper to the share of the Indian Ocean as far North as 5 degrees North and as far South as the mouth of the Zambezi River.⁷⁸

The economic implication for Northern Rhodesia of lying within the Congo Free Trade Area was that its market was open to all imports of the world on uniform non preferential terms.⁷⁹ This implies that Northern Rhodesia could not protect its market and promote the setting up of local industries without being exempted from the provision of the treaty.⁸⁰

Lack of industrialization during the period prior to 1956 cannot be wholly attributable to the existence of the Congo Free Trade Area.

A committee appointed to look into the establishment of secondary industries in Northern Rhodesia reported that the per capita income and the narrowness of the market provided by the local people would not support viable and profitable enterprises.⁸¹ Further the Political future of Northern Rhodesia, and the fear that the natives might take over the running of the country also militated against any economic development.

The narrowness of the market is not a convincing reason. It has been argued that since Northern Rhodesia lay within the enlarged market of the Congo Free Trade Area the white settlers could have taken advantage of producing the goods and selling to Southern Rhodesia and South Africa.⁸² The reason being that because of the treaty obligation any manufactures of Northern Rhodesia could enter Southern Rhodesia and the Union of South Africa, without attracting any tariff barriers. The manufactures of Southern Rhodesia and the Union of South Africa could however not be allowed to enter each other's territory without complying with the custom regulations.⁸³

Zambia, being a country within the Congo Free Trade Area was in an advantageous position and the climate was

right to support industrialization because Zambia's manufactures could be exported to a wider market without any restrictions while at the same time taking advantage of the poor wages that were paid to Africans.

African workers were deliberately paid low wages that could only enable them to purchase the most important necessities.⁸⁴

Mulwila sees the low wages paid to Africans as also a contributing factor that helped to narrow the local market for new industries.⁸⁵

Lack of capital, has also been advanced as a reason for the lack of industrial development of Northern Rhodesia. It has been found that residents in Northern Rhodesia, on the whole were not a source of much capital.⁸⁶

The Government of Northern Rhodesia too, it has been said, was not in a position to initiate or sponsor industrial development.⁸⁷ Lack of capital, and of ability to initiate or sponsor industrial development, militated against any economic planning for the future.⁸⁸

The mining companies which could have been a source of capital, were incorporated in the United Kingdom and through the double taxation relief agreement the Mining Companies paid their taxes in the United Kingdom, while they got tax relief in Northern Rhodesia. This was the position until 1946.⁸⁹

In 1946, the headquarters for the Nchanga Consolidated Coppermines, Rhodesian Anglo American Limited, Rhodesia Copper Refineries Limited, Rhokana Corporation Limited and the Rhodesia Broken Hill Development Company Limited, transferred their registered offices from the United Kingdom to Northern Rhodesia.⁹⁰ But before any benefit could start accruing to Northern Rhodesia, the Federation of Rhodesia and Nyasaland was established in 1953. The residences of the mining company moved to Southern Rhodesia. As a result, taxes became payable to the commission of taxes in Salisbury.⁹¹ The position remained unchanged until 1963, at the time of the break-up of the Federation of Rhodesia and Nyasaland. In 1964 the headquarters for the mining companies moved back to Lusaka.⁹²

The effect of the establishment of the Federation of Rhodesia and Nyasaland in 1954 included the loss of revenue by Northern Rhodesia to the Federal Government, and lack of secondary industries in Northern Rhodesia. As a result the finished products of Southern Rhodesian industries were exported to Northern Rhodesia. Thereby turning Northern Rhodesia into a dumping market, of all Southern Rhodesia manufacture and seriously retarded the pace of Northern Rhodesia industrial growth.⁹³ The loss in revenue was in excess of £50 million by mid 1959,⁹⁴ rising to over £83 million at the end of the Federation.⁹⁵

As a result there was no meaningful development in Northern Rhodesia and whatever economic growth that took place was distorted and consequently left Zambia with no basis for industrial diversification.⁹⁶

The major asset however that has been bequeathed to independent Zambia, obviously, is the copper mining industry. By any world stand the industry is well-developed and ranks among the top four producers.⁹⁷

The asset of copper has however made Zambia unfortunate in another way. A number of imbalances in the pattern of economic development can be attributed to the development of the mines since the late 1920s. The most visible one is the fact that no other sector of the economy was as developed as the mining sector. Geographically, economic development was limited to the copperbelt and the line of rail.⁹⁸

The copper industry was and still is export oriented. It was dominated by a foreign-owned private sector until 1969 when Government announced interest in all the mining companies.

The colonial Government, pursued free trade policies with bias in favour of white settlers. The involvement of the colonial administration in the development of the country and the Mines in particular took the form of establishing laws and taxation policies that gave the mines the latitude and assistance they needed to extract copper most profitably.

The effects of the support given to the white settlers, as we have seen were to retard and discourage economic development involving Africans. Africans wishing to participate in the cash nexus economy of Northern Rhodesia like in the production of Maize were actively discouraged through the creation of institutions like the Grain Marketing Board.

One is therefore led to conclude that the overall colonial economic policy, the deployment of revenue from copper mining, until independence, lack of indigeneous skill and the dominant feature of the B.S.A.CO., and the Rhodesia Selection Trust Limited and Anglo America Corporation Limited mitigated strongly against any meaningful development, and left independent Zambia ill-prepared to tackle the problems of under development.

(d) Towards Diversification

Since independence the Government's economic development strategy has been rethought. Underlying the policy of the Government Participation in industry is the need for industrial diversification. The need to diversify the economy was mooted in the First National Development Plan, which ran from 1966 to 1970. The reason for diversification has been advanced as:

To diversify the economy so that the copper industry is not the only main employer in the

economy, and so that a greater portion of domestic demand is satisfied by domestic production from a large industrial base through import substitution.⁹⁹

The diversification process in the Zambian context is a movement from the dependence on the predominantly Copper industry to agriculture and Manufacturing industry,

"so that by the time our present Mining industry has ceased to play an important part in our economy, we shall have changed the basis of our economy from Mining to agriculture with industry playing a supporting role. This is the Policy which the Party and its Government have chosen.¹⁰⁰

The medium through which industrial diversification is to be achieved is import substitution.¹⁰¹ Through the import substitution Policy, the government hopes to encourage the setting up of manufacturing industries for essential consumer products, industries that process resource based raw materials, and industries that produce goods for export.¹⁰²

By embarking on import substitution what it means in our view is that Zambian manufacturing industries are expected to produce goods for which there is already an existing market. Consequently the industries are protected from foreign competition by tariff and quantitative restrictions on imports.¹⁰³

Zambia imports most of the capital goods and intermediate

inputs for its import-substitution industries and consumption goods to meet the demand for foreign goods by urban sector.¹⁰⁴

Given such a situation it can be argued that in a country, such as Zambia where the basis for industrial diversification is very slight, import substitution constitutes a false start to diversification and industrialization. It is not surprising that Ann Seidman has argued that import substitution does not help in the diversification of the economic development of a country. If anything import substitution appears more likely to aggravate rather than to restructure the dualistic features of an economy like that of Zambia.¹⁰⁵

We feel that for diversification to succeed in Zambia, there is need to orientate the utilisation of local raw materials, the training of local people, the acquisition of technology, and the industrial production to specific Zambian needs.

Zambia however has a number of obstacles to overcome before she can achieve rapid and sustained economic growth.¹⁰⁶

The first problem which deserves mention here is the fact that the manufacturing industry in Zambia is of comparatively recent origin. The UN/ECA/FAO Economic Survey Mission on the Economic Development of Zambia observed that only after the large scale mining of copper gave rise to a money economy and

an urban community of appreciable size did manufacturing industry begin to have impact in the economy.¹⁰⁷

The mission found as a fact that in Zambia there is almost a total lack of a class of local professional managers capable of controlling manufacturing enterprises.¹⁰⁸ To all intents and purposes there are no local sources of manufacturing know-how to draw upon for the development of new manufacturing enterprises and consequently the Mission felt that:-

"an industrial programme, especially in the early stages, will have to draw heavily upon foreign countries to supply entrepreneurship, management and know-how"¹⁰⁹

In other words, in order for Zambia to achieve the desired goal of the diversification of the economy, some aspects of technology transfer have to be incorporated in the economic programme of the country, incorporating know-how, management and entrepreneurship. Such technology acquisition should aim at bringing technologies that will ensure that.¹¹⁰

- (a) the copper industry is no longer the main employer in the country;
- (b) a greater proportion of domestic demand for industrial goods is satisfied by domestic production from a large industrial base; and
- (c) there is increased employment extending even to rural areas.

Locating industries in rural areas in our view will help in turning rural areas into viable markets.¹¹¹ The Industrial

Development Act of 1977, now repealed by the 1986 Investment Act was advanced as the framework through which the diversification of the economy could be achieved. The provisions of the Act will be considered in Chapter Three of this Dissertation.

Here it suffices to state that the intensive utilization of available factors of production within Zambia and supplemented by the acquisition of appropriate technology should be viewed as positive indicators towards diversification. The Industrial Development Act generally and its provisions relating to transfer of technology constitutes an essential component towards the realization of diversification.

CHAPTER ONE

FOOTNOTES

1. International Labour Office: Narrowing the Gap: Planning for Basic Needs and Productive employment in Zambia Report to the Government of Zambia by a JASPA Employment Advisory Mission Addis Ababa (1977) P.P. 74-97
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4. Source: calculated from The World Bank World Development Report 1980, Washington D.C. August, 1980.
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12. Sir Theodore Gregory; Ernest Oppenheimer and the Economic Development of Southern Africa: (Oxford University Press, Cape Town 1962) p. 386
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24. Dresang D.L., The Zambia Civil Service Supra p.4
25. Ann Seidman: "Distorted Growth of Import Substitution Industry; The Zambian Case" Supra.
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61. In 1963 the urban population was 715, 020, by 1974 it increased by 946, 980, bringing the total to 1,662,000 calculated on the data from Republic of Zambia, sample census of population 1974, Central Statistical Office Lusaka(1975) p.6
62. See Mulwila and Mushota: "The Legal Framework within which the Informal Sector Functions in Zambia" P.2 Supra.
63. Ibid P.6, The powers of the Local Authorities came from the Municipal Corporations Ordinance 1927, and the Township Ordinance 1929.
64. See Markets Ordinance 1937 The markets were open to all Africans who had any native produce to sell, subject to the payment of market fee.
65. See Northern Rhodesia, Report of Pim Commission (colonial No. 145 1938, on the effect the setting up of different areas had on Africans).
66. Republic of Zambia: First National Development Plan 1966-1970, Office of National Development Planning, Lusaka (1966) p.1
67. UN/ECA/FAO Report on Economic Development of Zambia P. 98 Supra
68. Ibid
69. Ibid see also the Manpower Report published in 1966 on the Status of education in Zambia. p. 5
70. See UN/ECA/FAO Report, Ibid p. 101
71. It would be interesting to note that inspite of Zambia's comparatively advanced industrial structure, opportunities for apprenticeship and on the job-training of Africans were hindered by racial discrimination. Until 1959 no African was permitted by law to be apprenticed in Zambia. Manpower Report, Lusaka 1966 Supra. p.5
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89. See Anglo American Corporation Annual Report for the year ended 31st December, 1950.
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100. Ministry of Commerce and Industry: Outline of Government Industrial Policy 1964, Government Printer, Lusaka P. 1
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102. See Ibid Paragraph 7 on page 1
103. Obidegwa and M Nziramasanga Copper and Zambia Supra P. 64
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105. The UN/ECA/FAO Report on Zambia numerates the number of problems to be overcome and we do not think it necessary to repeat all of them here see pages 75 to 87 of the Report for details.
106. Ibid p. 75
107. Ibid p. 87
108. Ibid paragraph 126 p. 87
109. See Republic of Zambia; Outline of Industrial Policy Supra P. 1

110. Narrowness of Markets as can be seen from Basschau Report Supra was advanced as a factor militating against industrialization in Zambia.

CHAPTER TWO

DEVELOPMENT AND DEFINITION OF TECHNOLOGY, TECHNOLOGY DEVELOPMENT AND MONOPOLY: A GENERAL VIEW

(a) Definition

Technology and technology transfer in Zambia are relatively recent phenomena which some researchers, in particular R.E. Baldwin, have attributed to the existence of rich sulfide ores on the Copperbelt, and to the coppermining companies' willingness to exploit the same.¹

Before we go into the intricacies of technology transfer, it is important first to define technology. According to Hall and Johnson, technology is

"knowledge, or information that permit some task to be accomplished, some service rendered, or some product produced. Conceptually technology can be distinguished from Science which organizes and explains data and observations by means of theoretical relationships. Technology translates relationships into practical use."²

The above definition serves as a basis for delimiting our subject of inquiry and at the same time affords us an opportunity of broadening the scope of its application.

In our view technology constitutes a special form of human resource, which can be defined as the body of knowledge that is used in the Production of goods and Provision of services.

In a wider sense technology is basically a commodity embodied in a variety of different forms, such as software, information, and qualified manpower. Technology is a commodity in the sense that it is marketable. It can be hired, bought and sold. Consequently, like with any other commodity the fundamental rule of trade applies, that an optimum bargaining can be held only by one who has the complete possible knowledge of prevailing situation of supply and demand. We shall endeavour to demonstrate the truth of this statement in Chapter IV below, where a number of transfer of technology agreements that Zambia has entered into are discussed.

Technology as defined above is largely being developed and pioneered in industrialised countries.³ The developing countries (LDCS) have to acquire it through a process of transfer.

This process of transfer connotes the existence of technology and the mode of the transfer of that particular technology.

Acquisition of technology by Zambia or a Zambian enterprise from a foreign country or source constitutes a transfer. It involves the bringing into a particular country, for instance Zambia, a piece of technology that was non-existent until such acquisition was effected. The Concise Oxford Dictionary defines transfer as:

"convey, remove, handover (thing etc. from person or place to another)"⁴

The transfer is also associated with the question of ownership of the transferred technology. It is a troublesome matter, and it is important to appreciate that it is even more so to developing countries like Zambia with a relatively short period of nationhood, and which are just in the process of restructuring their legal and economic bases and relations with the transnational corporations.

Inevitably a number of critical issues arise in the process of transfer including the formulation of development policies, the articulation of national science and technology policies, strengthening of the national bargaining positions, developing of skills for the absorption of technology, creating the base of infrastructure for the evolution of appropriate technologies, and finally the evaluation and the assessment of the national strength or capabilities to absorb the new technology. These and other related issues are discussed in detail in subsequent chapters.

(b) Development and Monopoly of Technology

Technology has come about as a result of research findings, mostly by multinational corporations (MNCs) through their research laboratories.⁵

Studies have shown that the technology is generated

and possessed by a small number of enterprises in developed countries (DCS).⁶ The enterprises' willingness to transfer the technology is motivated by a number of factors. The World Intellectual Property Organisation (WIPO) lists some of the factors as:

"...technological, commercial, economic and sometime even political considerations. One of the most important of these is an assessment of the advantages and disadvantages if the technology were to be exploited in the technology holder's country and the resulting product exported to developing country with the resulting product sold in that and other countries."⁷

The above quotation in our view tends to imply that the developing countries have little to say in the question of transfer. The pioneers of the technology have to decide who should get the technology before any other factors can follow. It is submitted here that even the question of cost seems to be secondary. It becomes important only when the decision to transfer has been agreed upon.

The other factor is that of cost of research findings and development (R & D) which has become so intermixed with the whole question of technology transfer that it is impossible to extricate it from the process of development of technology itself.⁸

Technology involves some costs, and MNCS would like to be paid for their technology together with the reimbursement of costs incurred in developing the technology.⁹

LDCS on the other hand argue that the cost of developing technology by DCS and MNCS is marginal or negligible.¹⁰

The reason they give for this is that DCS and MNCS have the technology already and would lose nothing by giving it away.¹¹

The question of whether the DCS and MNCS technology is not too expensive is a question not likely to be resolved, and it is a relative factor since DCS and MNCS operate under diverse legal and economic arrangements. They are not homogeneous and consequently the terms under which they create and transfer the technology cannot be the same.¹²

CHAPTER TWO

FOOTNOTES

1. See Robert E. Baldwin: Economic Development and Export Growth: A Study of Northern Rhodesia 1920-1960; Berkeley University of California Press 1966.
2. R. Vernon (editor): The Technology Factor in International Trade; National Bureau of Economic Research New York (1970) at p. 306.
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4. The Concise English Dictionary 5th Edition (1963) p. 1378
5. See Footnote No. 3
6. (1) In particular see the work done by UNCTAD on the Code of conduct on the Transfer of Technology and in particular various reports to the Trade and Development Board, in particular UN. DOC. TD/B/C.6/AC. 1/2 Rev. 1. 1975
(2) UNIDO: Guide line on Evaluation of Transfer of Technology Agreement No. 12 U.N. New York 1979
(3) WIPO: Licensing Guide for Developing Countries Geneva, 1977.
7. WIPO: Licensing Guide for Developing Countries; WIPO Publication No. 620E Geneva (1977) p. 18
8. See Business International S.A. Transfer of Technology A survey of Corporate Reaction to Proposed Code 1978.
9. For the full details and further discussion of cot for research etc. See W. Loehr and J.P. Powelson: The CEconomic Development and Distribution, Harcourt Brace Jovanovich inc. 1981.
10. See Ibid pp. 60-70
11. See Ibid pp. 60-70
12. For the difficulties of not having homogeneous legal and economic systems see: U.P. Toepke: EEC. Competition Law; Business Issues and Legal Principles in common market Antitrust cases. A Wiley Inter Science Publication New York 1982.

CHAPTER THREE

LEGAL FRAME WORK OF TECHNOLOGY TRANSFER IN ZAMBIA

(a) Introduction

The purpose of the economic and legal analysis undertaken in this study is to consider from the view point of Zambia, whether, on balance, the legal framework that exists can play a useful role in encouraging the transfer of technology and can contribute to economic development, and whether this system is a proper vehicle for accommodating the various interrelated interests that are involved. The interests involved seek to ensure that both the transferor and transferee are happy. The transferor gets remunerated, while the transferee receives the technology that is capable of producing the intended results, and the interest of the country at large is met by ensuring that the technology so acquired will help in accelerating and promoting its economic development.

To be able to do this we have to look at the legal provisions available, and see how the same have been applied through case studies. This will entail also the examination of the modes of technology transfer in Zambia, and in particular the main methods used.

(b) Legal Arrangements for Technology Transfer

In Zambia, many if not most, of the methods through which technology transfer takes place depend upon legal relations, principally consensual legal arrangement between the parties to the transfer. The terms and conditions agreed upon by the parties governing technology transfer are almost always incorporated in a legal instrument, sometimes denominated a "license", "contract", or "agreement."¹

(c) Modes of Transfer

Technology transfer from one country to another is effected through the transmission of technical knowledge, for examples through patent licences, or through the execution of agreements for the supply of technical know-how or through the provision of technical services and assistance, or through the sale and importation of capital goods or through direct foreign investment, or through the training of personnel of the target country or by immigration of qualified personnel into that country, or, last but not least, by the inflow into the country of capital goods.²

Despite the existence of so many methods of transfer, in Zambia there are only two main methods that are employed in technology transfer, namely, the licensing of industrial property rights, and the supply of know-how.³

An industrial property licence relates to the permission granted to the licensee to do certain acts covered by the exclusive rights conferred by law in the fields of patents, trademarks and industrial designs.⁴

Accordingly a licence means in the case of a right conferred by a patent, trademark or industrial designs, the permission given by the owner of that right (licensor) to another person (licensee) to perform certain acts which are covered by that right.⁵

Unlike the licensing of industrial property rights which are precisely defined in terms of scope, duration and rights, no such a clear definition of know-how exists, even in industrialized countries where there is abundant case law.

The lack of a universally acceptable definition of know-how has inevitably led to divergent views on the matter, with UNIDO arguing that the nature, content and specificity of know-how can only be established or secured in a licence agreement.⁶

In the case of Rolls Royce V. Jeffrey it has been said that:-

"know-how is not a single physical entity but is the kind of intangible entity that can easily change its character according to the use to which the owner decides to put it."⁷

Inevitably, in practice you find that there is a close affinity between a trade mark and the supply of know-how

employed in the production of goods and services. In some cases the trade mark is almost synonymous with a particular standard of production derived from the known existence of special methods of production. The coca cola trademark, is the good example that can be given, in that wherever coca-cola has been produced it has been produced under license from the U.S."Coca cola"Company, and the licensees are obligated to use the trademark "Coca Cola", with inscription "made under-licence from the Coca-cola Company.

From the discussion on the definition of supply of know-how we can say that supply of know-how should be regarded as the provision of unpatented information.

The importance of supply of know-how in relation to industrial property rights is that it acts as a support system for these rights. In a situation where the know-how agreement for the supply of know-how is neither tied to the patent nor the trademark the use of the term 'licence' should be avoided, as the essence of supply of know-how agreement is not the grant of a licence, but the disclosure of information on condition that an undertaking which has been given will be kept or if broken will be compensated by damages.⁸

Inevitably a supply of know-how agreement almost always contains a confidential clause whereby the recipient of the know-how undertakes to treat the information supplied as confidential.

(i) Technology Transfer Through Patent Licence

In Zambia patent licences are regulated by the provisions of the Patent Act,⁹ and technology transfer through Patent licensing is subject to Government's approval. Thus licensing is not only a matter of interest between private individuals but it also involves the government.

A patent is basically a monopoly granted to the owner of a patent (patentee) for an invention. Its legal effect is that it is a right and can be enforced by law and can be assigned in law by an instrument in writing.¹¹ An invention on the other hand means:

"any new and useful art (whether producing a physical effect or not) process, machine manufacture or composition of matter which is not obvious or any new and useful improvement thereof which is not obvious, capable of being used or applied in trade or industry and includes an alleged invention."¹²

From the definition, it would appear that for an invention to be patentable and hence licensable under the Zambian Patent Act, it has to be new, involving an inventive step, and having industrial applicability.

Within the meaning of invention, the following, namely, discoveries, and scientific and mathematical theories, cannot be patentable and consequently fall outside the ambit of patent licence.

In Zambia a Patent is granted by the Government through the Patent office.¹³ The effect of a grant of a patent is that

the patentee, his agents and licensees are given power, exclusive privilege and authority, during the term of the patent in force, to make use and vend the invention within Zambia.¹⁴ Any other person, not being the patentee, his agents, his assignees, or licensees risk being sued for the infringement of the patent.

The life of a patent in Zambia is 16 years. After the expiration of this period there is a possibility of extending the life of a patent for a further period of ten years.¹⁵

In Zambia no patent can be granted where what is claimed as an invention is a substance capable of being used as food or medicine, or any invention which in the opinion of the Registrar of Patents might be used in any manner contrary to law. Accordingly patent licensing is not possible under the Patent Act, if the object of the license relates to food or medicine or any substance which in the opinion of the Registrar could be used contrary to law or morality.¹⁶

Under the Patent Act, patented technologies must contribute to the economic development of the country. In other words inventions must be worked in Zambia. Nonworking of an invention is considered to be an abuse of the privilege conferred on the patentee by a patent, and in the event that the patentee abuses his rights under the patent, like the failure to work the patented invention or failure to grant licences in relation with his invention on reasonable terms to

any interested Party, may lead to the patent being compulsory acquired.¹⁷ What it means is that a potential licensee may apply to the Registrar or Patents for the grant of a compulsory licence, on the ground that the reasonable requirements of the public with respect to the invention in question have not been or will not be satisfied.¹⁸ The reasonable requirements of the public are deemed not to be met if the invention capable of being worked in Zambia is not being worked on a commercial scale and there is no satisfactory reason for such non working.¹⁹

Lastly the Patent Act, in Section 49 prohibits the inclusion of restrictive conditions in any patent licence. Where the restrictive terms are included in the patent licence, such terms are null and void. In other words the restrictive terms are of no consequence.²⁰ Section 49 in part provides that it shall not be lawful in any contract made after the commencement of this Act in relation to sale or lease of or a licence to use or work any articles or process protected by a patent to insert a condition the effect of which will be:-

- (a) to prohibit or restrict the purchaser, lessee or licensee from using any article or class of articles whether patented or not or any patented process supplied or owned by any person other than the seller, lessor or licensor or his nominee; or
- (b) to require the purchaser, lessee or licensee to acquire from the seller, lessor or licensor or his nominee any

article or class of articles not protected by the patent; and any such condition shall be null and void as being in restraint of trade and contrary to public policy.

On the basis of the legal provisions that exist in Zambia, it is clear that the Patent Act constitutes the legal framework capable of encouraging technology transfer and can contribute to Zambia's economic development through patent licensing. The patent license is a legal framework under which certain patented technology is transferred from one country to another through the process of first patenting the invention and then later offering the patented technology to licensees, in the country where the patents are protected. The technology contained in the patented invention is disclosed through a patent document. The patent documents contain information which is partly technological and partly legal and commercial.²¹

A licence is a legal agreement or arrangement and sets out the rights and obligations of the parties to the agreement acceptable under the law. Usually the governing law of the agreement can be that of any country in respect of which parties to the contract have confidence.

In order for the patent licence to be effected two things are necessary namely that the intended country in which the licence has to be effected must have a patent system and that there must be a patent in existence in the licensee's country at the time of entering into an agreement.

By virtue of a licence agreement, the licensor authorises the licensees to acquire the technology which is a subject of the patent protection to enable the licensee to produce certain goods or render services protected by a particular patent.

If the law for one country prohibits the patenting of certain products and processes, for instance like those processes related to the production of foodstuffs, the designation in a license agreement of the laws of a third country cannot be used to avoid the consequences of a patent, antitrust or competition laws of a licensee's country.²² Zambia for instance prohibits grant of patents in food stuffs and medicine.²³ It follows that a product or patent licence in food or medicine is not possible in the Netherlands, and this is so even if some other laws were designated which do not make any prohibition such as the Law of the Netherlands.²⁴

As stated above, in addition to prohibiting the patenting of food stuffs and medicines in Zambia the Patent Act further prohibits the use of restrictive clauses in licensing agreements.²⁵ Restrictive clauses are prohibited because they hamper smooth technology transfer.

In practise however as the case study will show, the provisions of the Patent Act, in particular section 49, are always flouted, despite the advantages the patent licensing

has over all other modes of technology transfer. This is because the language used in most licensing agreements is too technical and the technology recipients lack the necessary skills to unpackage the agreement.

Patent licence as a mechanism for the technology transfer from one country to another should be recommended. Wherever a patent licence agreement has been entered into the subject of transfer is not a secret as it would have been disclosed in the patent documents or specifications. In other words under the patent laws of most countries and that of Zambia in particular, the patentee is under an obligation to make a full disclosure of his invention, through the patent documents and the manner in which the invention has to be worked.²⁶ Once the patent documents are lodged with the patent office the documents are examined and published for public information as required by section 21 of the Patent Act.

After publication the public has access to all the information contained in the patent document. Due to the publication of the technology contained in a patent document prior to the licensing agreement both the potential and actual licencees will already know what they will be receiving.

This advantage is summed up by UNIDO as follows:

"In fact, the licensee can compare patents in a competitive products area and thus negotiate a

favourable contract. In a pure know-how agreement, on the other hand, the licensee is in a poor negotiating position since the licensor's information is obtained only after the contract has been signed. The licensee often prefers the patent-and know-how licence, since know-how then supports the information of published patents and can be somewhat evaluated in advance.²⁷

Patent licence, coupled with its prior disclosure of the nature of the technology to be transferred, has proved to be a more effective mechanism of technology transfer than any other form. Infact patent licensing has been singled out as the driving force behind the Japanese technological advancement in the field of electronics and motor industry.²⁸

Having looked at the advantages of a patent licence, in particular the opportunity offered by the patent system of enabling the licensee to have access to the technical information contained in patent the document prior to the execution of the agreement, it is hoped that LDCS would take full advantage of this mode of transfer. This is mainly because the licensee is enabled to evaluate the technology which is a subject of transfer before and not after the contract has been signed.

CASE STUDY 1

Licensing agreement between Livingstone Motor Assemblers Limited (Licensee) and Fiat Auto Spa (Licensor)
comments and appraisal of the agreement

The licensing agreement is for the assembly of Fiat cars, and those other vehicles described in article 2.3.1 of the agreement.²⁹ The agreement also covers the licensing of Fiat Auto Spa Patents and Trademarks³⁰ and technical assistance, in article 3.

In articles 2.3.1; and 4.1 the agreement prohibits the assembly of any vehicles other than the licensed vehicles namely, Fiats, Peugeot models 504 Saloon, 504 one ton pick-up and Isuzu pick-up model NB Isuzu for a maximum aggregate quantity of 2,500 (two thousand five hundred) per year. The agreement further prohibits the use of any modified parts in the production of the vehicles without the consent of Fiat Auto Spa.

The agreement, as can be seen in appendix 1, covers so many things in one agreement. The agreement for the patent licence, a trade mark, the supply of know-how and technical assistance, in our view should have been in separate and distinct agreements, so as to enable each to cater for specific elements of technology transfer such as engineering

designs, plant construction, marketing arrangements and management service. This approach can facilitate the administration of the commercial, financial and technical aspect of each licence or agreement, particularly when the administration of each aspect is confined to a separate unit of the transfer or transferee. This approach can also assist government authorities, like the Department of Industry in the Ministry of Commerce and Industry, in its task of evaluating each element and determining the adequacy of the price of each such element and the cost of the transaction as a whole, as long as there is an appropriate reference in each license or agreement to all the others.³²

Further, in article 3 the agreement provides for the remuneration of the seconded staff to be paid in foreign exchange in addition to a local salary. The payment of salaries in foreign exchange to all personnel seconded to LMA by Fiat Auto Spa for the purposes of tuning up of jigs and equipment is not only expensive but also constitutes a serious drain **on Zambia's foreign currency reserves.**

The foreign exchange cost of transfer of technology represents a considerable burden on Zambia's balance of payments. On average Zambia spends no less than 94 million American Dollars annually in form of royalty fees as and management service fees.³³

Article 3 of the Licensing Agreement should have therefore

been avoided, or better still renegotiated so as to enable each party to bear its expenses in so far as the up keep and travel expenses are concerned when it comes to sending specialized personnel from Italy to Zambia and the sending of trainees from Zambia to Italy respectively.

Further, the payment of all travel expenses for the recalled staff to Italy and the payment of K10,000 (converted into US Dollars directly into their accounts in Italy) and the salaries paid to all the seconded staff in Zambia should have been avoided.

Articles 2, 4 and 7 of the Agreement create package imports. The package imports explicitly state that LMA shall not use another technology that may compete with the technology of Fiat Auto Spa. This is so whether the technology is local or foreign. Thus the said articles have enshrined technological lock-ins in the agreement.³⁴

Fiat Auto Spa restricts LMA to use jigs, assembly equipment, fixtures and parts exclusively from Fiat Auto Spa. This requirement leaves LMA with no means of adapting the acquired technology to the local conditions. Further, LMA cannot avail itself of the opportunity of procuring equipment parts and spares from other sources, even if these sources were to offer the same materials at reduced costs.

Article 2 restricts LMA to the production of 2,500 vehicles per year, thereby denying LMA an opportunity of going

into export trade. This is at the expense of self sufficiency (through technology adaptation) and national autonomy.

Articles 2, 4 and 7 create a considerable disadvantage for LMA in the utilization of technology and in making use of available local resources. It discourages import substitution.

The production of vehicles at LMA consists primarily of last stage assembly and processing of imported parts and materials. The result has been that it has reduced the potential spread effects.

There are no industries that can be built around LMA to complement its efforts. The lock in situation in which LMA has found itself does not allow any form of adaptation to the acquired technology. If anything it only leads to technological dependence.

In the final analysis Zambia's technological dependence is self-perpetuating in that there exists legal provisions like section 49 of the Patent Act, which could have been invoked to prevent the inclusion of terms that are likely to restrict trade.

It is our considered opinion that any effort in Zambia to control the terms under which technology is being acquired will remain academic, unless efforts are made to

strictly enforce Section 49 of the Patent Act, and steps are taken to train personnel specifically to deal with the whole question of technology transfer.

Under Article 5 of the Licensing Agreement LMA is obliged to maintain Patents and Trademarks and pay the necessary fees for their maintenance. In terms of the Zambian Patent Act Sections 11 (b) and 58, it is only a patentee or an assignee who can register and maintain a patent.

LMA have not been designated as assignees by Fiat Auto Spa. In the absence of an assignment the obligation to maintain patents falls away. In fact it is to LMA's advantage in that Patents and Trademarks as provided for in the treaty establishing the convention for the protection of industrial property of 1803 commonly ~~known~~ as the Paris Convention, are territorial in character in that they are valid only in countries where they are registered and maintained through the payment of necessary fees. What it means to LMA is that unless the patents which are a subject of the licensing agreement are protected in Zambia, the technology contained there in is free and when used no question of payment of royalties can be legally enforced, neither can infringement proceedings be instituted in that unless the patent is in existence and legally protected, the encroachment on a non existing patent is not possible.

The search conducted at the Patent Office revealed that

at the time of the Agreement, there were no patents in force in Zambia. Any patents that could later be registered in Zambia cannot be a subject of the present existing licensing agreement, unless of course it can be shown that at the time of the agreement there were patent applications in the Zambian Patent office, awaiting registration and to which reference was made in the licensing agreement.

It is therefore extremely important that in order for the parties, and the licensee in particular, to obtain maximum benefit from a licensing agreement they should agree on what technology is to be transferred. It also follows that parties should pay particular attention to the definition of the terms used, so as to express clearly and concisely the understanding reached between them. Further the very process of arriving at agreed definitions and terminologies, in our view can assist the parties in clarifying their ideas and may thereby prevent unnecessary disputes in future.

Under the licensing agreement under review there is a conspicuous absence of a terminology clause. Article 8 provides that the agreement is for ~~six~~ years and may be terminated by either party upon giving notice to terminate the contract. Upon termination the licensee is under an obligation to surrender the specifications, drawings and all technical documentation to Fiat.

In such an agreement, the conditions under which the

contract have to be terminated have to be stipulated. Further if the termination of the contract is at the instance of the licensor, the licensee should have an option to retain or surrender the specifications, drawings and all the other relevant documentation.

In article 8, arbitration is also provided for. All disputes arising from LMA and Fiat Auto Spa have to be referred to the International Chamber of Commerce.

LMA should have paid particular attention to the wording of the arbitration clause, in particular LMA should have insisted that the governing law be that of Zambia. Further, considering that arbitration can be costly, LMA should have insisted on arbitration proceedings to be conducted in Zambia.

In conclusion we can say that the LMA licensing agreement, for the reasons already stated above, was not properly negotiated, and in the absence of a hardship clause in the agreement, the question of renegotiating the agreement is not feasible.

(ii) TECHNOLOGY TRANSFER THROUGH SUPPLY OF KNOW-HOW

In Zambia, the supply of know-how is another important channel through which technology is acquired. Supply of know-how is effected in several ways, including:-

- (a) joint ventures
- (b) turnkey packages
- (c) service contracts.

(a) Joint-Ventures

In Zambia, Joint-Ventures as a mechanism through which technology transfer can take place implies the existence of partnership between local investor and foreign investor(s), with the foreign investor supplying the technology and usually part of the capital for the project.

It is therefore Zambia's declared policy that industrial development in the country be accelerated, by participating in the establishment of certain large scale and key industries through Industrial Development Corporation (INDECO).³⁵ To this end Indeco is given the responsibility of preparing feasibility studies, promoting, financing and managing the Government's interest in industry. To accomplish the task entrusted to it, Indeco adopted a policy of seeking the participation of technical partners, who while providing their expertise would also take a substantial financial interest in the venture.³⁶ The adoption of the joint venture policy is the Indeco group of companies gave rise to the concluding of management and technical consultancy agreements in large scale industries. It can therefore be said that in Zambia joint ventures is one major way in which the needed technology is being obtained, through partnership with multinational corporations and other foreign companies.

Further in Zambia joint ventures are considered as a means through which the Government can achieve its two primary

development objectives, namely the diversification of the economy from mining and the increasing of Zambian participation in its ownership, management, and benefits.³⁷ As part of this goal, the highest priority has been given to industrial development.

To this end, as early as 1965, the Government followed a policy of direct participation, on its own, in key industries where necessary and otherwise providing incentives to attract foreign and Zambian private enterprises. Fiscal policies included provision of incentives under the Pioneer Industries (Relief from Income Tax) Act, which offered tariff protection, capital allowance, and other tax relief, including direct assistance through loan and equity capital, provisions of factory buildings, promotion of projects, feasibility studies and investment advice, through Indeco. Indeco has a controlling interest in a variety of companies such as Tazama Pipeline, Zambia Oxygen, Kafue Textiles, Zambia Sugar Company, Kafironda Limited and Zambia Breweries Limited.³⁸

The advantage of a joint venture as mechanism for technology transfer lies in the fact that there is commitment by all the parties to the venture. All the parties want to see the venture succeed. Failure to succeed entails losing the capital invested in the project.

(b) Turnkey Packages and Products in hand

In Zambia technology transfer is mainly through turnkey contracts. Turnkey industries that have been set up include the Nitrogen Chemicals of Zambia Limited which was put up "by" Kobe Steel of Japan and the international telephone exchange in Lusaka which was put up by ITT Supersonic International of America.

However, there is not even one industry that has been set up under the arrangement of turnkey and products-en-main (products in hand). This is so despite the United Nations Commission on International Trade Law (UNCITRAL) appeal and insistence that LDCS, should whenever securing foreign technology insist on turnkey and products-en-main.³⁹ In this type of contract, the foreign company has the sole responsibility for the execution of the total works, including delivery of the industrial complex, its design, procurement of equipment, engineering and construction work and initial operation of the plant.

For a number of LDCS that secure their technology through turnkey contracts, their involvement is limited to providing capital and the site for the project.⁴⁰ This is also the case in Zambia.

Under the turnkey arrangement of technology transfer, the obligation of the transferor is limited to ensuring that the plant

will function properly on the date of hand-over of the plant.

The post-start-up performance of the plant, the training of the local personnel in ensuring that they acquire the expertise that would enable them to run the plant properly, is usually outside the ambit of the transferor's responsibility.

In many instances, after the plant has been completed and delivered by the foreign contractor, the enterprises of LDCS encounter serious difficulties in operation and maintaining the plant and equipment.

Most turnkey contracts have been unable to meet the guarantees for project quality and output.⁴¹ In these instances, where the contractual arrangements include clauses of guarantee, the problem has been that they are formulated in such vague terms that they turn out to be either ineffective or create more problems for the LDCS.⁴²

However, despite the drawbacks associated with turnkey contracts, there is no doubt that the turnkey contract method of technology transfer has played a crucial role in the development of industries in LDCS. Turnkey contracts have enabled a number of LDCS to obtain industrial plants of high technology levels from the DCS.

In Zambia as stated above examples of turnkey plants are many and include those at Kafue Textiles Limited, The Nitrogen Chemicals of Zambia Limited and the Kapiri Glass Products Limited.

Turnkey plants quicken the pace at which LDCS can industrialize. It is therefore recommended that LDCS that are keen on achieving rapid development of their capital goods industries, should insist on turnkey contracts.✓

Due to past commissioning problems of turnkey contracts, countries like Algeria and Tunisia are now switching over to turnkey and products in hand.

Under the turnkey and products in hand arrangements, the transferor in addition to the execution of the total works, including delivery of the industrial complex, its designs, procurement of equipment, engineering and construction work and initial operation of the plant for proving its performance, is under an obligation to guarantee the project quality and output in the past commissioning period.

In drawing a distinction between turnkey and produits-en-main contracts, Professor Benchikh of Algeria, a country that has pioneered this new contract form, has said that in the traditional turnkey, the transferor generally guarantees the due erection of the plant and not product quality or output.⁴³

Benchikh points out that even where provisions are inserted in turnkey contracts seeking to guarantee products quality and output, these have proved ineffective because of the vague terms in which they have been drafted, and also

because low product quality or output can plausibly be blamed on the owner of the project who takes charge of the plant after its commissioning.⁴⁴

To safeguard the LDCS interest in the turnkey and products in hand contracts, negotiators from LDCS should insist on ensuring that the transferor is made responsible for an initial management period for the project constructed by him. The initial period can be two years and can be varied depending on the nature of the technology to be transferred. Within the initial period the transferor should have no excuse for failing to meet his guarantee as to quantity and quality from the project put up by him.

It can be said that the main distinguishing feature of this mode of technology transfer is that the transferor gives a guarantee. The guarantee is for quality and quantity of production of the plant he has constructed, and he takes charge of the initial management of the plant before his departure leaving the management of the plant or project in the hands of the transferee, who he has meanwhile trained pursuant to the terms of the contract.

The difficulties of control which are normally associated with management contract are not an issue and cannot arise in the turnkey and product in hand contracts. This is indeed so because, the initial management of a project for a specified period in order to prove the successful performance of the

project is normally made a condition precedent to final hand over of the project, and the completion of payments for the work done and for the technology embodied in the project, and transferred to the transferee.

(c) Transfer through service contracts

Apart from turnkey arrangements as mechanism of technology transfer, Zambia has also acquired technology through service contracts. So far the most important service contracts have been technical assistance and consultancy and management contracts.

The majority of the companies in Zambia are managed under technical assistance and technical consultancy contracts. Exceptions are the Zambia Sugar Company Limited and National Milling Company Limited which are managed under management contracts.⁴⁵

For practical purposes, technical consultancy contracts and management contracts tend to overlap. Under technical consultancy contracts two aspects of the contract often come out. The contract involves the training of local personnel as well as managing the enterprise to some limited extent. The owner of the industrial establishment seeks to have the transfer of technology effected through the training process for his personnel by experts from another enterprise.

The training may relate to the production, operations, plant repair, maintenance and marketing.⁴⁶ The training may include setting up an in-plant training programme and administering a local training centre.⁴⁷

The training in some instances would include the sending of personnel to other countries. The acquisition of technology through education and training of indigenous manpower in our view would have the greatest impact on any nation's technological potential. However, the development of a sufficiently high level of education in the working population to permit the creation of indigenous technologies is a relatively slow process. The sending of students abroad has got its own disadvantages and may add little to the country's immediate technological capacity and may even constitute a temporary drain on the nation's capacity to utilise technology effeciently.⁴⁸

To achieve the rate of industrialization deemed necessary, it is our view that the same cannot be achieved through technical consultancy contracts. It is therefore recommended that Zambia and other LDCS should concentrate on acquiring stock of technological knowledge that can be immediately utilised in their enterprises. Direct transfer of technology, through turnkey method is a quicker process of acquiring the technology needed for industrialization.

Management contracts on the other hand, are legal arrangements which enable an enterprise deficient in managerial skills to invite managers from another country to manage a particular project for a specified period. When the agreement is in force, skills may be acquired by managers of recipient enterprises through learning-by-joint management and organization with the help of consultants, or they may be entirely provided through management service contracts.

Typically management contracts will often contemplate the transfer of technology by the managers and also the provision of either marketing or accounting services. In theory the management contracts are supposed to give the hosts who are in most cases enterprises from LDCS better control over the enterprises than other arrangements which bar them from doing so.⁴⁹ In practice however the problem has been the reverse. The transnational corporations from which the managers are obtained are often able to retain much control under management contracts. In some companies the degree of control can equal or even surpasses the control that is obtainable in joint venture.

Zambia's experience in the field of management contracts has not been a pleasant one. The typical examples of the management contract are the ones the Zambian Government signed with two Mining Companies, namely Anglo-American Corporation

(AAC) and Roan Selection Trust (RST). The signing of the management contracts followed President Kaunda's speech at Matero in August 1969, when the government, announced the taking of the controlling interest in the existing mining companies.⁵⁰

After acquiring the controlling interest in the mines, Zambia was left with no option but to enter into management contracts with the mining companies because it was essential to retain the then existing management and their good will, in order to keep the mines operating, secure expansion and keep open flows of technology.⁵¹

Under the management contracts the directors representing the multinational mining companies were permitted to run the mines in the way they thought best.⁵² In other words the management contractors were the final authority on where and how to invest the profits from the mines.

The Government's failure to control the management contractors, and the failure by the management to ensure expansion of the mines, create employment and make adequate arrangements for the training of Zambians, prompted the government to terminate the management contracts it had entered into with the mining companies. The management contracts were replaced with individual contracts of service.⁵³

After terminating all the management contracts with the mines all aspects of industrial projects are carried out under the auspices of technical consultancy contracts.⁵⁴ Technical