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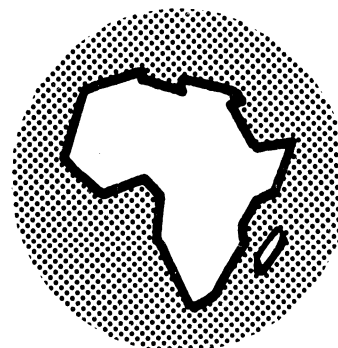
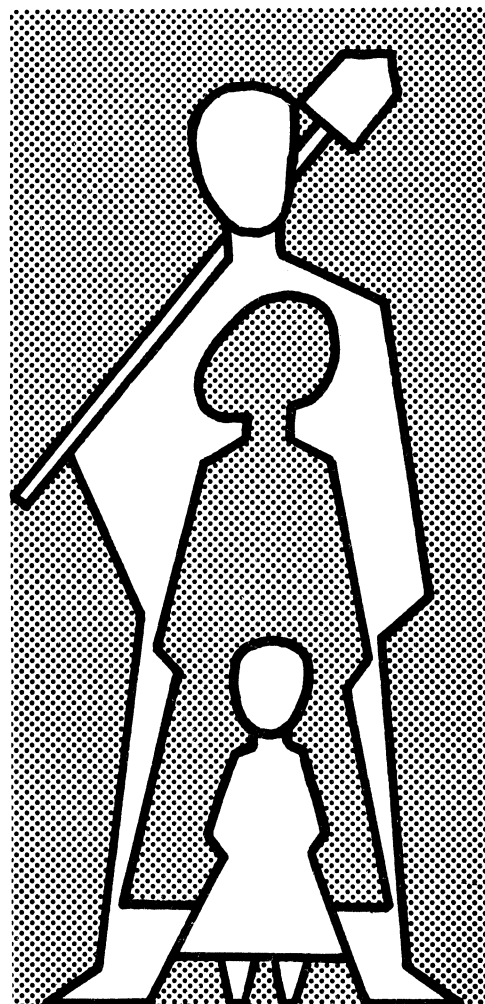
TRAINING COURSE IN HUMAN RESOURCES PLANNING IN AFRICA

DAKAR-SENEGAL

18 July - 8 September 1967

UN
ECA(058)
H82
No.1

Addis Ababa June 1968



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Dakar, Senegal

Planned and Edited by the Manpower and Training Section,
Human Resources Development Division, ECA

M6E-948

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PREFACE

The first ECA sponsored training course for African Manpower Planners and Administrators of National Training Programme was conducted at the African Institute for Economic Development and Planning (IDEP) in Dakar. The course which ran from 18 July to 8 September 1967 was designed to provide technical training for senior government officials in the approaches, techniques and methodology of manpower planning and the translation of manpower programmes into training programmes.

The ILO, UNESCO, FAO, WHO, UNIDO and USAID collaborated by contributing resource personnel to offer lectures and lead seminar discussions.

This course was planned as the first in a series of annual training courses in order to assist member States build up corps of indigenous manpower specialists needed for the assessment of manpower and training requirements.

The course materials in the form of summaries of lectures are being put together in this mimeographed handbook for the benefit of participants in similar courses in the future as well as for the information of practitioners who might not be able to attend some of these courses.

It is our hope that persons making use of this handbook will be stimulated to evaluate approaches and suggested solutions in light of their local circumstances and needs even though the course did not attempt to find solutions to many of the issues raised in the course materials.

TRAINING COURSE IN HUMAN RESOURCES PLANNING IN AFRICA

(Course for African Manpower Planners
and Administrators of National Training Programmes)

17 July - 8 September 1967

OUTLINE OF COURSE PROGRAMME^{1/}

I. General Introduction

1. Human Resources and Development

2. Comprehensive Planning for accelerated development

general principles and techniques (goals and targets; measurement of development; activities of the planning process; the role of the total population; perspective and short-term planning; over-all and sectoral planning; social and economic objectives of plans; prerequisites for plan formulation and implementation, etc.)

3. Social Development Planning within the context of over-all

development planning - population behaviour and policies; education as a determinant of development and educational policies; health and nutrition factors; housing and urban planning in development; community development strategy, social security and welfare factors; manpower planning factor in social planning; employment policies, wage policies, etc.)

4. Education and Training for Development

5. Structure, Organization and Operation of African Labour Market

^{1/} This is an indicative outline; the precise lecture topics are shown in Part III under the summaries of lectures.

Part I - Techniques of Human Resources Planning

II. 1. Data collection and Analysis:

- demographic factors (population; labour force and occupational structure; active, underemployed and unemployed manpower);
- manpower educational capability assessment;
- manpower physiological capability assessment;
- manpower achievement capability assessment;
- cultural behaviour analysis;
- organization and conduct of manpower surveys;
- analysis of data on manpower surveys.

2. Identification and Measurement of Manpower Requirements

- tabulation of employment opportunities (over-all and by sectors of economic activities, by occupational classification, educational level, geographical distribution, by age groups and sex, short-and long-term, etc.);
- methodology and techniques for manpower projections and forecasts (extrapolation, productivity and output coefficients; manpower model building; input-output analysis; manpower coefficients for given industries; labour efficiency index; target setting; rolling inventory; estimating requirements in public and private sectors.

III. 1. Manpower Programming Techniques

- phasing of manpower programmes into annual manpower budgets in relation to requirements for development plan fulfilment;
- annual balances of manpower demand and supply by sectors and occupational skills;
- progressive estimation and balancing of manpower requirements and supply by sectors and occupational skills.

2. Employment Policies in Manpower Planning

- employment creation in situations of underemployment and unemployment;
- unemployment criteria in choice of technology;
- regional development approach to labour migration;
- industrial location and population distribution;
- wages, income and other incentives in manpower planning

3. The Educational Implications of Manpower Requirements

- assessing the educational and training requirements of the Labour Force;
- educational interpretations of manpower surveys and manpower programmes;
- techniques for translating manpower programmes into educational and training programmes and functions;
- the integration of educational programmes with special development programmes (agricultural education, health and nutrition, community development, etc.).

IV. 1. Education of Manpower to fulfil technical and vocational training requirements

- job analysis as an instrument for syllabus preparation and curricula reform;
- techniques for continuous adjustment of manpower capability with employment opportunities and changing technology;
- choice of training institutions and methods;
- organizing training in terms of geographical region; specific economic development projects, industry, occupational class, etc.;
- use of audio-visual aids to facilitate retention of knowledge and the training of larger numbers in the acquisition of new skills.

V. Approaches, Methodology and Techniques in the Assessment of Manpower and Training Requirements in main Fields of Activities

1. Educational Planning

(formulating educational objectives; programming education in terms of social and economic objectives, analysis of constraints; the inter-relationships and co-ordination between different educational programmes; forecasting pupil enrolment and teacher requirements; essential data; short-and long-term programmes; costs-benefits analysis; resource allocation between levels, etc.)

2. Health Development

3. Agriculture and Rural Development

4. Industrial Development

5. Employment Services

- their organization, staffing and operation.

6. Public Administration and implementation of manpower and training programmes

(co-ordination of action; personnel; financial control; etc.)

Part II - Techniques of Training Co-ordination and Programming

VI. 1. Organizational Framework for Human Resources Planning

- manpower planning functions;
- organizational and institutional requirements;
- interdependence between manpower planning organization, the National Planning Agency and other agencies involved in human resources planning;

- technical co-ordination in manpower planning and co-ordination mechanisms;
- personnel and equipment for manpower planning action.

2. Training Policy

- the basis for the formulation of national training policy;
- evaluation of national training policy.

3. Training Priorities and Strategy

- determining training needs in relation to national development efforts and capacity;
- taking action to meet assessed needs;
- strategy for action;
- essential mechanisms for training programming and co-ordination;
- intra-African co-operation.

4. Principles and techniques in formulating national training programmes within the context of manpower requirements for over-all development

- priority setting and short-and long-term needs;
- the freedom of the individual and the claims of the State for training in essential fields needed for development;
- procedures and problems in training co-ordination;
- training at home and abroad;
- formal training, supplementary practical training in industry and on-the-job training;
- facilities for training in specific fields;
- building incentives and disincentives for the implementation of national training policy and programmes;
- cost-benefits consideration in training programming.

VII. 1. Organizational Framework for the Administration of National Training Programmes

- the functions of a central machinery for training co-ordination and programming;
- the design and structure of the central machinery;
- relationship with the manpower planning agency;
- personnel requirements.

2. Training Requirements in the Public Service

- the organization and co-ordination of local training facilities;
- the co-ordination and utilization of external training facilities.

3. Manpower Data Collection and Analysis for National Registers

- framing the questionnaire and essential data for survey of high-level manpower in training;
- organization and conduct of survey of students and trainees at home and abroad;
- procedure and problems in collecting individual data;
- international co-operation and co-operation of employers;
- coding, punching decoding and information retrieval methods;
- organization of work for machine processing;
- occupational classifications suitable to African economic situation;
- educational subjects classifications;
- classification of educational attainments.

VIII. 1. National Register of High-level Manpower

- establishing national registers of actual and potential addition of high-level manpower resources;
- procedures and techniques for follow-up action for up-to-date information and data on individual entry;
- utilization of register data for manpower planning and training programming.

2. National Vocational Guidance Service

- objective, coverage and scope;
- organizational framework and relationship with the Educational and Employment Agencies;
- the responsibility of vocational guidance officers;
- the development and dissemination of information on occupations and employment;
- vocational guidance service in schools and out of school.

3. Employment Service Mechanisms

- the public employment placement service (organization; its services and methods of operation);
- Appointment Boards in Universities and Colleges;
- appointment services of professional associations;
- appointment services of profit-making private agencies;
- informal measures (advertisement; personal recommendations);
- the special employment service needs of highly qualified personnel.

Part III - Applied Manpower Planning and Training Programming

IX-X. Supervised individual and group assignments. Participants are expected to select a major research project early in the course, based partly on their concern about specific manpower planning or training programming problems facing their countries and partly by subsequent stimulation. In preparing individual essays on the situation of human resources planning, in their countries a number of questions and problems may be posed. These should be closely examined in an effort to apply the new techniques acquired in Parts I and II to find appropriate solutions. These problems may be formulated into a major individual research project on which the Final Essay is to be written, after consultation with, and advice of the Directors of the Course.

Note: The lecture hours/periods allocated to different Organizations under various subject headings and sub-headings are indicated in parenthesis. The Roman numerals I-X refer to Week of Course.

III. SUMMARIES OF LECTURES

A. GENERAL INTRODUCTION TO DEVELOPMENT PLANNING

A.1 OPENING ADDRESS

by

Stanley Greene

Regional Adviser, United Nations, ECA

In the name of the African Institute for Economic Development and Planning and the Economic Commission for Africa, the joint sponsors of this Course on Human Resources Planning in Africa, I wish to extend a warm welcome to you all.

The development of a nation into a modern progressive society is a function of the work, effort, and skill of its people. Capital plays an important role in development; natural resources are significant; foreign aid is very helpful; and international trade of course is important. All in fact, play important roles in economic development, but none is more important than the diligence and skill of a country's citizenship. I am sure I do not have to stress the importance of scientific and technical manpower in this age of science and technology.

What is Human Resources Planning? It has been defined as a comprehensive strategy for increasing the output of needed skills, and that is what this course is about, the techniques and strategies for increasing skill output and the equally important problem of determining which particular skills are needed.

Economists here will understand when I say manpower planning is primarily a job of determining for the future, the anticipated supply and demand for the entire occupational range and then determining and implementing policies that would help the market place - in its broadest sense - balance these two.

There are, of course, other considerations besides the economic, in human resources development. There are the social, cultural and political aspects - preparing people to play an active and constructive role as good citizens and to lead healthier, happier and more enriched lives.

Economics is the science that deals with shortages - limited resources or supply in a world of unlimited demand. It is no wonder that the economists have turned their attention to developing countries which are characterized by shortages of skilled workers and shortages of jobs for unskilled workers. Thus the job of the planner is to increase the fund of occupational skills and utilize employment policies or distribution policies that will not overlook the unemployed or under-employed.

The vague terms "development and modernization" of a country can be translated into more practical language. It means maximizing the national product; it means higher and higher living standards. This comes about through labour efficiency, active employment, elimination of underutilization of labour and of unemployment.

Human resources planning encompasses many functions - manpower assessment through data collection and analysis, projection of manpower requirements through statistical methodologies, the translation of anticipated future occupational requirements into educational and training programmes and strategies, and finally, techniques for maximizing the contribution of available manpower by more efficient and fuller utilization.

These concerns are particularly acute for the developing countries. This is so because the expected future rapid population growth and increase in manpower supply in these countries add dramatic emphasis to the urgency of the problem and to the need for channelling the activities of a greater number of people into the development process and for enabling them to make the maximum contribution.

In the developing countries, the proportion of total population in the working age range is considerably smaller than in the developed ones. As the increase in the coming years in the working age population in developing countries will be mainly in the younger age groups, training programmes for young workers and measures to ensure productive activities are all the more important.

Similarly, the importance of educational programmes and of measures for the development of pre-school children is strikingly under-scored by the large increase anticipated in the child population in the developing countries.

Another significant facet of the manpower picture outlined by demographic factors is that the rate at which new workers enter the labour force in developing countries is now such that new job opportunities have to be created for almost half of them. In the future this ratio will increase still further and after 1980 about two-thirds of all the jobs required for newcomers will have to be created.

This course will address itself to these considerations. Do not be dismayed if no definitive answers are presented. I venture to guess that many of the policy considerations will be posed to you in the form of questions. But I think the right questions are more than half the battle. Remember, the question "How do you know?" is the genesis of science method and the question "How much?", i.e. the quantification of problems, is the essence of the scientific method.

A.2 Summary of Lectures

by

T.M. YESUFU, Ph. D

Professor of Applied Economics and

Dean, School of Social Studies

University of Lagos

ECONOMIC DEVELOPMENT PLANNING

Lecture 1

The Nature of Under-development

A clear unambiguous definition of economic development, or its converse, "economic under-development" is not easy. But the broad concepts are clear, for as Hoffman once pointed out, it is easy to identify an under-developed country when you see one; and conversely for a developed economy.^{1/} Nevertheless there is too often a tendency for the process of economic development, and that of economic growth to be confused. Both are processes of positive character; but growth is simply a process, at least, of accretion. Economic growth therefore means no more than an increase over a given period in the output of more goods and services within a given economy. "Growth" can thus be easily confused with "development", for development evidently implies growth. There is nevertheless a fundamental difference. It is held that "economic growth" means more output, and economic development implies both more output and changes in the technical and institutional arrangements by which it is produced.^{2/}

In this view, the essential difference lies in the nature of the technical and institutional arrangements by which increases in output are achieved. This distinction appears to be valid only up to a point,

^{1/} Paul G. Hoffman: One Hundred Countries - One and One-quarter Billion People.

^{2/} Charles P. Kindleberger: Economic Development (McGraw-Hill) p.3.

for on that basis it is possible to imply from these words that a mono-sector economy does not develop, no matter its level of output, as long as it remains undiversified and its level of technology remains the same. And, conversely, it tends to equate all change in economic structure and institutional arrangements with economic development. But it looks plausible to argue that a mono-sector or undiversified economy which achieves more output through a greater efficiency, through better utilisation of existing resources and techniques, is automatically a developing economy. It is also possible to envisage a situation where an imposed change in technological methods and/or changes in institutions, may not result in an improvement in either gross or per capita output. Indeed the tendency to equate such changes with economic development has been (and continues to be) the bane of many an under-developed country. Advanced technology introduced into a country without the necessary changes in mental receptivity and productive efficiency of the manpower utilised or other complementary resources can lead, not to improved output, but to inefficiency and waste. A rapid change imposed from without or from above in economic and allied techniques in substitution for established ones could lead to frustration among the public and social and cultural reaction which hinders, not promotes, economic development.

It is not that changes in technology and institutional arrangements are irrelevant to economic development. But development should be seen as a sustained change both in the rate of growth or its maintenance at a high level, and in improved per capita output. Economic development must be seen, therefore as implying growth, but it is not all growth which implies development. Economic development is a growth process which leads sooner or later to a self-sustaining "secular increase in total national income, or in national income per head of the population".^{1/}

^{1/} Phyllis Dean: The Long Term in World Economic Growth quoted in Gerald E. Meier: Leading Issues in Development Economics, p.5.

An under-developed economy would not have become a developed economy unless and until it reaches the stage of self-sustained growth through some built-in "generator".^{1/}

The concept of economic development tends, therefore, to focus on material standards or well-being, and the performance of the economy. On the basis of such performance countries are divided into rich and poor, developed or under-developed. Many difficulties arise, however, in attempting to measure the level of performance. Various measures can in fact be used depending upon the basis and purpose of the analysis. Okun and Richardson^{2/} refer for example to two criteria of measurement, namely:

- (a) the size of per capita income; and
- (b) the abundance or dearth of capital - what one might refer to as the capital availability ratio.

Some of the conceptual problems of measurement of economic performance and so the level of economic development are well illustrated by the question of the capital availability ratios. This implies that countries with high ratios of capital to other factors of production or to population are highly developed, and vice versa. As the authors themselves point out, "the major trouble with definition of under-development in such terms as capital per head is that it introduces confusion between a casual and a definitional relationship. In fact a low capital per head (or for that matter, resources-per-head) ratio is in part a cause of under-development".

Since, however, there is a rather wide acceptance that economic development must imply material welfare, the concept of per capita national product, or more appropriately a measure of the national product, is the most widely used index. Expressed as Gross National

^{1/} c.f. also Bernard Okun and Richard W. Richardson: Studies in Economic Development Part V, p. 230.

^{2/} Ibid., p. 236.

Product which is the marked value of all goods and services produced in the economy, it has nonetheless the defect that it does not allow for depreciation; and the use of Net National Product might look more appropriate. The very definition of national product however raises important problems which Simon Kuznets has classified under three main heads namely:

- "(a) delimitation of scope, involving the distinction between economic activity and social life at large;
- (b) questions of evaluation, involving the base to which economic activities can be reduced;
- (c) and problems of netness and grossness involving the distinction between costs and net returns of economic activity."^{1/}

A fourth may be added, namely:

- (d) Problem of international comparability.

Scope: Only activities which go through the market or are exchanged in money terms, are generally recognized as economic and measured. Thus unpaid housework is usually omitted in spite of its extreme economic importance. However, as development proceeds more domestic work is shifted to the market. There is therefore a tendency for an upward relative bias in national income measurement in favour of developed countries.

Problem of valuation: Measurement of the national income is normally done in terms of market prices. Money value not only changes over time; as Kuznets pointed out "systems of price weights selected from different points of a given long period may yield different rates of growth in national product at constant prices."^{2/}

The relative prices of goods also change over time; early price weights tend to bias the index upwards, and the use of later weights

^{1/} Simon Kuznets: Some Conceptual Problems of Measurement in "Economic Development and Cultural Change", October 1956, reproduced in Okun and Richardson, op.cit., p. 237 and seq.

^{2/} Op.cit.

to bias the index downwards. The general practice is, therefore, to use more recent price weights, the base year chosen being often dependent on either the immediate purpose of the statistical exercise or usually one of historical importance. But even this measure at constant prices, appears to have also the defect that qualitative changes in the composition of the basket of goods are difficult to measure and tends over the long run to result in a downward bias in national product.

Grossness and Netness: This is really a part of the overall problem of measurement. But it arises because of changes in economic institutions and concepts, and in the increasing complexity of the process of change that determines the final products. In this process the distinction between costs and net returns, between intermediate and final goods becomes a question of definitions.

Problem of International Comparisons: Firstly there are many countries in the world - indeed almost all developing countries - with dualistic economies; in which activities in one (usually the more important) economic sector, e.g. agriculture, are mainly outside the market economy. Secondly the basket of goods which determine the consumption levels between developed and undeveloped economies are very different. Thirdly as the economy progresses, the working population tends to increase their leisure, so that, "the data for income per capita under-state, in this respect, the differences in efficiency between the less developed and the more developed countries."^{1/} Fourthly, comparison is made difficult because of differences in philosophical concepts. Thus the Soviet block countries, exclude wide ranges of services, such as government administration, distribution, and transportation, from the concept of national income.^{2/} Fifthly there are frequently problems of currency convertibility and it is possible to arrive at different indices which exaggerate

1/ Kiddleberger, op.cit., p.7.

2/ Ibid., p.8.

the comparative levels of production more or less heavily in favour of one country or the other. Thus it is pointed out for example that as a result of this type of convertibility problems, "the real income of Asian countries in 1950 (excluding the Middle East) amounted to \$58 per capita converted at the appropriate rates of exchange; the real level after elimination for the bias involved in differences in prices of non-traded goods and services was nearer \$195. And for Africa, for the same year, the figures were \$48 and \$177".^{1/}

Sixthly the crudity, if not complete absence, of statistics in the less developed countries makes comparison with the more advanced countries, with highly sophisticated statistical information, very difficult.

Nevertheless, the national product criterion remains a sufficiently objective measure of economic performance, in evaluating the individual economy as well as for comparative purposes. Some of the biases referred to tend to offset one another! Some tend to exaggerate rates of growth while others tend to under-state them.

National Income Data

Taking into consideration the general levels of national income and implications for growth as well as for standards of living, countries may be divided for our purpose into:

- (a) The highly developed - with per capita incomes over \$700
- (b) Intermediate -- with per capita income between \$250 and \$700
- (c) Under-developed - per capita income below \$250.

The following table indicating the position in 1961 emphasizes the low degree of economic development and well-being of most African countries compared with the more highly developed countries of Western Europe and North America (Income in American dollars):

^{1/} Kiddleberger, op.cit.

Highly developed		Intermediate		Under-developed	
Country	Income per capita	Country	Income per capita	Country	Income per capita
United States	2,308	Puerto-Rico	685	Ghana	179
Switzerland	1,463	Israel	627	Peru	145
Canada	1,459	Japan	402	Brazil	129
United Kingdom	1,149	South Africa	396	China	117
West Germany	1,072	Mexico	279	Sudan	91
France	1,034	Portugal	251	Kenya	72
Soviet Union	800			India	69
				Congo (K)	67
				Nigeria	66
				Tanzania	50

Against this background the tremendous leap required of the under-developed nations in order to bridge the gap between them and the highly developed countries becomes obvious, if not frightening. It postulates that the poor countries must somehow achieve and maintain a rate of developmental growth far in excess of that of the developed countries.

Desirability of economic growth

Most discussions on economic development presume that economic growth is desirable. Empirically this view is fully justified as evidenced by the economic policies and plans of virtually all countries of the world - policies which cut across the great divides of wealth and poverty, of ideology, of geography and of culture. But growth has its preconditions and is achievable only at some cost. Professor W. Arther Lewis, for example analyses some aspects of this cost of growth, indicating that the costs are not only economic but social, cultural and political.^{1/}

^{1/} Arther Lewis: The Theory of Economic Growth (Richard D. Irwin) pp. 420 et. seq.

The main advantages of economic growth as enumerated by him may be summarized as follows:

- (1) It gives man greater control over his environment.
- (2) It provides greater freedom for leisure.
- (3) Economic growth permits us to have more services as well as more goods and leisure.
- (4) It permits mankind to indulge in the luxury of greater humanitarianism: "the desire to care for the sick, the incompetent, the unlucky, the widow, and the orphan is not necessarily greater in civilized than in primitive societies, but the former have more means to spare for the purpose, and therefore do in fact display greater humanitarianism".^{1/}
- (5) Economic growth tends to have a stabilizing effect in poor societies, politically speaking - particularly where newly-won independence has whetted economic and social appetites and aspirations.

The main disadvantages may be summarized as follows:

- (1) The economizing spirit - economy, especially in the form of savings is a precondition to investment and hence economic growth. But this economy happens generally to be associated with the acquisitive instinct for wealth - regarded by some as a vice.
- (2) Atomization of social relations - the process of economic growth and development is largely associated with individualism; it accordingly breaks down established social and family ties and moral values.
- (3) Inequality of incomes - is associated with economic growth. The rich tend to get richer and the poor, relatively if not absolutely, poorer.
- (4) Degradation of the individual - the administrative machinery associated with large-scale industries in growing economies tends to degrade the dignity of the individual worker. He becomes a mere component of a mechanical wheel.

^{1/} Lewis, op.cit.

- (5) Problems of urbanization - growth of conurbations is associated with economic development. This leads to problems of overcrowding, increased propensity to crime, mental imbalance among a growing proportion of the population, unhealthy slums etc.

Lewis himself has amply demonstrated the futility of using these problems as arguments against economic growth. There is a world of difference between stagnation and unduly rapid rate of change. But change there must be for where change in the form of progress (which growth implies) ceases in human affairs retrogression begins. Thus some of the alleged undesirable costs associated with economic growth are not necessarily its concomitants, while others are not intrinsically evil; e.g. growing urbanization or increasing individualism. The extended family system and its related moral codes, for example, can to a large extent, be seen as causes of the poverty of many under-developed countries. The consequences of poverty-illiteracy, diseases, and high death rates - cannot be removed unless there is an attack at the roots. In the process of growth new social relationships and mores are developed which replace the old ones - and the new are not necessarily the worse. These consequences of transition have in most developed countries been accepted, at least by the policy makers and governments, as relatively small price to be paid in contrast to the explosive danger that is easily generated by the current almost general situation in which aspirations for economic growth and social welfare tend constantly to outstrip production capacity. It is therefore not such a difficult problem (if only the right approach is adopted) to convince a people to accept the necessary changes as a step towards meeting their aspirations for an economic millennium.

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(MacGraw-Hill Book Co., 2nd edition, Chapter 1)
2. Economic Development Analysis and Case Studies by
Adamantios Pepelais, Leon Mears, and
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3. Studies in Economic Development by
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ECONOMIC DEVELOPMENT PLANNING

Lecture 2

Theories of Economic Development their Characteristics and Limitations

The path of economic history is littered with many theories not only of "economizing", but of expansion and of wealth. Thus Brenner's analysis of these theories, for example, spans the whole era from the Mercantilists to the present day.^{1/} But as he himself points out, "man's longing for material welfare did not begin with the era of mercantilism",^{2/} and it is possible to go even further back in history to find in writings such as those of Plato or Aristotle, economic as well as political or ethical postulates.

But partly because the growth path of developmental theory was not itself uniform or sustained, and partly due to limitation of time, only aspects of the more provocative theories will be outlined at this stage.

1/ Y.S. Brenner; Theories of Economic Development and Growth
(George Allen & Unwin 1966)

2/ Ibid., p. 13.

Economic theories or models are simplified statements intended to indicate the causal as well as the resultant effects of the inter-relationships between given economic variables. As Kindleberger puts it, an economic model purports "to illustrate causal relations among critical variables in the real world, stripped of irrelevant complexity, for the sake of obtaining a clearer understanding of how the economy operates, and in some formulations, in order to manipulate it."^{1/}

The end of the middle age saw, in the 16th and 17th centuries, the emergence of a new merchant class. They were essentially practical business men, motivated in the main by the following common objectives:^{2/}

- (1) Identification of national wealth and national power - and a preoccupation with how to increase the former in order to attain the latter.
- (2) Belief in State intervention in economic affairs. They accordingly advocated the removal of internal restrictions to trade within the State, but protection from external competition.
- (3) Belief in large population both as a source of supply of more workers, and a means of boosting demand through increased consumption.

The classical economists of the 18th and 19th centuries, on the other hand, starting with Adam Smith, "all believed in natural law as a philosophy of life, which in economic terms meant laissez faire, as a natural consequence of being opposed to government interference, they were free traders. From Malthus on, they feared population pressure on resources might become chronic and keep wages of common labour near a subsistence level. And beginning with Ricardo and continuing through

^{1/} Charles P. Kindleberger: Economic Development op.cit., p.40.

^{2/} For a fuller treatment of mercantilist views in the context of economic growth, cf. Stephen Enke: Economics for Development, Chapter 4.

Mill, they evolved an increasingly deductive body of economic theory that related capital, resources, and population in the development process".^{1/}

We thus see in the views of the mercantilists and the classical writers, the genesis of a still rather potent issue - namely, whether economic stagnation is caused by insufficient demand or, on the contrary, by insufficient supply. Not all economists even of the classical school were agreed on the subject. However, the controversy appears to have little relevance for the under-developed world. In these countries both demand and supply are at low levels and this can be seen partly as a consequence, not cause of under-development.

An example of how the classical mind worked may be illustrated by Richardo's growth model which sees land as the limiting factor to growth. As Kindleberger summarizes it, "Like Smith, Richardo believed that growth resulted from 'accumulation' or capital formation. But accumulation in turn was a function of profits, which depended on wages, which depended on the price of food, which depended on the availability of land or food imports".^{2/} (Emphasis mine).

~~Thus output is limited by available resources and growth stops at T because sooner or later owing to diminishing returns at that point whose rent is so high that profits fall to zero.~~

For a while after the classical economists, growth was taken for granted in Western Europe. The work of J.M. Keynes renewed interest in the subject following upon the depression years of the 1930s. He pointed out that the economy would be stabilized where capital investment exactly equalled savings. But this could be at less than full employment. This was the point of departure for the Harrod-Domar model of growth. R.F. Harrod observed^{3/} that the amount of additional spending over a given period to maintain full employment income is a function of the relationship between capital and output; i.e. the capital/output ratio.

^{1/} Ibid, p. 70.

^{2/} cf. Charles P. Kindleberger, op.cit., p.40.

^{3/} Ibid., p. 46.

E.D. Domar worked on the same lines as Harrod but laid greater emphasis on the enlarged capacity of the economy for growth due to prior investment. The important thing in the Harrod-Domar model is its focus on the role of capital. But it presumes a constant capital/output ratio which cannot be the case if there is a differential in the growth rates between labour and capital. It also fails to allow for technological progress.

Neoclassical economists like Robert Solow, J.E. Meade, Paul Douglas have attempted more complex theories that would overcome these and other deficiencies of the earlier models - e.g. to allow for factor substitution (as between labour and capital), for changes in capital/output ratios, etc. But they too have the tendency to oversimplify the dynamism of the actual world. As such there is as yet no economic model or theory which can be relied upon by the under-developed countries to provide the magic key to their problems of poverty. The Ricardian model in which growth is limited by the non-availability of land or natural resources, was disproved (or, at least, proved irrelevant) by the developmental history of Western Europe, the USA etc.). Analysis of the growth of the US and other countries more recently tends to show that increases in output is much more rapid than inputs of capital, land and labour. Factors such as innovation, managerial capacity, increments in human capital have all been suggested as possible explanations.

More significant perhaps is that most of these theories presume a unified if not homogenous economy - and this is exactly what most under-developed countries are not. For example, under the Keynesian or Harrod-Domar models, one would expect that as and when investment and economic growth increase faster than the population, employment would increase and unemployment decrease. For most African countries, however, unemployment increases, not decrease, with more investment - even in countries like Nigeria where rates of economic growth as high as 5.6 per cent have been achieved. The problem here is not necessarily that the economic

models are wrong, but that they tend to be applied to situations for which they were not intended.

It looks plausible, therefore, to suggest that what is required of analysts of growth is not one but a series of theories or models, which would be applicable to varying stages of economic development. A prerequisite would be an identification and analysis of these stages and quite a few economists have devoted attention to this problem.^{1/}

The stages identified have usually proved to be of limited applicability. Commanding greater contemporary attention is the stage theory postulated by W.W. Rostow.^{2/} He postulates five main stages of growth:

- (a) Traditional: a stagnant economy in which techniques are unchanging; high birth and death rates with stabilized population.
- (b) The preconditions stage: in which old attitudes, practices and organization change in favour of economic progress. The rate of growth is slow, but innovation is welcome.
- (c) The take-off: this is the critically important stage when remaining obstacles to change are broken down and the rate of investment jumps to about 10 per cent, and the rate of growth is rapid.
- (d) Maturity: at this stage, rate of economic growth surpasses the rate of population growth and so per capita income increases. Technical change is widely accepted and there is as it were, a built-in-self-generator within the economy.
- (e) Mass consumption: the stage of high incomes, high standard of living.

^{1/} W.W. Rostow: The Stages of Economic Growth (New York).

^{2/} W.W. Rostow: The Stages of Economic Growth (New York 1960).

Rostow's thesis suffers from the deficiency of failing to indicate the time period during which each stage can or does last. Casual relations are beclouded. His emphasis is on innovation. But little explanation is given of what initiates the change or innovation in a traditional society which has been set in its technological methods and cultural traits for centuries, or whether the same catalyst will have the same effect in each and every such society. In any case it does not nowadays follow that a country at one stage in Rostow's time series, needs necessarily pass through all or any of the subsequent intermediate stages.^{1/} Economists are thus far from developing one or more water-tight theories of the developmental process. Some of the thinkers have naturally drawn theoretical conclusions from the facts and background with which they were familiar. Even the under-developed countries themselves are generally similar only in the fact of their common economic backwardness. Equally significant is the degree in which these countries on the one hand differ from the more advanced nations on the other and hence in the pre-requisites or preconditions for development.

The uniform and uncritical application of a given economic model is therefore fraught with grave dangers. Indeed, arising from the very fact of under-development, there is a serious lack of the statistical material required to verify the applicability or otherwise of most growth models to backward countries.

Models of economic growth are useful for isolating and emphasising critical variables in the growth process, that need to be identified and quantified for purposes of measuring growth and planning for it, as well as the various methods which may be adopted. To this extent they are universally important. Indeed some of the important conditions and concepts in developing countries today are very akin to those that went before. The mercantilists identification of national wealth

^{1/} cf. for example, Alexander Gerschenkron: Economic Backwardness in Historical Perspective; and Albert O. Hirschman: The Strategy of Economic Development.

with national power may not always be true, but it has never had greater potency than as at present. Their interventionist and protectionist policies have in varying forms become perhaps even more rationalized as preconditions of growth in the developing countries of today. The emphasis of the classical economists on capital and effective monetary policies, and the threat of population pressures to economic development remain equally relevant. So it is the application of individual growth models which need to be approached with caution. Thus the problem about growth theories is not so much their internal inconsistencies, but that their variables have been chosen with relevance to particular time and place and can hardly therefore have uncritical universal validity and application. The conclusion, therefore, is not that the theories should be ignored, but that they need to be put to pieces and readjusted to suit the particular situation of a particular country.

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5. Theories of Economic Development and Growth, by Y.S. Brenner, Chapters VI and VIII.

ECONOMIC DEVELOPMENT PLANNING

Lecture 3

The Determinants of Economic Growth

The concept of labour as a factor of production constitutes the central core of the manpower problems in economic development and will therefore be given special consideration subsequently. This lecture is therefore devoted to the role of natural resources and capital and of the more important non-economic factors as determinants of growth.

Natural resources

In general usage, the term natural resources embraces all the physical environment, in its widest sense, which man may exploit for his material well-being. For various reasons, not all such resources are being immediately exploited. Only a fraction of solar energy of the contents of the bowels of the earth have been tapped, partly due to the state of scientific and technical knowledge and partly because there are ready and more economic substitutes. The concept of natural resources is thus both dynamic and shifting and has important consequences for the economy. The dieselization of the railways in Nigeria coupled with the discovery and exploitation of natural gas and petroleum has considerably reduced the economic value and exploitation of her coal deposits. Uranium has just been discovered in commercial quantities in the Niger Republic and will commence to be exploited in 1968. But it was there all the time.

This suggests that emphasis on natural resources availability may often be misplaced. But while it may be true that the availability of natural resources may not be an adequate condition for economic growth and development, it is equally true that there can be no meaningful and sustained growth without resources. Even on the basis of existing knowledge and technology, however, many under-developed countries are better endowed with natural resources than is generally apparent. Nigeria, for example, produces about 98 per cent of world's output of columbite

and a sizeable proportion of its groundnuts, cocoa, and palm products. The Congo (Kinshasa) produces 75 per cent of the world's cobalt, over 65 per cent of its diamonds, and about 60 per cent of its tantalite. Nigeria, the most populous country in Africa, nevertheless, has only a population density of about 150 persons per square mile.

Moreover, it has been pointed out that, at any rate, the relative role of natural resources declines as an economy develops and that "the ratio of natural resources to the complex of all resources used by a country in the creation of its national income falls from about 20-25 per cent to a low level of about 5 per cent, as an economy advances from lower to higher stages or as we move from a pre-industrial to a developed economy."^{1/}

One has to be careful, however, not to misdirect such arguments. The highest return that 98 per cent of the world's columbite has ever fetched for Nigeria was only 72,136,000 (i.e. in 1960), and even with all her other natural sources now including petroleum, Nigeria is among the 12 per cent of the nations of the world with the lowest per capita income. Not does the tendency to use decreasing proportions of natural resources in the production process mean that less absolute quantities of such resources are demanded. The great problem of the developing countries in regard to their natural resources endowment, however, has not been so much the paucity, but, the real value, in terms of their contribution to the national product. Attempts by developing countries to sustain economic growth by increasing production or export of natural resources, is bedevilled by the fact that they are frequently confronted by adverse terms of trade, partly because of the relative inelasticities of demand and supply (and therefore prices and incomes) of raw materials and foodstuffs compared with manufactured products.

There is also the view which experience seems to sustain, that the failure of most African countries to develop on a base of natural resources, even when these were adequate, stems partly from the price manipulations

^{1/} Adamantios Pepelesis & Others: Economic Development, p. 19.

of colonial monopolist combines, and the policies of colonial governments which not only discouraged free international trade, but also the development of manufacturing industries in their territories.

Nevertheless, as long as the countries concerned depend on exporting their natural resources, so long will they tend to face the problem of disadvantageous barter terms. On the other hand, the co-operating factors necessary to process the resource at home or ensure their optimum utilization, are generally in short supply - particularly capital and skilled labour.

Capital and technology

What has been said so far already reflects the importance of capital for promoting and sustaining economic growth. Capital is usually defined as produced means of production - i.e. all goods which are produced for use (in contrast to consumption) directly or indirectly in future productive output. It includes the physical plant and equipment, factory buildings and the inventories of intermediate and semi-processed materials. It is not easy to measure the capital endowment of a nation. One may estimate the value of capital goods by capitalizing the expected returns from their use over a given period. But, their yields at any point of time may not necessarily reflect their real value. Their existing market value may be obtained - but again this may be biased upwards or downwards, even when depreciation has been allowed for. In under-developed countries in particular, capital depreciation allowances are often fixed so high as an inducement to attract foreign investment, that generally speaking, the existing recorded value of capital stocks is far below the real market value. For certain items, such as roads, harbours, telephones, etc., generally referred to as infrastructure, there is a large element of social overhead that does not enter into exchange of market valuations. In developing countries today much communal effort goes into capital creation in the form of construction of roads, dwelling houses and even factories, most of which are unvaluated in monetary terms.

For these and other reasons, similar problems of international comparison bedevil capital as has been noticed in respect of international income.

In spite of these problems of measurement, the concept of capital is clear; and its relative scarcity "is probably the most common characteristic of economically under-developed regions."^{1/} Thus installed electric generating capacity, railways, telephones, etc. per capita are extremely low in the under-developed countries, compared for example with Western European countries and North America.

Capital formation depends essentially on the amount of savings available, and savings is a function of income, the correlation being positive. But the under-developed countries, by definition are poor, and savings are therefore extremely low. It follows accordingly that an important element of development policy in the under-developed countries must be directed towards increasing the levels of savings.

Yet most countries in Africa today are saving less than 6 per cent of their national incomes. In spite of their poverty, much more could be done under existing circumstances to canalize and utilize existing capital or savings resources more productively. The processing of heavy and bulky natural resources - e.g. groundnuts, timber, cocoa, into semi-finished products often require less capital investment than is often realized.

It remains true, however, that the extent to which this can be done is rather limited, in an increasingly inter-dependent world, by the level of technology, attained in the less developed, but in the most advanced nations. No nation, however rich in iron ore, can today competitively produce iron and steel without involvement in high capital costs: there is, that is to say, little room for an intermediate technology. Rational incentives for assuring savings and investment must therefore constitute a cornerstone of governmental policies in developing countries. Tax reliefs, guarantees of freedom to export profits, the development of

^{1/} Ibid., p.92.

industrial estates, assurances against nationalization, budget surpluses and their investment in productive uses are all important methods for raising the level of capital in developing countries.

Non-economic factors in development

Economic activity takes place within a complex of social and cultural inter-relationships. Economic development is thus a problem which transcends the economic frontiers alone.

The process of economic development involves a continuous break with the past - more so in the under-developed countries of today, perhaps, than in previous centuries. Institutions which grew as part of the development process in other countries, are today transplanted, often without adequate preparation in the receiving countries. They require for their success a certain amount of social and cultural adaption and receptivity.

It is true, as the Japanese example amply illustrates, that the process of economic development, need not always break up existing social relationships. Many governments in under-developed countries actually decry such breakup and commit themselves to stemming the process. But it is an uphill task to stem the tide of such changes. Indeed an effective economy policy which envisages growth must not only accept the changes, but induce and canalize them.

As has been pointed out, the values, use and exploitation of natural resources are directly affected by the socio-cultural environment. The same applies to capital resources. Development policy must therefore be geared to tackling the problems of change at the roots. Abolition of uneconomic land tenure systems, and the encouragement of more rational utilization of land resources need to be given special attention in many countries. In some developing countries, of which Nigeria is a good example, ritualistic, burial and naming ceremonies, annual festivals, performance of unnecessary chieftaincy rites - all these consume incomes which could with advantage be saved and invested. Discouragement of this type of conspicuous consumption and waste, must constitute part of a rational programme of economic development.

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ECONOMIC DEVELOPMENT PLANNING

Lecture 4

The aims and elements of development planning

In nationalist arguments for independence, colonial exploitation was usually held out as being responsible for their backwardness. It is only natural therefore to think that, with independence, the economic paradise was just around the corner. Even if this were true, negotiating a corner always has its problems, and it is rewarding that as a result of experience in the last few years much of the illusions of the past are now dissipating. And it is now more than ever realized that planning is an essential pre-requisite to the attainment of the lofty goals to which the under-developed countries are directing themselves. A plan is however much more than a mere collection of projects or programmes, intended for implementation. In this context, project refers to the smallest unit of development activity; for example, the building of a road between two towns. On the other hand, a programme would include a number of such related projects. On the other hand the term "plan" is used as a generic term to include all programmes properly appraised in terms of their inter-relationships and directed to achieving well-defined national objectives, over a given period of time.

The basic reasons why such planning is undertaken are, firstly that resources and productive capacity are limited in relation to the needs and objectives of society. Secondly, in developing countries, in particular, there is an urgent need to increase the productive capacity of the economy. Thirdly, change was extremely slow, and there is need for concerted effort to be made to increase the rate of change and to see "that the various governmental measures fit together sensibly and have the desired impact on development".^{1/} Fourthly "development plans may become an integrating force drawing the people of the country toward national unity as they are drawn into the development effort".^{2/}

To realize the need for planning is, however, only the first step in the long and arduous journey towards development. Planning itself must be adapted in the varying characteristics of the individual countries. Nevertheless, there are certain common elements, and all effective development planning involves the following major tasks:

- (a) an appraisal of the country's economic potential for growth;
- (b) setting production, investment and resource mobilization targets in the light of such appraisal;
- (c) allocating resources to projects and programmes;
- (d) formulating appropriate economic policies; and
- (e) devising appropriate development institutions and adopting and implementing the development plans, adapting them to experience as circumstances change and more knowledge of the development process is gained.^{3/}

Since, the circumstances and problems faced by individual countries are diverse, national development plans may vary all the way from full-scale Socialist planning, as practised by the Sino-Soviet bloc countries, to the so-called "indicative" planning now practised in France.^{4/}

1/ Louis J. Walinsky: The Planning and Execution of Economic Development, p.22.

2/ Everett E. Hagen: Planning Economic Development, pages 17-18.

3/ c.f. Walinsky, op.cit. p.9.

4/ Ibid., pp. 10-11.

Whatever method is adopted, experience shows that it is necessary for a plan to be as comprehensive and as carefully integrated as possible; it must indicate the means for achieving the development goals, the various methods by which such means shall be acquired, and to locate and eliminate the various difficulties and hazards which are bound to be encountered in the process of the plan implementation.

These basic elements of planning may be grouped into five major headings.^{1/} These are as follows:

- (1) Screening of individual proposals. This involves appraising both the intrinsic value of an individual project, and its relation to others.
- (2) Ascertaining project complementarity. This is related to the first point, but the emphasis here is to ensure that projects, facilities and services proposed by different agencies include those needed to complement and assure the feasibility of each other's projects and programmes, including those of the private sector.
- (3) Evaluating the relative desirability of all components of the plan including government activity and also private consumption and investment.
- (4) Adjusting levels of aggregate demand for goods and services, if there is prospect of its being too high or too low in relation to the prospective or anticipated level of economic activity.
- (5) Determining investment and consumption levels. While the level of investment alone is not adequate to determine the overall level of economic performance, it is, as we have seen, of crucial importance. The decisions involved here include whether, by how much, and in what direction, government expenditures should be expended or curtailed, whether and to what extent credit should be liberalized and for what purposes, etc.

^{1/} c.f. Hagen, op.cit., pp. 11-16.

The concept of balanced growth

As against the so-called pure theories of growth, such as those covered in Lecture 2, there has developed, as a proposed guideline to planners, what is popularly known as the "theory of balanced growth". Hardly a theory, however, its protagonists emphasize the need for equal (or balanced) emphasis to be placed simultaneously on different sectors of the economy. Thus industry and agriculture should grow at the same pace, and sectoral developments in transport, supply of energy, etc. should be harmonized.

So stated, the theory is easy to criticize. As Hirschman put it, "development presumably means the process of change of one type of economy into some other more advanced type. But such a process is given up as hopeless by the balanced growth theory which finds it difficult to visualize how 'under-development equilibrium' can be broken into at one point..... the balanced growth theory," he continues, "reaches the conclusion that an entirely new, self-contained modern industrial economy must be super-imposed on the stagnant and equally self-contained traditional sector. This is not growth, it is not even the grafting of something new onto something old; it is a perfectly dualistic pattern of development"^{1/}

This is, however, hardly a fair criticism, for as Hirschman himself conceded his view of the theory is far from being the true picture that was in the minds of its authors. A criticism of perhaps more fundamental importance is that the theory tends to call for investment in many different sectors and directions at the same time, and requires huge amounts of those resources and abilities which are generally in very limited supply, in spite of their criticisms, however, experience in many under-developed countries gives some cause to take the balanced growth theory more seriously. The tendency to concentrate development projects in a few cities, the high productivity and consequent relatively high incomes in the industrialized and other modern sectors of the economy,

^{1/} Albert O. Hirschman: The Strategy of Economic Development; pp. 51-52.

result in rural depopulation, and an increase not only in the urban, but in the general levels of unemployment. The political, social, and cultural consequences are of serious nature, and can be mitigated only by a more balanced dispersion of development programmes and activities, by improving the social services in rural areas, and by paying more practical attention to programmes designed to increase agricultural and rural incomes.

While development will always involve social as well as economic costs, it is necessary, (indeed vital) that the harshest effects of the forces of disequilibrium associated with the growth process, should be mitigated. To this extent the concept of balanced growth provides at least some useful qualitative guidelines to development planning.

Appraising potential and setting growth targets

It has been indicated that the first tasks of planning should be to appraise the development potential and proceed therefrom to set growth targets. Appraisal involves the following elements:

- (1) A broad assessment of the character, structure and directions of production. This will indicate the growing as well as the declining economic sectors.
- (2) Land and Natural Resources Endowment. This includes an appraisal of existing agricultural output and production techniques and forests, mines etc. to see how effectively they are being utilized.
- (3) Labour. Ascertaining the size, composition, productivity, motivation etc. of the labour force.
- (4) Capital. Here it is necessary to evaluate existing capital facilities - dams, canals, railways and rolling stock, harbours etc. their current state, and how effectively they are utilized.
- (5) Government machinery and policies. This involves both a qualitative and quantitative appraisal of the services generally rendered

by government - the quality and adequacy of water supply, the dependability of the electricity, telephone and postal services; the quality and effectiveness of the educational system.

- (6) Location of entrepreneurial and managerial talent. An assessment of the distribution of wealth and to what extent it is being economically utilized.
- (7) Appraising existing economic activities. The aim is to locate waste and idle capacities and to evolve measures for overcoming bottle-necks.
- (8) Foreign exchange potential: here an assessment should be made of the balance of payments trends and current position, and of potential for earning foreign exchange. In regard to setting development targets, four basic problems need to be tackled. The first is to set the period of the plan itself. Planning for too long a period ahead is fraught with increased statistical difficulties, and the community tends to lose interest in the plan after a while. There is also a danger that governments will change and the plan drastically altered or thrown over-board. A plan should therefore be normally of between 4 years and 6 years' duration.

Secondly, resources have to be reconciled with growth objectives. But it is best to set growth targets which will stretch the resource capacity and ingenuity of the government, private industry as well as the whole community.

Thirdly, targets should be set sectorally - increased agricultural acreage, increased railway rolling stock, etc. - and aggregated in terms of the Gross National Product. This will facilitate both sectoral and general appraisal of the economy in terms of the growth rates achieved.

Fourthly, the plan should include consumption and investment targets so as to indicate clearly the immediate benefits as well as the further sacrifices to be required of the community.

There are no formulae to indicate how large an increase in per capita output on the individual plan should be. Considering the high rates of population growth 4 per cent should probably be regarded as a minimum target consistent with any meaningful long-run development. If it is to catch up with the advanced countries, then growth targets of between 5 per cent and 7 per cent, requiring an annual investment of between 15 per cent and 20 per cent of the gross national product should be the aim.

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4. Studies in Economic Development, by Bernard Okun & Richard W. Richardson.
5. Lectures on Economic Development - International Institute for Labour Studies (Geneva 1962) pp. 11-22.

Lecture 5

Development Institutions and Economic Policy

Too often, however, the importance of addressing the nation's efforts to the task of development is befogged by endless debate as to the sharing of responsibility for planning, and the execution either of the plan as a whole or sectors of it. The question is generally bedevilled by ideological under tones - communism versus democracy; socialism versus free enterprise, etc. This ideological argument is becoming rather puerile. Most under-developed countries today (notwithstanding any protestations to the contrary) are neither communistic nor democratic; more significantly, they are concurrently both socialistic and free enterprise.

So far as the individual or private firm is concerned, the propelling motive in undertaking any economic activity is to make profits. So far as the government is concerned, the motive is much broader - it is to ensure an increase in the productive capacity of the whole economy, with the objective of promoting the welfare of the people. But not all activities which enhance the productive capacity of the economy or promote social welfare which are, in the narrow economic sense, necessarily profitable. It follows, therefore, that a government must combine the duty both of promoting or encouraging private enterprise in those areas which are prima facie "profitable", and undertaking by itself such other tasks which, though not directly economically profitable, can be expected to enhance the economy's productive capacity.

The main functions of government, in so far as promoting economic development is concerned, may be summarized as follows:

1. To defend the integrity of the nation and assure political stability. Political instability destroys the confidence of private investors and saps the energies and resources of the government.

2. Building and maintaining the infrastructure and social overheads: these include roads, communications, hospitals, water supply, electricity supply, educational and training institutions, harbours, extension work, etc.
3. Mobilizing capital for development. Government can do this through budget surpluses, establishing development banks and credit institutions, and borrowing or guaranteeing loans from abroad.
4. Direct participation in industrial production. Particularly in fields which are assessed as essential for the development effort but which are not obviously or immediately profitable, or which require such amount of capital or special resources that only government can reasonably provide it, e.g. an iron and steel complex.
5. Formulating, developing and executing economic policies which will promote economic growth and development consistent with national objectives.

Economic policy

The development plan, as we have seen, is a composite of related programmes intended, when completed, to attain certain well-defined economic and social objectives. Accordingly, the formulation, development and execution of economic policies as mentioned under Item 5 above becomes a cardinal element in development planning and execution. A well-thought-out economic policy should give unequivocal direction both to the economic planners and executors in government as well as in private industry, and would emphasize not only the broad goals, but also the manner in which it is intended that the goals shall be attained.

The more comprehensively the economic policy of a nation is spelt out, the better it will be for removing any doubts and ensuring that private and foreign individuals and governments interested in assisting or participating in the development effort, do so with a full knowledge

of the implications. The various aspects of such a policy have been summarized by Walinsky as follows:^{1/}

1. Budgetary Policy: This should as already mentioned be directed towards achieving as substantial surplus of government revenue over current expenditure so as to enable government to contribute to capital investment.
2. Tax policy: The aim of this should be not only to generate the necessary revenue in support of the budgetary policy already indicated, but also to direct public and private expenditure on lines which are consistent with the development programme.
3. Credit policy: This will need to be formulated to ensure that adequate volume of credit at reasonable rate of interest is directed towards those sectors of the economy which need capital for their development.
4. Foreign Trade and Exchange Policy: This is intended to ensure, firstly, the maintenance of the convertibility of the local currency and the importation of commodities essential for development, as well as encouraging the exports of such commodities that tend to earn vital foreign exchange. Normally, foreign exchange reserves should be maintained at levels equivalent to about three to six months' import requirements.
5. Tariff Policy: This is allied to the foreign exchange and tax policy. Apart from revenue functions, it should be indicated by what method tariff policy is intended to be used as a means of protecting infant industries during their gestation period.
6. Price Policy: Again, this related to both tariff policy and tax policy. Generally speaking, free competitive pricing is desirable, except in such a situation requiring protection for infant industries as already indicated. In case of goods and services provided by government and other public bodies, however,

^{1/} Louis J. Walinsky: The Planning and Execution of Economic Development.

it should generally not specifically require charging of economic prices, since such services usually include an element of social overheads.

7. Wages Policy: Where effective Trade Unions exist, perhaps it is best to permit salaries and wages to be set by process of collective bargaining within industry. Nevertheless, there will always be cases where labour exploitation will need to be guarded against and for this purpose, it should be part of national policy to determine minimum levels of wages and conditions of service at regular intervals.
8. Manpower Policy: This policy should indicate how the usual shortages of skilled and entrepreneurial manpower will be met through utilization of scholarship schemes and development of existing educational and training institutions. A manpower policy also should indicate clearly government attitudes towards the utilization of foreign skills.
9. Nationalization Policy: Most developing countries are usually anxious to attract foreign investment as well as encourage local indigenous business investors. But efforts in this direction, are often thwarted by hasty and ill-considered nationalization measures. While such actions cannot be completely ruled out particularly where it is dictated by strong political considerations, it needs to be given very careful thought and guarantees must be given of independently assessed compensation for those whose enterprises are nationalized.

Organization for planning

The planning organization in developing countries should be as all-embracing as possible. But the setting up of an effective planning organization is a primary function of government. There should be a permanent organization in which the highest public functionaries are involved as well as important private organizations, such as employers and the trade unions. Such an organization may take the form of a

planning board which has the power to take decision or a ministry under a senior minister of State or a planning commission.

The main advantages or disadvantages of deciding which of its type of body need to be carefully weighed in the context of the country concerned.

Whatever organization is adopted, however, the staffing of the Planning Office is of extreme importance. It should have on its staff, top-rate economists who would be concerned with economic intelligence questions, manpower problems, economic statistics relating to consumption, trade prices, etc. for example, monetary and credit problems. The major sectors of the economy by industry, such as agriculture, mines and power, manufacturing, communications and education should come under the continuous purview of specialist staff in these areas. There will be need also for technical and high professional staff such as engineers, agronomists and other technicians who will appraise the technical aspects of projects and programmes so as to ensure their feasibility, determine methods of implementation and their linkage effects with other programmes within the plan. The organization must have a section or division concerned primarily with the co-ordination of the plan and a continuous review of its implementation, analysing the progress made, the difficulties encountered and the bottle-necks which need to be overcome.

Economic development planning and execution is too often seen as an exclusive function of government in developing countries. But the population are invariably required to make sacrifices and other contributions which will make the plan a success. It is essential, therefore that, firstly, at the higher level of planning, private industry and labour organization should be brought into the process so that not only will their experiences find expression in the plan, but that they might identify themselves, more readily with it, and co-operate in assuring the attainment of its objectives.

Secondly, planning should be regarded as a two-way sequence, that is to say, that while the final decisions regarding the plan and the preparation of the more technical and important projects must be undertaken at the top, even the villages and local communities should be given an opportunity of expressing their own expectations and aspiration, of the contributions they are willing to make in the form of local effort and community development, etc. Only in this way can it be assured that the general population are aware of what development means, of the efforts and sacrifices required of them, and that they would identify themselves with the objectives of government.

Lectures 6 and 7

Population and Economic Development

Summary

By manpower we mean the stock of human capital of a nation; it implies both the physical human beings and their skill content, as acquired through education, training and experience.

The population of a country is evidently the source of its manpower and provides, therefore, the departure point for the consideration of manpower questions. Since it is not all the population of a nation that constitute its manpower, the population is usually classified into:

- (a) Potential labour force - all those capable, willing and available for productive employment (determined by age, legal requirements, health, old-age, culture, educational development, etc.
- (b) Occupied labour force - those actually employed and may be fulltime, part-time or under-employed.

The relation between population and economic activity is two-way:

- (a) Population is the source of the labour supply and entrepreneurial skills.

- (b) On the other hand, the reason for economic activity is to satisfy the wants of the population.

Population therefore is both an agent and in some sense the end of economic activity and economic development. In analysing the relation between population and economic development, therefore, one needs to look both ways at:

- (a) the influence of economic development on population; and
- (b) the influence of population on economic development.

A. Influence of economic development on population

The influence of economic development on population can be classified into:

- (a) changes in size of population;
- (b) geographical dispersion;
- (c) economic, industrial and occupational redistribution;
- (d) qualitative changes, e.g. improvement in standard of living;
- (e) changes in age structure.

Size of population

The size of the population is determined over a given period by the interaction of birth rates, death rates and immigration. Nowadays there are very strong international barriers to large-scale movements of people from one country to another: immigration may therefore be ignored at this stage. Perhaps the most famous of population theories, indicating some relation between economic development (rise in real incomes) and population growth, is that of Malthus. He postulated that rise in incomes tended to increase birth rates and to reduce particularly the death rates: thus leading to an increase in population. Unless something was done, however, this led to an increase in the labour force and ultimately in the lowering of incomes.

The views of Malthus have been critisized in and out of context - but they cannot be dismissed lightly by developing countries of the

modern world. How important the problem has become may be gleaned from an examination of the more recent analysis embodied in the so-called theory of the demographic transition.

The theory attempts to explain changes in the size of the population as a country develops from a stagnant under-developed economy to one of advanced technology and high incomes. Four main stages are identified:

In Stage I: we have a stagnant, peasant under-developed economy; both birth and death rates are high, the former always a bit higher. The death rate runs a zig-zag course because of incidence of famine, epidemics, internecine warfare, etc. High birth rate sustained by moves in order to sustain the population, owing to high death rate; also children have economic and social security potential.

Death rates are also high because of poor diets, primitive sanitation, poor curative medical facilities, etc. The result is a fairly stable population.

Stage II: Economic development has effect of reducing both birth and death rates. But its effect is felt first on death rates because of:

- more regular food supplies
- advances in medical knowledge
- improvement in sanitation
- availability of cheap insecticides, DDT etc. and help of international organizations, e.g. WHO
- better education and changes in receptive attitude to change.

Birth rates tend to remain high because customs and attitudes regarding marriage, sex relations etc. are usually rigid. Accordingly we tend at this stage to have what is popularly known as a population explosion.

Stage III: Further economic development leads ultimately to reduction in birth rates because of:

- increasing urbanization
- decline in importance of children in economic activity and for social security purposes
- it is expensive to train children
- labour contracts are based essentially on the individual.

The countries of European settlement appear to have reached this stage between 1750 and 1850 when the population more than doubled. It trebled again between 1850 and 1950.

Stage IV: Birth rate again levels off somewhat parallel to the trend in death rates; there is a limit to the level to which birth and death rates can be reduced. We therefore tend to return to a condition of only gradual growth in population.

Criticism

The theory "seems to be the best available to describe the expected course of events in the low-income areas of the world today if their economies are developed."^{1/} Nevertheless its entire applicability may be doubted because:

- (a) it provides no measure of the rate of change that can be expected;
- (b) it is now possible to reduce death rates markedly without deep fundamental changes in or reorganization of, the peasant economy. Thus "substantial economic improvement may be a sufficient condition for a decline in mortality, but it is not today a necessary condition";^{2/}
- (c) it is thus uncertain that European population experience will be repeated in the under-developed world of today;

^{1/} Ansley J. Coale and Edgar M. Hoover: Population Growth and Economic Development in Low-Income Countries, p.13.

^{2/} Ibid., p.14.

- (d) the theory does not state the conditions precedent or favourable to fertility decline; and some countries have retained high birth rates even in conditions of economic progress, e.g. Ceylon where since 1921 death rate has declined from about 30 per thousand to about 10 per thousand. In other countries (India and Egypt) the differential between fertility in urban and rural areas is almost non-existent;
- (e) the existing rapid growth in population noticeable in under-developed countries may make it even more difficult to accomplish the economic and social developments which reduce the fertility rate.

Nevertheless the theory has its lessons - namely, that the prospect of population growth in developing countries today is such that the Malthusian nightmare could easily become a reality. Somehow they must find the means to sustain economic development at rates unprecedented in history, or develop population policies which will reduce not only death rates, but the birth rate as well - otherwise their modest effort at economic growth will be swallowed up by their less modest achievement in population.

Geographical redistribution

Economic development leads to a geographical redistribution of the population for the following reasons:

- (a) the modern sectors of the economy are generally concentrated in a few urban centres which have strong locational pull. Owing to the higher rates of income derivable therefrom and better employment opportunities there is a tendency for populations to gravitate to these areas. The better social amenities normally available in the urban areas also tend to attract population away from the rural areas; electric lights, cinemas, health and educational facilities, etc. There is therefore a tendency for rural depopulation and for increased urbanization as the economy develops.

- (b) the discoveries of new resources e.g. coal, iron ore, tin, petroleum, lead to mass movement of population to the areas concerned. The converse, i.e. exhaustion of resources can lead to the appearance of "ghost towns".

Industrial redistribution

As an economy grows there is a change in the allocation of the working population between industries and occupations. The trend is usually away from agriculture, handicrafts, etc. to manufacturing, commerce and service industries; and from unskilled to professional, technical, skilled and semi-skilled employments. These movements are usually both a cause and a consequence of economic development.

Population quality

The inherent quality of the population itself tends to increase with economic development. Indeed this is the raison d'être of economic development. And it is reflected in higher standards of living, better education, health, social security, longer life span, etc. Indeed it is the hope of attaining these ends which sustains a nation in its development effort, and makes the cost thereof worthwhile.

Changes in the age structure

It is often held that since economic development improves the standard of living, medical and health facilities, etc., it increases the span of life. Since more people live longer, the population of those in the higher age-groups would increase relative to those in the lower age groups below 15 years. Contrast is drawn in this respect between the developing and developed countries. In Nigeria for example, persons below 15 years of age constitute about 43 per cent of the population as against about 23 per cent in Great Britain.

It must be pointed however that the proportionate change is not inevitable, and much depends on whether economic growth leads to a decline:

- (a) in birth rates or
- (b) in death rates; or
- (c) in both death and birth rates.

A decline in death rate which is general does not necessarily lead to a decline in the proportion of the younger age-group, if the birth rate is unchanged (stage II of the demographic transition). It is only a sustained low fertility (birth rate) which can have this result. As Coale and Hoover put it, in a closed population, "the principal determinant of the age distribution is the course of fertility. Persistent high levels of fertility give a narrow-based age distribution. If fertility is low enough, the age distribution may be broader in the shoulder than at the base . . . " and "conversely, mortality changes of a sort that usually occur have only a slight effect on the age distribution."^{1/}

B. Influence of population on economic development

The influence of population on economic development may be examined from three points of view:

- (a) the absolute size of the population
- (b) the growth rate of the population
- (c) the age distribution.

Size of population

The size of the population of a country is often an index of the size of its market. Accordingly a large population, all things being equal, is more likely to stimulate economic development and attract overseas capital and entrepreneurship, than a small one. Division of labour and economies of scale are likely to be more feasible and more pronounced where there is a large population. In a sparsely populated country, certain economic activities would not be worthwhile carrying out, either because of limited demand, or because of lack of adequate manpower - large iron and steel complex, railways, manufacture of motor

^{1/} Coale and Hoover, op.cit., p.22.

cars, for example. On the other hand more population means more consumers: given equal resources, therefore, it is more likely that development would be faster in a country with a smaller population.

These views are, however, relative and introduce the concept of an "optimum population" (one which is not too large on the criterion of average income). "The central idea of this theory is that, under conditions of constant techniques, resources, tastes, technology, and institutions, there exists a population size that maximizes per capita income (or some other criterion of welfare). For a smaller population the extent of the market is too limited to permit full benefits to be derived from division of labour and economies of scale. With a larger population, diminishing returns set in, since there are fewer co-operating resources available per worker".^{1/} An increase in skill can turn a population at a stage of diminishing returns to one of optimum or sub-optimum.

Since capital and land are never usually fixed, "the effective supply of land or of useful natural resources is in fact partly a function of technical knowledge and skills. Hence judgements that a population has too large a size on the criterion of average income should be provisional" . . .^{2/}

Rate of growth

As Coale and Hoover put it (op.cit., p.19) "The significant feature of population growth as such is that a higher rate of population growth implies a higher level of needed investment to achieve a given per capita output, while there is nothing about faster growth that generates a greater **supply** of invertible resources".

^{1/} Pepelais, Mears and Adelman: Economic Development, pp. 49-50.

^{2/} Coale and Hoover, p.19.

Age distribution

We have seen that only in reduced birth rate can an effective change in the age structure be attained. In low income countries the high birth and mortality rates give a very high dependency ratio.

This means that propensity to consume is higher in the under-developed economy where birth rates (and less significantly) death rates are higher than in a developed economy. Savings and investment (which are already low) are further depressed owing to non-productive expenditures to support the non-productive persons.

Lecture 8

Employment objectives in economic development

Summary

The idea that employment policy must be a specific and integral part of economic development objective is rather recent. In spite of its obvious importance, many development planners still tend to overlook it. The prevailing notions appear to equate economic development with maximum growth in the gross or per capita national product. Moreover, following upon the theories dealing with the problems of secular stagnation in the more developed economies, it seems to have been generally accepted that if through adequate investment an economy grew at a rate faster than the rate of population growth, then employment opportunities would be created fast enough to contain or even wipe out unemployment. In this view unemployment and under-employment tend to be accepted as merely the symptoms of under-development, and leads to the conclusion that they could be remedied by merely promoting more rapid economic development.

Undoubtedly economic development leads to more employment, but experience in the developing countries has shown forcefully that it should not be taken for granted that measures promoting economic development will of themselves necessarily create enough

job opportunities for the masses of the unemployed, within a given period. Indeed if the experience of Nigeria, for example, is anything to go by, one could almost conclude that the process of development accelerates the rate of growth of unemployment. This view would of course be as unfounded as the contrary notion that development by itself would automatically wipe out unemployment. Neither view is quite correct because, they are predicated upon an over-simplification of the forces at work and of the inter-relationships and relative importance of the relevant economic variables.

Unemployment and chronic and persistent under-employment have, however, very serious social, political as well as economic consequences. Employment objectives - that is programmes and policies designed to contain, if not completely eliminate both - have therefore become a cardinal necessity in development planning. As an ILO publication points out, an opportunity for productive work is not merely a means to a higher income. It is a means of self-respect, to the development of human potentialities and to a sense of participation in the common purposes of society. The report adds, rather graphically that: "There are alternative paths of economic development, and along some of these more new jobs will be created more quickly than along others. If paths of development are chosen that provide relatively few new jobs in the early stages those who need and seek work or more work will scarcely share in the benefits of progress. The purpose of economic development" it points out, "is to raise levels of living, and the main purpose of insisting that employment objectives should be given weight in the choice of alternative paths of economic development is that this is the surest, if not the only, way of making certain that the improvements in levels of living that come about as economic development proceeds will be widely shared."^{1/}

^{1/} International Labour Office: Employment Objectives in Economic Development (Geneva, 1961), Foreward, p.III.

There are three main difficulties in accepting and implementing the Employment Objective as a cardinal part of the development objective:

- (a) it requires revising or modifying the usual lines of development policy: e.g. in regard to investment allocation and priorities in order to assure not only rapid growth, but also, rapid increases in employment,
- (b) it requires an acceptance of part at least of the theory of balanced growth. Much of the unemployment and existing under-employment is usually in the rural and traditional sector. The employment objective requires, therefore, that development should be spread out to include this sector and not to concentrate on the modern sector,
- (c) there are usually short-term conflicts between employment and growth objectives. Special care need to be taken to ensure that as much as possible, both complement one another.

Whatever action is taken to implement the employment objective must depend upon the particular situation of the country concerned. The main steps in the development of an effective employment policy are:

- (a) analyse the existing employment situation, so as to locate the degree of unemployment, and under-employment, and their spread geographically, by industry and by occupation,
- (b) analyse the employment potential of the development plan, if any exists, to see how the new economic and industrial structure which will result from its implementation, will affect the employment and unemployment situation. If no plan exists, analyse existing investment/employment ratios or output/employment ratios (productivity) and project to the target year. Take special note of changes in labour force participation rate among the different sexes and age groups in the population,

- (c) set employment targets or objectives in the light of the above, for the whole economy, and by industries and occupation; and
- (d) modify wherever possible the development plan projects and programmes so as to ensure its consistency with the employment objective, in particular the maximization of the volume of employment,
- (e) in the light of existing circumstances, propose special measures directed at eliminating or containing residual unemployment and under-employment.

Employment situation in under-developed countries

The main features of the employment situation in the developing countries are:

- (1) Gross shortage of skilled and professional (i.e. high level) manpower - engineers, scientists, graduate and trained teachers, doctors, nurses, etc.
- (2) Over abundance of unskilled labour.
- (3) Open unemployment - persons wholly unemployed, with no jobs or independent means of livelihood; usually concentrated in urban areas and most prevalent among the educated; or seasonal in rural areas.
- (4) Under-employment - in rural areas as a result of low ratio of land to population and size of farms (2.5 acres); in urban areas, under-employment, particularly in the service trades.

The view has been expressed that from the point of view of employment policy what seems to be more important, "is the point that a more rapid industrial expansion in urban areas may in fact evoke a more rapid inflow of labour from the rural areas . . . the rate of inflow of rural labour may well be an increasing function of the rate of urban industrial growth".^{1/}

^{1/} C. Hsieh: Employment Objectives in Economic Development, in "Lectures on Economic Development", International Institute for Labour Studies, Geneva, 1962, p.88.

The various methods by which developing countries try to solve or contain their employment problems will be the subject of other lectures. Briefly they show a disappointment with manufacturing industries in terms of employment creation, and a greater reliance on

- (a) handicrafts;
- (b) public works;
- (c) improvement in agricultural techniques;
- (d) community development schemes;
- (e) vocational training for the educated unemployed;
- (f) changes in educational and training curricular structures;
- (g) encouragement of labour mobility between regions;
- (h) encouraging labour intensive techniques.

A.3 Summary of Lectures

by

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EDUCATION PLANNING

Lecture 1

The Purpose of Economic Planning

Introduction

By considering the history of economic planning in the West, in the Eastern countries and in the under-developed world, we will be able to define the problem:

- Why planning?
- And how to plan?

The answers will be different, at least at the beginning, because the political problem raised is different.

1. Antecedents of economic planning

(a) State intervention in the precapitalist period:

- in Europe: Mercantilism - its historical function to promote wealth accumulation - its instruments, protectionism, monopolies etc outside Europe.

Significance of the State's economic role in the centralized societies of the East: Egypt - ancient China and India - The Roman, Byzantine, Arabian, Ottoman Empires.

"Planning phenomena in Africa: the Mouride example - Absence of a powerful centralized State and absence of economic "direction "; the decentralized societies of Africa - European and Japanese feudalism.

(b) State intervention in the liberal capitalist State:

- the myth of laissez-faire - protectionism,

- the shifting of instruments of economic orientation towards money and credit - its reason - its theory; the quantity theory of money, business cycle and rediscount rate, balance of payments and business cycle,
- experiences of the war economy, 1941-1918 and 1939-1945; physical controls, rationing, exchange and price control, government distribution and of raw materials - the discovered instrument; the Leontief (input-output) table and its use in USA during the second world war,
- experiences of the great depression; "aggregate" Keynesian policies.

2. Modern planning in industrial States

- (a) The Soviet experience: War Communism - NEP - GOELRO plan (electrification) - Stalin's plans - nature of the planning; priority targets, physical controls etc ... can be explained by the nature of the task; rapid industrialization.

Extension of the Soviet model after the second world war: Eastern Europe, China.

- (b) The Western experiences: from the planning of reconstruction in Western Europe (France, Norway, Holland) to the regulation of spontaneous growth within the framework of a market economy open to the outside world - the French planning experience - the extension of the planning system to the European Common Market - the rallying of Great Britain to the philosophy of the plan. The evolution of planning in the industrial States, the convergence of the Soviet and Western Systems: planning and market - their respective places - why convergence? because it is more and more a matter: no longer of accelerating growth at all costs but, growth being spontaneous (intrinsic dynamism of private enterprises in the West and State enterprise in the Eastern countries), one co-ordination, of giving consistency (physical and financial) to an entity in continuous motion.

3. Development planning in the under-developed world

First experiments: programming the public works in the field of infrastructure - "plans" of the colonial period, with no concern for financial consistency (the Mother country can bear the cost of the imbalances resulting from this policy). The extension of Western planning models to countries of the under-developed world.

Critical assessment of planning practice in the present "Third World" - Here the problem is fundamentally different from that of the industrial world. No dynamism of its own. It is not, therefore, a matter of co-ordinating spontaneous dynamisms, but of awakening them.

Hence, the need for structural transformations and (including socio-political ones), releasing spontaneous development forces, must be borne in mind by the planner just as much as the need for "technical" consistency, which is too often found only "on paper".

Conclusion

Deliberation on the two aspects of economics:

- Social science, that is explains social phenomena in their totality.
- Technique of management of "rational" economic choice.

Lecture 2

General Problems of Planning in the "Third World"

The purpose of planning to develop:

1. What is under-development?

(a) The superficial aspect of the problem: income per capita etc.....

(b) the under-developed economy corresponds to a historical phenomenon; the partial transformations of precapitalistic economies by the prevailing world capitalism - it is therefore a phenomenon of transition: non-colonized precapitalistic economics must not be treated as "under-developed".

(c) Fundamental features: of precapitalistic systems: static nature of capitalism; dynamic nature of related concepts: profit, accumulation, dynamism, entrepreneurship bourgeoisie etc...

Of under-development: "mixed", "dualist" system - particular kind of structural transformation, slow, partial etc.

(d) Types of under-developed structures in Africa: Settler colonization: colonial Maghreb, colonial Kenya, Rhodesia, South Africa.

Wholly commercialized economies: Egyptian type, mining type, European plantation type.

Partly commercialized economies: colonial trade economy.

(e) General fundamental features of under-development:

First aspect: disproportions in the sectorial distributions of product and activity. Very big differences in productivity from one sector to another

Second aspect: lack of articulation (or linkage) of the system as opposed to the integrated economy (in which the sectors exchange a great deal among themselves).

Third aspect: foreign dependence as regards the pattern of foreign trade and of financing.

2. Hence: Purpose of planning and its techniques

Setting in motion the development mechanisms: accelerated capital accumulation.

Techniques: 3 stages of the planning mechanism:

- First stage: choice of a development strategy -
- Place of macro-economic models and national accounting (retrospective and projections) as instruments of this stage.

Significance of the overall consistency at three levels: physical, income distribution, financing: the economic inter-dependencies.

- Second stage: choice of sectorial targets -
- The plan breakdown - inter-industry (input-output) tables.
- Third stage: the micro-economic level - choice of projects - private profitability and social profitability.

Lecture 3

The Place of Education in Development

Introduction

The second lecture laid stress on the technical aspect of economic consistency, that is, it proceeds from the view of "Economics: management techniques: there is all too great a tendency to confine attention to this technocratic angle and lose sight of "Economics : a Social Science".

- From the economics point of view, education has a dual function:

(1) Education supplies manpower at the levels of skill required by the economy.

(2) Education is a factor in the transformation of society.

First problem: Is Education as a "technique" for the production of manpower amenable to "economic measurement"?

(a) The necessary balance between the development of the material basis of the economy and not directly productive actions.

The State budget as the centre of income redistribution - limits to the tax burden: relative preferences for private or collective consumption, incentives for production and effort, price structure etc.....

"Recurrent" expenditure - definition.

(b) The measurement of the economic return on "not directly productive" expenditure. Analogy with the capital output ratio:

$$K = I / \Delta P \quad \text{or} \quad \Delta K / \Delta P, \text{ with}$$

$$\begin{cases} P &= F(K, T, A) \\ P &= \text{production} \\ K &= \text{capital} \quad (\Delta K = I = \text{Investment}) \\ T &= \text{labour} \\ A &= \text{residue} \end{cases}$$

Similarly we can relate the increase in production, ΔP , to the "expenditure" occasioned by the transformation of the quality of the manpower.

Characteristics of the techniques of calculating this kind of "profitability": the time factor, uncertainty concerning the levels of skill required to ensure a given production etc.

Second problem: Education as a factor in the transformation of society.

- Back to our starting point: To develop requires the transformation of structures in such a way as to evoke a spontaneous dynamism.
- Ideology in Africa: Traditional African ideology "static" nature, gerontocracy etc... modern ideologies: cult of economic progress, of change etc.
- Place of education in the ideological transformation of Society - repercussions on the social structures.

A.4 Summary of Lectures

by

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SOCIETAL DEVELOPMENT PLANNING

Prefatory Note

In this general introduction to our programme on Human Resources Planning in Africa we shall take a long distance look at "social" planning in the most comprehensive way. We shall, together, formulate a perspective view point so as to comprehend the totality of what it is that is being planned.

My remarks and our collective discussion have been divided into two parts. Part one will first include a very brief review on concepts of social planning and economic planning; and secondly, we shall attempt a detailed formulation of society using an overall social science analysis which I have labeled "Societal" Planning. In Part two, the structure and behaviour of population will be discussed as the beginning phase for detailed plan making. Other phases of plan making for human resources shall be presented by specialized sectors. The ILO and guest consultants, including UNIDO, shall lecture on manpower planning, the WHO will lecture on health, the FAO will be concerned with food and nutrition and UNESCO will present the very important analysis on education Planning.

PART I - SOCIETAL DEVELOPMENT PLANNING

Introductory Note

My topic on our agenda is labeled as "Social Development Planning within the Context of Overall Development Planning".

This title implies that "social" planning is something(?) and also that social planning is within something else(?). So let us first explore a few ideas about social planning. Secondly I would like to make sure that we have some agreement as to what we think of when "economic" planning is mentioned because I want to propose that economic planning is also within something else(?) just as social planning is within something else(?). Lastly I propose that we, together through discussion, compose a concept of "Societal Development Planning"; the something else.

What is Social Planning -- the lack of an overall concept.

Our first task is to decide what we are thinking about when we talk about social development planning. The literature of planning has many names and concepts which indicates a variety of ideas, directions of approach, and occasionally a tendency for contradiction. I would like to suggest that there is a degree of confusion of names as illustrated in Chart I. Although there are many choices the variety discourages any attempt to select a clearly defined starting point for our discussion. Therefore my proposal is that we abandon these names and take a look at some functions commonly found under the title of "social" planning. (Again referring to Chart I).^{1/}

Under functions of social planning we find a heterogeneous assortment of more or less discrete activities. Most of these functions are carried out by different government departments which compete with each other for budget allowances and which are not likely to have free flowing, enthusiastic, effective inter co-ordination nor co-operation nor communication. Each of these functions is staffed by personnel having

^{1/} See Charts I to II at end of these lectures.

specialized education from independent faculties of a university. An exception to this emphasis on differences among functions may be found under the title of "Human Resources Planning" but alas, this function has not been fully established as one which includes any or all of the others. It is also handicapped by being thought of as limited to the function of "manpower" planning. Once again it seems reasonable to conclude that we should abandon an attempt to clearly define one concept of social planning.

We can conclude however that "social" planning is different from "economic" planning. The names of chart I and the literature of planning readily suggest that "economic" is something unique; especially when one takes a look at econometric macro-models.

Economic Planning - an attempt for common agreement.

The literature of, and the attempts to plan for, development has been dominated by economics. But, even though economics is a social science with which we are familiar, each of us may not have exactly similar concepts. Let us therefore work together to compose a structure of economic planning with which there is general agreement. In addition to conducting this discussion for the purpose of seeking agreement on concept it is important to also emphasize the significance of the role of the economic system in any fabrication of development planning. It should be axiomatic that we agree that increased economic activity and the manipulation of the economic system provides the material where-withal for the realization of overall developmental growth.

Chart II (the result of discussion) illustrates the ingredients and process of economic planning. Money goes through an assortment of investments in resources which are allocated to economic activities, and/or economic infrastructure, and social infrastructure. The outcome appears as a variety of outputs which become gross national product (or GDP or GIP or?) in terms of money. The functions of economics and its system are directed to producing additional things, and services along with the manipulation of the quantity and imputed value of the concept of money.

The weaknesses and errors of relying solely on the economic system and/or econometric model to provide development planning need not be laboured over; this has been most ably done by Albert Waterston in his study on "Development Planning: Lessons of Experience."^{1/}

I suggest that economics should not be thought of as equivalent to overall developmental planning. This viewpoint is also self-evident since we have some degree of agreement that the social planning functions of chart I have an integrated connexion with developmental planning.

The Trend to Combination

At this point in the process of thinking toward our objective to formulate a concept of "societal" developmental planning, let us briefly review some thoughts on the trend toward combining economic and social planning. Again, referring to charts I and II, we can identify a sequence of expressions leaning toward togetherness.

Titles such as social development, social programmes, social planning, indicate a discrete category of social. The equally discrete category of economic planning has always been with us.

We should agree without much argument that having a competitive confrontation between economic and social is to dissipate the efforts which should be applied to the task of planning for development. Using this dichotomy has been discarded as an erroneous approach.

Titles such as "economic and social" and "balanced social-economic" development indicate an acceptance that two discrete concepts can be included in one plan.

Under this schema the economists have agreed that development plans should include social plans. There are still two discrete concepts however. Somehow or other someone has a methodology for "balancing" the two; and that a formula for money allocations to each can be devised. This relationship of being balanced, again dissipates planning efforts. Overall planning is wanted, not acrobatics with two concepts.

^{1/} Johns - Hopkins Press, Baltimore, Md., 1965, 706 p.

Titles such as "social variables", "social factors", "social lubricants" indicate an acceptance that social phenomena are operational as pieces of something else. Similarly there is the suggestion that social infrastructure is a companion of economic infrastructure with both respectfully being servants to economic production expansion.

This attempted integration still carries the conviction however, that developmental planning is primarily economic and that economics provides the basic vehicle and measures the major objectives. Social "things" are attached and/or even become part of the infrastructure.

Development planners working within the limitations of a statistical-math bias attempt to integrate the social with the economic by seeking minimum levels of "action" in social activities which are considered necessarily complimentary with a selected level of economic growth measured in money GDP. For example, an attempt could be made to calculate the least amount of education or health necessary to reach the GDP which had been selected as a target.

We have "given up" on formulating a concept (or "model" if you like) of social planning. Although we have composed a "first-draft" structure for economic planning, it is easy to agree that this is not "bverall" development planning. In economics there is too much adherence to seeing an increase of GNP-money. In our third discussion, we traced the tendency for an integration of the two; the attempts to reconcile the social as well as the economic protagonists. My suggestion is that this approach also be discarded. I am not implying that plans which include so called social and economic phenomenon cannot with good luck in implementation-bring forth an increase in GNP in the econometrician's model. This has been done. What I am really suggesting is that all of this is irrelevant to our formulation of "what-is-being-planned" in a total sense. We have not taken a good look at the totality of the real world. Some thoughts must be devoted to seeking "What it is that is being planned". Something more must be said about the goals for which plans are made and some consideration must be given to who will be the role players in the implementation of plans.

Overall Societal Planning - A first diagnosis

Let us proceed to the creation of the "something else" which was mentioned in the introductory note. Why not conceive something which we can call the "real world". To be realistic is a criteria one can readily agree to, even in academic discussion. Using the concept of "world" suggests an all inclusive thing, a "oneness" composed of everything. A country will be thought of as a single entity within which there is a matrix of organs, activities, and what not which function creatively to provide life. In psychology there is the "gestalt" approach, in philosophy there is a "holistic" phenomena, and there is the totality concept of human ecology. In economics we have "institutionalism". Similarly, I suggest that we look at a country as one society in which each of a number of critical phenomena affects every other one in the process of development. What takes place in terms of growth will be more than the statistical computations of the ingredients of GNP. Developmental growth will be determined by people who have harmony, equilibrium, action toward objectives and other things.

Chart III is presented as a first concept of a total society and at first blush, we see a complexity of many things, many phenomena, many ramifications. This the real world.

We shall look at total society in terms of people and start by repeating the usual quips that the progress of a nation depends first and foremost on "progress of its people", the future "is to be created by people"; developmental planning calls for "the development of people"; planning is meant "for man and not for money"; it aims to satisfy "the whole man, his needs and aspirations"; and growth is achieved "by people for people". My emphasis is directed to having people be the essence of societal planning. People, as individuals and as groups determine activity and inactivity toward the achievement of individual satisfactions and as well, of groups goals. Sometimes economic production is very necessary; sometimes economic activity is irrelevant to societal development. People determine the purposes for societal development and provides the will to achieve, and carry out the necessary action steps.

People as Individuals

People as individuals, have been divided in three ways of analysis: A. Individuals with personal characteristics, B. Individuals having a role in society, and C. Individuals in an economic sense.

A. Individuals With Personal Characteristics. As individuals, people have various amounts of physical vitality, inertia, creativity, initiative. They also have various kinds of aspirations and values. Any development calls for change-by people which is preceded by understanding and acceptance before action takes place. How much and what kind of education must be planned and for whom? To what extent can inertia be reduced with incentives of various kinds? Some people value the accumulation of livestock as a symbol of prestige not as a means for producing food. Others pile bags of rice in front of their hut as a status symbol. Some people aspire for a six year primary education thinking it an adequate qualification for a white-collar position in government. Some people are proud when youngsters can be maintained in robust health, and well groomed and in idleness. Although diversified farming is indicated as most efficiently productive, the nomad herdsmen will scorn "grubbing" in the soil, preferring to wander with their herds, even for a very small profit and under difficult conditions. Sometimes, cattle ranchers, have a distinguished social status over the crop farmer. In a recent case the economic planners schedule the relocation of 5,000 families per year for a new irrigation project without knowing that 25 per cent of the men and V.D. and many others had malaria, tuberculosis, and intestinal parasites.

Individuals can be placed at various stages of evolution from primitive, non-economic, to sophisticated wage-salary earner. Some people have to be induced to think about a future; they have to start counting time through the use of a calendar. Without the concept of "future", plans are helpless. Individuals must be recognized as having various amounts of physical vitality and various kinds of psychological capability which must be applied to societal development. Planning must include consideration for using, changing, improving, individuals.

B. Individuals Having a Role in Society. People must also be diagnosed in terms of the role of each individual. There are peasant-campesinos, merchants, managers administrators, politicians, military people, (add some more). Some people are rich men, some are bourgeoisie, some are patrons, some are elite, some are "common" etc. Some people want and will help reaching for development, some will abstract and destroy, some you may not like but you do not want them as an enemy.

Each of these kinds of people has had a historical role in society which may or may not be useful for the success of developmental plans in the future. Past behaviour may have to be changed in the interest of society goals. The practice of corruption comes easiest to mind. Take the case of the head of a government housing agency in a Central American country who allegedly left the agency with a \$800,000 deficit after he had built an apartment, in his name, in Rio de Janeiro. Corruption seems to be indigenous to the poor countries which can ill afford losing monetary capital to numbered accounts in Swiss banks. (Read "Corruption in Developing Countries" by Wraith and Simpkins). And then there is the phenomenon of castle building such as the presidential palaces in the Ivory Coast and Liberia which may believe to be a waste of scarce resources. The more difficult task is to incite a dedication to the future welfare of one's country. How can individuals be diverted from "self-orientation"? For example, there was the case wherein bilateral aid was invested in a 200 acre plantation of good quality oil palm. It was handed to a young African planter, the son of a chief, who had just completed the study of agronomy in France. Within a short time the entire farm was invaded by the "bush" and became non-productive. The young man had become a high government official. Societal planning recognises, the social, political, or economic elite and their degrees of power over society. Plans can prescribe usefulness, or elimination, or re-orientation for the elite, the patron, the economic-religious marabout, etc.

To summarize these remarks about people as individuals, may we conclude that in societal planning we recognize that each person can have a "self-concept" of who he is and what he wants in life, and what his responsibilities are as he carries out his role within his tribe, or community or country. My suggestion is that this self concept should be created and directed in the interests of the objectives of the development plans.

C. Individuals in an Economic Sense. Lastly, people as individuals are classified economically as productively and non-productively (subsistence) employed, as unemployed, as under-employed and as idle rich or idle poor people. Developmental growth calls for less non-productive employment, less unemployment, less under-employment, and less idle poor. The increase or decrease of any degree of economic activity can be planned for and controlled through societal development. As for individuals, it is a question of tastes for things, feelings for health, satisfactions with comfort, incentives for work, possibilities for increasing personal income, and dedication to national goals. It is assumed that the size of the labour force, the productivity of people employed, the amount of personal income and the equity in distribution of personal income are all pre-established in terms of the employment policy of the development plan and the nature of manpower requirements necessary to fulfill the total objectives of the plan.

People as Groups

Most people seem to collectivize themselves into groups. Maybe people are extroverted, maybe they have learned that it is easier to survive economically with togetherness, maybe it is a function of the extended family, maybe it results from ethnic similarities, maybe it comes from religious belief, maybe it is necessary for protection from enemies, etc?

A. Foreign Minority Groups

Some groups are non-indigenous, (some even though their ancestors came to Africa over one hundred years ago) such as Asians, West Europeans, East Europeans, Mid-Easterners, and Africans who left as slaves and returned as immigrants. Sometimes these groups behave as outsiders who exploit Africa and keep their gains outside of Africa. I recently asked one of these outsiders how he liked Africa. He smiled as he replied "I like money". These foreigners (who in some ways are parasites on society even though they perform an economic service) can be readily identified as one walks business streets of Dakar, Freetown, Monrovia, Kampala, Dar-es-Salaam etc. Development plans must consider possibilities (a) for changing the personal values of these groups, (b) for using constructively their initiative, or (c) for asking them to leave (as has been done in Tanzania).

B. Class Colonialism Groups

Some groups are pure African but have learned to behave as an elite, practicing a native class-type colonialism. These may be a new bourgeoisie of government officials, religious leaders, or economic monopolists. They take the comforts of an affluent society. They become alienated from their brothers. The future role of these groups must be planned, but the difficulty lies in the likelihood that they are the political power which controls the planning. (Examples are not cited but may easily be found in the writing of Rene Dumont of France, John Hatch of England, and David Hapgood of USA).

C. Indigenous Groups

Here we shall briefly note the nature of any people as they practice their cultural inheritance and follow the custom of established mores. In Africa there is the added complexity of the pluralistic society in which countries can have from one to a dozen or more different tribes having varieties of languages. These group phenomena have a variety of social structures which include the tribes, economic and social classes,

extended family, etc. Within these classifications one can find patriarchy, matriarchy, oligarchy of elders, etc. Some times planning officials try to use the traditional authority as in the case where the selection of farmers for the settlement of a new irrigation project was granted to the tribal chiefs. These chiefs were told to seek "volunteers" but as it turned out, the chief arbitrarily sent members of the tribe who were "trouble makers", resentful of his authority. Qualified settlers and their education/training had not been planned for. Sometimes tradition is broken under pressure of over-use as in this case of a new, large, palm oil plantation. Under traditional harvesting customs, the more nimble youth had the duty of climb the trees as a community service. The income from the harvest was paid to the tribe under control of the elders. With the increased work of harvesting a "commercialized" plantation the youth refused, asking for a direct share of the income. Some traditional customs are very difficult to change, such as meeting the obligations of the "extended family". I know that it is presumptuous on my part to tell Africans about the extended family. It is however, an example with which most people are familiar if not an active participant. I recently discussed this with an African university professor (educated in England) who told of the difficulty in breaking away from such obligations. He really did not have a strong urge to try to discontinue the practice because of the social prestige accruing to the provider and the social repercussions from not maintaining the practice. The requirements for economic growth, such as savings by the high income earner and productive work by the idle relatives, were not to be realized because of cultural mores. Another social practice which dissipates an increasing personal income is found in the Latin American practice of having multiple households, and the African practice of adding another hut for an additional wife. Income is promptly converted to consumer expenditures or production is turned to necessary subsistence use.

Some traditional customs become institutionalized in an economic sense; such as property and the land. The concept of "private" property may not be understood because of the tradition of "tribal" property. The nomads may well not think anybody or any group could own the sand

and land. To cite an example; the economic planners had built an irrigation project, relocated the farmers, and a crop of rice had been produced. Technically, each rice field must be "finished" after having been levelled. To "finish" meant that the farmer must maintain a small embankment around the field so as to keep a uniform level of water. The farmers would not do the finishing because it is the custom of the tribe to redistribute land to different farmers every time it is cleared of crops. This practice assured equal opportunity to work on good and poor land with the result that there had never been any follow-up gain to a farmer who had laboured to improve the productivity of the land. To carry out the irrigation project, the planners should have induced a tribal-wide effort to maintain the fields, or, if brash enough, might try introducing the concept of private property.

Another example using the concept of "property" may be cited from an agricultural project which was introduced by "outside" technologists. Planners made plans for increased agricultural production and engineers promptly conducted the construction. Farmers were hired at 20 per cent above the going wage rate to do the work. A suggestion was made for the future settlers of this project to acquire an investment in their plot of land by contributing their labour without wages. This idea was rejected, partly because it had the implication of "forced" labour (a western word with bad implications).

After project completion many who helped build refused to settle. Many who settled refused to maintain the system. The project was considered government property. The farmer did not have any feeling of responsibility toward it's success. In Central America, farmers refused to take title to a piece of land, saying that land belonged to everybody.

D. Institutions

Groupings of population must also be recognized in the institutions which people tend to establish. Some are religious and may evolve from the indigenous culture such as voodoo in Haiti and its counter parts in

Africa and such as the protestant ethic in Europe and in the United States of America. Other religious institutions are transplanted from foreign cultures such as the Catholic Church and Muslim religions into Africa. Every religion has both desirable and unwanted impacts upon development in as much as its beliefs influence the nature of the "future", the causes of the "present", and the extent to which man can reformulate his environment and condition of life. Every religious institution also has a degree of economic power such as the marketing and entrepreneurial activities of the Murid in Senegal and the control over land ownership by the Catholic Church in many parts of South America.

Other institutions have evolved to meet specific group requirements; tribal soldiers have become the military for protection from groups who are enemies, councils of elders have become governments and these in turn have fragmented into specialized functions to carry on the civic activities of taxation, law and order, services etc.; the "bush" school has become an educational system; various economic entrepreneurs have joined to have group influence as a pressure force for protection and the advancement of self-interests such as a Chamber of Commerce; and there must be many more institutions.

Institutions are not always active in their discrete functional operations, especially is it possible that they will fight each other for control of the government such as the many military coup d'etat in Africa since independence has been achieved. Institutional frictions cause general societal unrest which is a most serious constraint to developmental progress in both internal operations and international relations. Ghana, Dahomey, Sierra Leone are recent cases in point. In a less violent manner, there are the institutional frictions between education and religion.

Sometimes institutions must be created as a prerequisite or as an operating agency for the implementation of developmental plans such as the establishment of a university. Sometimes institutions must be

"shook-up" if not re-staffed at the middle- and top-levels such as when entrenched, "old school" bureaucrats keep their government agency from carrying out its responsibilities under the development plan.

In the pluralistic society of some African countries it can even be necessary to create the concept of one government as illustrated in Nigeria. To have political parties and democratic procedures is foreign to some countries and others may over-do the practice politics of by having 12-20 political parties. We can readily conclude that institutions and the minority people groups who control them can have a profound affect on societal development. Their bias and collective aspirations, their will to do what is necessary, and their concept of societal role for their institution can influence the formulation of policies, the selection of goals, the implementation of plans, and in a general sense, the creation of an overall "climate" for development. It remains for the societal planners to cope with the usefulness and liabilities of institutions.

Up to this point we have been formulating a web of the internal content of society. We have analyzed the population in terms of individuals, groups, and the institutions which become established through the evolution of group functions. The catalyst for initiating development is recognized as being of the people and the prime-mover for generating development is recognized as being the economic system. In our search for a "totality" we must now recognize that our national society is a local one and that it is a unit of a world-wide society. So let us include the impingement of out-of-country events, forces, pressures, attractions; etc.

In One-World

As a first look at one-world and the external phenomena which impinge upon the society being planned, the following are identified: world trade, special economic interests, neighbourly friction, politics and wars, neo-colonialism, bilateral aid, and (student adds more).

World-trade may mean that an economically poor country which must export raw materials on the supply side of competitive world-wide market is subservient to the economic power of the rich countries which have a degree of monopolistic control on the demand-side of the market. As examples there are ground-nuts in Senegal, coffee in the Ivory Coast, copper in Zambia, sisal in Kenya, cotton in Uganda etc. World trade may also mean that the planners must reduce imports of consumer goods which can be produced advantageously in one's own economic system. And world trade may mean that more cattle are smuggled from Savannah Africa to rain forest Africa than appear on the national accounts ledgers. (student adds others-again).

Special economic interests include foreign banks as in French West Africa, the dominance of a large corporation such as Firestone in Liberia the monopoly over export-import consumer goods such as is found in most every country.

Unneighbourly friction interrupts development such as between Kenya and Somalia (recently settled), and various frictions against Portuguese colonies, Rhodesia, etc. Even among Francophone West Africa, the considerable attempts to propagate the economic merits of "common market" cannot take root as long as tribes dislike tribes in a social sense.

World politics and wars can be localized such as the Arab speaking countries versus Israel with hostility against the "West", or it can be more pervading such as when different poor countries are picked up as pawns in the larger game of politics between East and West.

Neo-colonialism can be political and economic in impact. Regarding the practice of imperial preferences for example with coffee production in Africa, Rene Dumont claims that the results are: over-production of coffee, the destruction of forest resources, the depletion of fertility in the soil, and the prevention of productive investments in more profitable crops.

Bilateral aid may be a helpful gift or a burden arising from operational expense, or a burden of interest payments. In any case it will likely provide sales for the industries of the "giving" country. The details of aid are well known to all of us.

The United Nations, along with its ramified agencies must also be included when thinking about a world-wide totality. The Universal Declaration of Human Rights can be the basic ingredient of any body's goals for development. The United Nations Development Programmes are available to the extent that anyone wants to make them useful. In general, the whole United Nations Organization is directed to build constructive, co-operative, international action for mutual survival and developmental progress.

We have now rounded-out an understanding of Chart III as it portrays society. Society is "what is being developed". In retrospect, we can see that society has been analyzed using a multi-social science approach. With population growth there is the study of people stabilization. Economics as the prime-mover of development is obvious. Sociology and Anthropology can be recognized in group behaviour. Individual Psychology and group social psychology determine action. Political power, government and public administration call attention to Political Science. Space relationships are directed to physical planning, geography, Urban planning, insularity, population density, and land utilization. Eco-logical implications from climate, vegetation, the degree with which man controls his environment may also be included. (To be elaborated by the reader). My suggestion is that, to develop society, one has to analyze society using the entire range of all social sciences.

Conclusion

We have now completed our task of formulating a total concept of society, the idea of social planning as a specialized part of development planning has been abandoned in favour of a more all-inclusive model. Chart III illustrates "what-it-is" that is being planned in a comprehensive human resources frame of reference.

Since we have just formulated a new model using an all-inclusive social science analysis for societal planning we now find ourselves handicapped because we will not be able to continue our creative efforts to the selection of goals for planning, to the techniques for plan making, nor to the contriving of strategies for the implementation of societal plans. This ECA Training Course on Human Resource Planning will be directed to current, orthodox practices for plan making and plan implementation. We shall look forward to future courses when our discussions will permit a continuation of a discussion on societal planning.

What is to be said about health, manpower planning, education, food and nutrition, etc. can however be applied to society, and there are no doubt many different ways to do so. I shall suggest that each student formulate his own schema for interweaving specialized social planning into our model of societal planning, and further, please keep in mind that two kinds of strategy may be used. One, is the overall, macro approach wherein one starts with population and computes development, say for example on the status of health, with overall statistical data. The same approach can also be used for increasing the educational stock of the country, or for changing the nutritional in-take of the population, etc. The other approach is to consider a project, or an accumulation of projects within a sector, and then programme all significant determinants of project success. For human resource planners these determinants could be educational competence, technical skills, physical vitality, psychological capability, etc. Manpower planning is very likely to start with sectorial data.

Our next question is, where does a human resources planner start his diagnosis and start some making of plans. We shall go on to Part II of my lectures and start with a review of the use of population behaviour and structure by the human resources planner.

PART II - POPULATION

Introduction

Population, and its degree of being economically well off and socially adjusted, is considered to be the basic benchmark for economic development and growth. Changes in population must be analyzed from both a world-wide and country-wide viewpoint. Inasmuch as economic growth is measured by per capita national income, changes in population play a large role in economic growth. Growth of production and increases in population interact upon each other with the net result that planning economically cannot proceed without the human resources planning staff having made a systematic analysis of the country's people, their behaviour, and their potential for contributing to the nations future progress.

A. Significance of Population Explosion

1. World-wide impact

- a. World population to double in next 40 years (2,000).
- b. Increase of population is most rapid in under-developed countries. Their percentage of total population will rise from 67 to 76 per cent. Eighty-five per cent of growth is in least developed parts of the world.
- c. Percentage of world population in Africa to increase from 9 to 13 per cent.
- d. Rapid growth creates economic and demographic problems and is critical factor in determining economic-social development.
- e. Relationship of population to world problems of poverty, hunger, ignorance, disease, and violence.
- f. Special relationship to agriculture sector wherein increased population originates and the ability to provide sufficient food is created.

2. Country-wide Impact (with emphasis on the rate of growth):

- a. Investment in population stabilization.
- b. Population growth as a constraint (unemployment).
- c. Population growth as a stimulant (labour shortage).
- d. Effects of economic growth upon population change.
- e. Analysis of population density, cultivatable land, and food production up to optimum size.
- f. Small population countries and their need for economic integration with others.
- g. Trends in family formation and the planning of housing units.
- h. Trends in family size (and multiple households) and the planning of housing as well as physical planning of communities.
- i. The impact of population growth on the planning for the production of consumer goods.

3. International comparisons:

- a. Comparative trends with your neighbouring countries and with Africa in general
 - Analyze seriousness of comparative population problems - constraints - pressures of density - food supply.
 - Economic implications of near-by differences immigration-emigration, trade and open markets.
 - Political implications
 - Ancestral claims for territory.
 - Pressures for secession of territory.
 - The synthetic boundaries established by colonial powers in Africa.

4. Population Policy :

a. Composing a basis for governmental population policy

- Rate of population growth.
- Saturation level estimate.
- Ratios to land, food supply, employment.
- Cultural mores influencing family size.
- Religious mandates.
- The dangers in ignoring the need for a policy and the planning of a programme of implementation.

b. Application assignment

Prepare a recommendation on Population Policy for your country. Substantiate your recommendation using only economic analysis.

B. Analysis of Population Behaviour

1. Measurements for population change:

Vital statistics (birth rates, mortality rates).
Immigration and emigration.

2. Determinants of Population change:

Fertility rates.

Cultural mores

- The security of the extended family.
- Multiple households.

Religious policies.

Economic need

- High mortality rate influence on need for additional children in order to assure sufficient working-age population.

Health conditions

- Over population is not a problem where high mortality rates prevail (50 per cent of children do not reach 5 years age).

Mortality control

- Adjusting to the impact of sudden elimination of a major endemic disease (malaria in Mauritius).

3. Special attention to population increase in geographical areas (birth and mortality rate only):

Identification of high population density areas

- Planned migratory mobility may be indicated because of increasing density without economic support.
- Planned population stabilization programmes may be instigated on selective basis.

4. Geographical mobility and its consequences:

Changes of population in Specific Areas and Trends in Geographic Mobility.

a. Identification of areas having increasing or decreasing population

- Land use implications and land reform.
- Location of industry implications.
- Use in transportation planning.
- Identifying needs for social services health medical services and facility educational facilities.
- Use in electric power-communication planning.
- Analysis of quality characteristics of population.
- Identification of sites for viable communities.
- Housing implications as well as the need for the physical planning of communities.

b. Rural to rural migration

- An economic waste.
- Depletion of soil fertility.
- Problem of agricultural development.

c. Urbanization

- Impact on labour force and unemployment.
- Creation of social problems.
- Housing overload - congestion - slums.
- A drain on government financial resources:
for sanitation and civic facilities,
health hazards,
education facilities,
transportation.
- Political implications.
- The planning of control over urbanization:
the need for selectivity in developing manpower,
for industry,
the balancing of economic growth throughout intra-
country regions.

d. Cultural and Institutional factors affecting mobility

- Nomad practices.
- Tribes, villages, and fixed land areas.

e. Special consideration for nomad peoples

- What numbers are involved.
- Economic production.
- Routes of travel.
- Space needed for survival.
- Alternatives.

C. The Structure of the Population

1. Significance of Urban-Rural distribution:

- Rural as provider of food and industrial raw materials.
- Rural as source of industrial manpower.
- Rural as market for urban production.
- Rural as a storehouse of unemployed and under-employed.

2. Age distribution analysis:

a. Determinants

- Determination by rate of population growth.
- Determination by mortality rates.
- Determination by wars, epidemics, disasters.

b. Education policy implications

- Ratio of age groups 5-14 years to the total population indicates the relative magnitude of the problem to provide 1st level primary education. (How many to have access to education).

c. Child labour implications

- Social policy on child labour may influence labour legislation to protect children.
- Trends of the ratio of children in the labour force may be pertinent to goals of social-economic development.

d. Retirement implications

- Estimating the effect on the labour force when social security schemes are inaugurated or when pensions are obligatory.

3. Economic implications of a young population:

- Increasing number of "new entrants" to labour force.
- Likelihood of vigor, physical capability, and high aspiration levels.
- Impact on demand for consumer goods needed for children and youth.
- Impact on general social investment obligations.

4. Social economic implications of oldish population:

- Lower productive capability.
- Impact on demand for consumer goods and likelihood of decline.

5. Dependency Burden

Having a job becomes very important.

A constraint to expanding economic growth

Young dependents are the most expensive.

Impact on savings potential.

Impact on food, health, education, housing, etc.

Influence on patterns of consumer demands.

Application Assignment - Prepare a chart showing age-groups/sex of your country's population.

D. Human Resources Planner and the Sources of Population Data

1. Build Communication Channels

A major responsibility of first priority, for the Human Resources Planner, is to build up communications channels to the basic sources of data without which human resources planning cannot take place. This "building of sources of data" may involve the initial creation of a Census Agency or Central Statistical Office, but for our discussions in this Seminar, we shall assume that some sort of government statistical agency is functioning. (It is also possible that sources of data may be available in non-government organizations).

A separate, independent statistical agency is suggested rather than have the planning agency conduct such operating functions.

Preference is for the Central Planning Agency to be a "think" organization without the problems of on-going operating agencies of government. (Examples from Waterston's book "Development Planning.")

It is the duty of the Human Resources Planner to be spokesman for and ardent supporter of the governments statistic and census agencies. This includes seeking assurance of adequate budget allocations for the various programmes of data collection, tabulation, and interpretation. (See comment on costs of population data).

The Human Resources Planner must be qualified to consult with the census staff on problems of content of enumeration schedule, tabulations to be made, the inauguration of new census, such as economic, conducting household surveys, verification of results, etc. Also it is not unusual for the planning agency to be in need of tabulations which have not been but must be made. The need for a free flowing communications channels between agencies providing population data and the human resources division of the central planning agency is therefore of paramount importance as a prerequisite to doing any planning. For most effective communication it is suggested that specific liaison personnel of the Census Agency be given special responsibility for assistance to human resources planning. An alternative would be to establish an inter-agency group which would co-operatively explore the implications of population data.

2. Knowledge Required of Human Resources Planner

The Human Resources Planner must therefore have an informed knowledge about census problems, the various data items which may be collected and the kinds of tabulations that can be prepared, etc. Recommended references with which the Human Resources Planner should be thoroughly familiar are:

Census Tabulations

Principles and Recommendations for National Population Census
United Nations, New York, (ST/STAT/SERM/27) 24 p.

Handbook of Population (Census Methods (Vol. II) United Nations,
New York, (ST/STAT/SERF/5 Rev.1.

Population Estimates and Projections

Methods for Population Projections by Sex and Age
United Nations, New York, 1956, 81 p.

Methods of Appraisal of Quality of Basic Data for Population Estimates
United Nations, New York, 1955, 67 p.

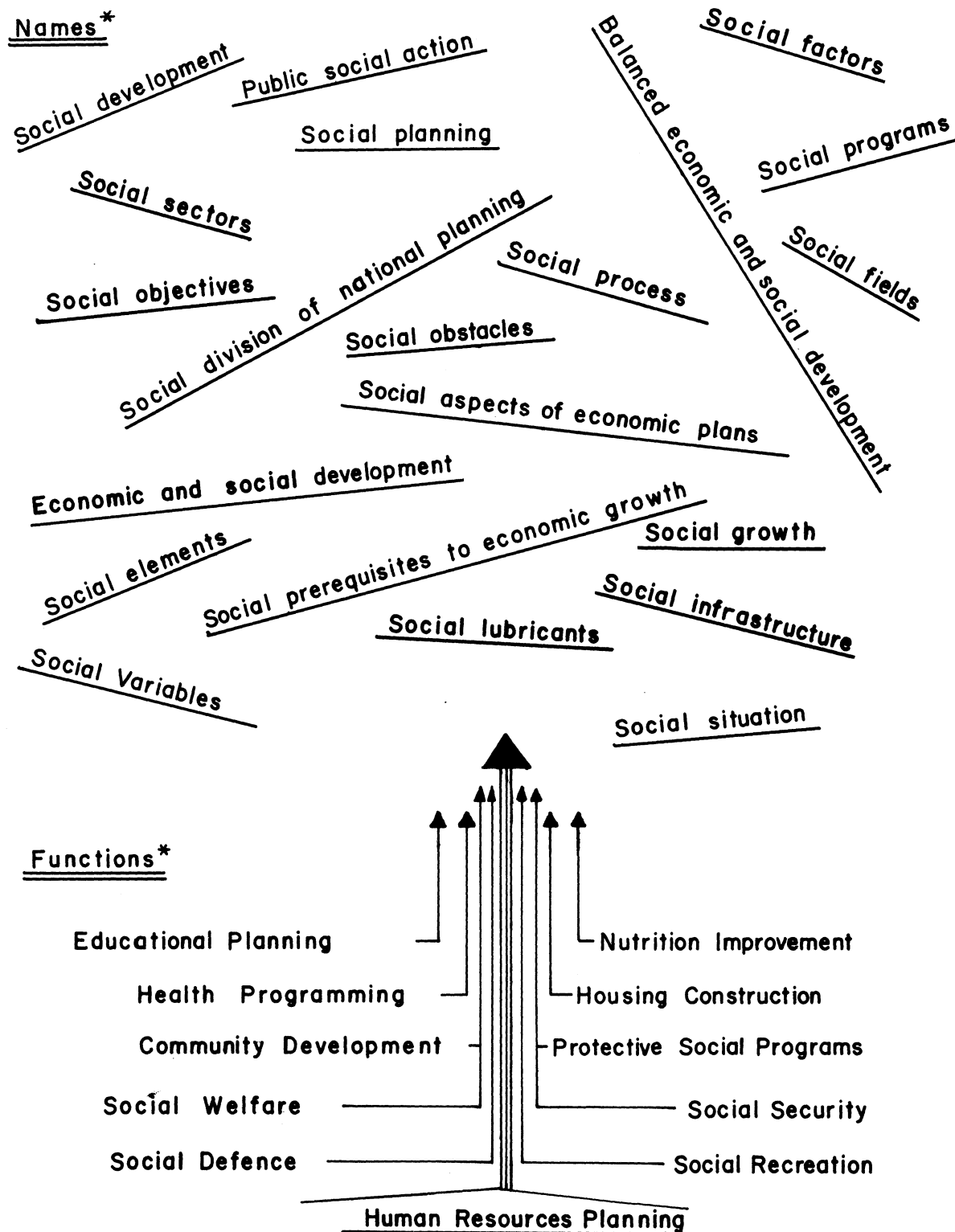
Methods of Estimating total population for Current Dates
United Nations, New York, 1952, 45 p.
Population Studies ST/SOL/SER.A/23

Surveys

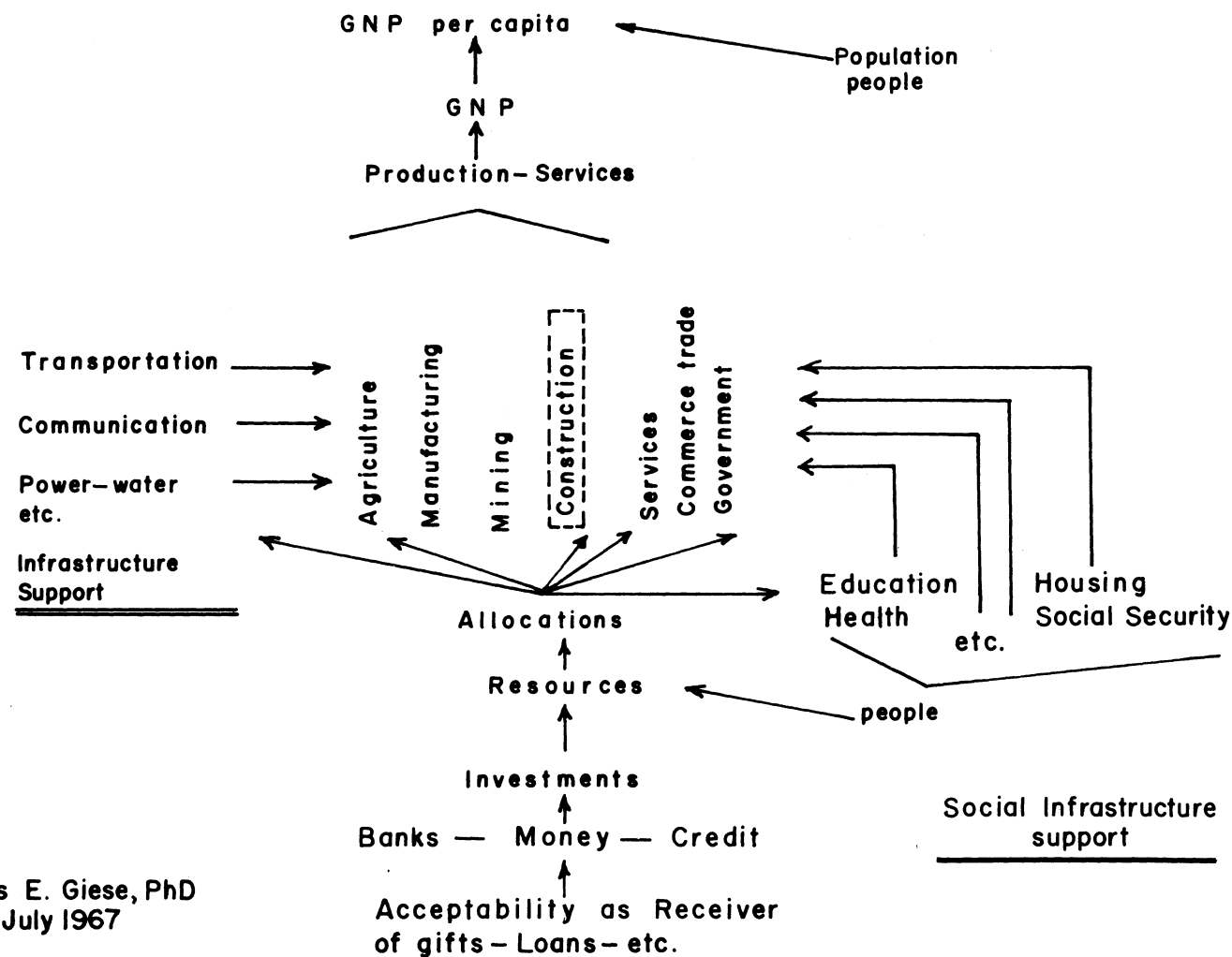
Handbook of Household Surveys

United Nations, New York, 1964 ST/STAT/Ser.F/10, \$2.00, 172 p.

Charts I, II and III to follow.

SOCIAL DEVELOPMENT PLANNING

ECONOMIC DEVELOPMENT CONCEPT



Composed by Willis E. Giese, PhD
Professor I.D.E.P. July 1967
Dakar, Senegal

SOCIETAL PLANNING



A.5. Summary of Lectures^{1/}

by

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INTRODUCTION AND PRINCIPLES OF HUMAN RESOURCES PLANNING

The planning of human resources has for the past ten years aroused growing interest, but its origins really go back much further to the 1930s when planning started in the Soviet Union. In the concept of integral planning for growth, the Soviet Union was the first country to seek to link educational development with economic development, without separating the social and political factors. Thus the Soviet Union aimed at raising the general level of education of the population by progressively extending compulsory schooling, and allowing the development of higher and technical education to be determined by the needs of qualified staff.

In countries with a liberal economy, it was after the second world war that the idea of planning spread, and progressively moved from the field of economics to education. There are many reasons which explain its success. Theoretically, research has demonstrated that capital is not the only factor which "limits industry", but that human resources also produce the same effect. Statistical studies in the Soviet Union, the United States and western Europe have shown that the human factor if interpreted to include education, research and organization in all fields, has made a major contribution to progress in industrialization. Education, which has hitherto been regarded as a "consumer" activity, is increasingly becoming a form of "investment".

^{1/} The whole of Prof. Khoi's lectures were taken from his book on "Education and Manpower Planning" which would appear in Paris in October 1968.

These conclusions are also corroborated by experience. In many countries, economic plans have failed because of a lack of corresponding manpower planning. Factories have been built without any provision being made for the necessary workers and technicians. On the other hand, the rapid and unregulated development of education can lead to unemployment among the educated, when young people leaving school do not find the jobs they are entitled to expect. The magnitude of educational expenditure, which now absorbs about six to seven per cent of the national product, is such that it can no longer be left to the sole management of educators, and calls for the establishment of some order of priority, in other words, of a plan.

International organizations, particularly the ILO and UNESCO, are to be commended for bringing home this need to governments, particularly the newly independent States, which have to tackle with limited resources the problems of poverty, ignorance and injustice inherited from the past. Nevertheless, there are few countries in which this new awakening has found practical expression in the establishment and adoption of a human resources plan, integrated into the general economic and social development plan. There are several reasons for this dilatoriness, some exogenous (political and administrative factors, lack of qualified staff), others intrinsic to planning and education.

Any plan is a "set of arrangements made in order to implement a project", and can thus be defined by the two terms: objectives and means. It should not be limited to the fixing of objectives, but should extend also to the provision of means to achieve them: training, economic and financial resources.

Plans may be classified variously according to their power of constraint, field of action, duration, and the nature of the project:

1. Imperative or indicative plans.
2. Integral or partial plans (depending on whether they embrace all the methods of training and the public and private sectors, or not).

3. Short- (1 year), medium- (4 to 7 years) or long-term plans (10 to 20 years).

The limit set for the operational characteristics of a plan is ten years, anything beyond that period being in the nature of a perspective.

The training period is necessarily longer than it is for economic planning, and this can be justified by a number of reasons: time required for training highly qualified staff (university professors, doctors, engineers, etc.), and for building establishments of higher learning (5 to 8 years) on the average, the need to train teachers before recruiting pupils, and finally the size of the school age population in the long run.

Some authors think it necessary to make twenty-year projections, since it requires something like twenty years to train a doctor. This is actually a unique case since the other higher professions require only 15 to 16 years of study. In any case, the decision as regards orientation cannot be made 15 or 20 years ahead, but only at the end of the general educational period, in other words, the single school (the American or Soviet system) or at the end of the first cycle of secondary training (European system). To secure doctors in 1980 all that is necessary is to orientate the required number of pupils to the scientific sections of the secondary school in 1970. To secure engineers at the same date, the decision might be taken in 1973.

Educational planning might thus be confined to a ten-year period which, in fact, is already too long for any sound theories to be enunciated on the future development of technological changes or the structure of international trade. A ten-year period is the limit set for the operational characteristics of a plan. Of course, longer term projections - 15 to 20 years - can be worked out on the basis of past changes or a comparison with the more advanced countries, but this would be a perspective rather than a plan, the object of a perspective being to state explicitly the distant aims which the society desires to achieve for the attainment of which short- and middle-term plans are prepared.

The interposition of the time factor, the longer period of maturity required for intellectual investment compared with physical investment, complicates the task of the planner. The urgency of development often imposes the need for accelerated training of qualified staff, but even when the necessary funds are available, it is impossible to obtain teachers overnight. On the other hand, any extension of the period of schooling reduces the number of young people who enter the labour market, and thus lowers production if there is a manpower shortage (this eventuality does not arise where there is under-employment, because the unemployed fill the necessary gap). When there is a lack of teachers for educational development, there is recourse to foreign staff, and this raises currency and sometimes political problems, such as the withdrawal either from the administration or the economy of a certain number of personnel for training as teachers. This poses a problem of expediency costs, as to whether they would be more useful to the nation as servants of the economy or of education.

In short, human resources planning may be defined as action integrated into the general development planning, to set manpower targets according to the level and type of training to be secured within a given period of time, and to determine the physical and financial resources to be employed in achieving them.

PART I - THE ORGANIZATION OF PLANNING

The direction, type and content of planning vary in accordance with economic and social systems. Planning, as we have already said, is nothing more than the quantified expression of a policy; it cannot replace the latter if it does not exist. Thus, underlying the success of any plan is the determination to implement a development policy. This aspect, though essential, is not sufficient to offset technical or administrative deficiencies: inadequate basic data, lack of organization and qualified staff, or resistance from the traditional structures.

An important factor for success lies in the active participation of the various social sectors in the preparation and implementation of the plan.

I. INFORMATION

No planning is possible without a minimum of statistical data. Should such data be incorrect, the best methods would be valueless and the plan itself would in part be ineffective.

The amount of information required depends on the nature of the plan (whether it is tied to economic development or not), its field of coverage (regular education only or the entire means of training), its duration (short- medium- or long-term), its scope (whether or not it includes regional objectives).

In the past, statistics were collected for administrative purposes. They do not always meet the needs of planning: some of the information are useless and certain data required are lacking.

Unesco has published standard lists of statistics^{1/} which may be classified under four headings:

1. Demographic statistics: total population on the basis of age and sex, birth, mortality, migrations.
2. Educational statistics: number of schools, classes (physical), pupils (age, sex) and masters (age, sex, qualification) in the different grades and types of education; educational cost and financing.
3. Manpower statistics: age, sex, level of instruction, professional qualification and classification on the basis of branch of activity; workers employed, unemployment and under-employment.

^{1/} cf. K.G. Brolin, "Statistics needed for educational planning" in UNESCO Economic and Social Aspects of Educational Planning, Paris, 1964, pp. 233-242.

4. General economic and financial statistics: national accounts, public expenditure and revenue, principal products.

In the newly independent States, many of these statistics are lacking, or else are unreliable. In some of them, there is almost no knowledge of the total population. The practice of registering births and deaths is often of very recent date; not all births and deaths are declared, and the ages of pupils rise or fall according to whether they wish to enter a school or remain there. Economic statistics, too, are chancy because of the extent of auto-consumption, tax evasions and inadequate means of supervision.

Nevertheless, the scarcity of data should not be a handicap to action, for any country, however inadequately provided with data, can produce sufficient to secure rough working estimates. The planning process itself will lead to a gradual improvement in statistics.

In countries where the statistical services are in their infancy, it is neither desirable nor necessary to strive to collect the maximum amount of information. It would seem to be more useful to prepare a minimum amount of statistics which are correct, and which can be quickly processed and distributed. Questionnaires which are too cumbersome increase the time needed for replies and the risk of error; there is the further problem of time and staff for processing. It is better to have present estimates rather than more precise data which may be delayed, since planning and action cannot be kept waiting.

The questionnaire should be as clear as possible, and contain explanations on the method of filling it and interpreting the terms used, so as to avoid one of the commonest risks of error: for instance, when a question is asked about the "level of instruction" of the active population, does this refer to a diploma or degree, the number of years of study, the last year of study completed or experience gained? And what of the self-taught? Other errors might occur in data collection, recording, calculation or from omissions. It is useful to test a new

questionnaire before giving it final shape. Then a careful check should be made to ensure that the replies are accurate and coherent. It should not be forgotten that the questionnaires should be coded for processing by computer. Finally, the results (at least the essential ones if not all of them) should be published and distributed as quickly as possible to all users especially of the plan.

II. STRUCTURES

Planning is a new task for the administration which traditionally concern itself with management. A number of problems arise from the fact that these two functions are diametrically opposed, one being concerned with broad horizons, the other with immediate views. The effectiveness of the planning body depends on its place in the machinery of the State, the role it has to play, and the services available to it. Solutions vary from one country to another, because they are influenced by such factors as administrative traditions, the constitution of the State, whether unitary or federal, the system of planning (whether centralized or not), the size of the country, and the level of economic and social development.

However, a proposal might be made that the plan should contain a Human Resources Division, which would direct and co-ordinate the work of the Ministries of Education, Labour and Health, as well as the specialized training given in other Ministries: Agriculture, Public Works, Industry etc. Co-ordination may take the form of regular meetings, communication of information and the exchange of civil servants.

In any case, it is necessary to establish alongside the administration a national advisory body made up of representatives of all who "provide" and "seek" education, to act as a channel for the expression of public opinion and provide a guide for planning: the teaching staff, public and private, of different grades, parents of the pupils and the pupils themselves (who are often forgotten), the sectors which employ skilled labour (agriculture, industry, services).

A final co-ordination problem concerns links between the centre and the region. Experience has shown that here as in the field of economics, extreme centralized planning leads to waste, delays and bottlenecks, and sometimes to a loss of contact with the real problems. On the other hand, excessive decentralization causes local interests to take precedence over the national interests which demand the observance of certain general principles and the need to avoid duplication.

Decentralization is particularly necessary in large States with a mixed population. In India and the Soviet Union, the method followed which seems to be the best, is a combination of centralization and decentralization. The central body establishes the plan, after receiving proposals from the States or the federated republics. Even in small countries, decentralization is necessary because the local organizations are in a better position to appreciate the needs of the population, and meet them in the manner most satisfying and least costly. For instance, the interest of the population can be aroused and the population made to participate in plan preparation and implementation - a condition for success. The local organization can be induced to explain the reasons for a project which though useful from the point of view of the State's plan may offend local susceptibilities. Finally, it is its duty to harmonize the achievement of economic and educational tasks, by supplying skilled manpower, for instance when the factory throws its doors open.

Thus the problem of decentralization ties up with the problem of co-ordination. The more important the first becomes, the more necessary is the second at all levels; at the centre, between the various economic and social planning services, between them and the Ministries which implement the work, and between the administration and the external organizations; between the centre and the regions; locally between the representatives of the Ministers and local authorities, and between the various services which are responsible for plan implementation.

However, if co-ordination procedures are carried too far, they militate against efficiency. Centralization is absolutely necessary at the strategic points of preparation and supervision. Indeed, in

many of the under-developed countries, the lack of qualified staff makes it necessary to centralize preparation and decentralize implementation. It is not possible to require regional personnel which are of modest size and are burdened with work, to establish detailed projects. It is for the central organ to prepare and submit them for discussion.

III. PROCEDURES

We have already said that planning is a continuous process constantly repeated, ranging from an analysis of the present situation to the establishment of targets for the future, and the determination of the methods for achieving them. The plan is not completed once it has been prepared and approved by the political authority. There is still (and this is not the least important phase) the question of implementation, and supervision of such implementation to ensure necessary modification and improve future planning. Procedures, like structures, vary in accordance with the social and political system and the size of the country.

Plan Preparation

Theoretically, two methods of preparation may be conceived, from the top down or from the bottom up. In the first case, the plan is prepared at the central level without the intervention of the regional and local organizations. In the second case, it is the regional and local organizations which prepare their plans and the central body then consolidates them.

The great disadvantage of the second method is that regional and local authorities generally see only their own interest and do not fit them into the national context. The incompatibilities between their plans are such that a synthesis is often impossible. In the poor countries, the lack of qualified staff already makes it difficult to constitute a central team, to say nothing of regional organizations. This explains the fact that small States generally practise the first method whereas the larger States combine centralization with decentralization.

In India, the Government of the Union has only a limited responsibility for education, which is constitutionally reserved to the States. Planning is carried out in three stages: at the top, the National Development Council, made up of representatives of the Central Government and the State Governments, formulates the recommendations for general economic and social policy; the Planning Commission prepares a rough outline which indicates the broad objectives, the order of priority, and the available resources. In this context, the Governments of the States prepare their own projects. These are discussed at the central level and integrated into a National Plan which is prepared by the Planning Commission. In the Soviet Union, planning proceeds uninterruptedly through information from one level to another, both in descending and ascending order. Once the political directives are formulated by the Congress of the Communist Party, and approved by the Supreme Soviet, the Gosplan of the USSR prepares the main economic and social objectives to be attained in the plan period. After approval by the Government, these objectives form the general framework of the plan which should then be "fragmented" on the basis of economic sectors and regions. The Gosplan prepares a draft plan which contains "indicators" that are valid for the whole country. In accordance with this model, the responsible organizations establish detailed plans.

As education is integrated into the development plan, the supply and demand of qualified manpower are calculated separately by two types of organizations.

The Gosplans of the Union and the Republics evaluate manpower demand for the plan period (five to seven years) on the basis of needs expressed by the enterprises, through the sovnarkhos (Regional Economic Councils).^{1/} This demand is reinserted in a long-term perspective (15 to 20 years) according to a rough estimate of anticipated growth for the period.

^{1/} Until they were abolished in October 1965.

The manpower in question comprises middle-level staff (workers with 8 years general education and one or two years vocational training or 8 to 11 years of general education), and upper level staff (with certificates or diplomas of higher education or specialized secondary education). The needs are evaluated vertically (on the basis of enterprises and branches of activity) and horizontally (on the basis of economic regions and republics for the country as a whole).

The estimates are forwarded to the Ministries of higher learning and specialized secondary education in the Union and Republics and to the State Committee for vocational and technical education. The Union Ministry plays the role of planner and general co-ordinator whereas the Ministries of the Republics exercise administrative and financial supervision over the teaching establishments. It is their duty, with the other Ministries responsible for educational work, to evaluate the human, material and financial resources necessary to meet educational needs.

The supply of trained manpower at various levels is therefore estimated by the Ministries of higher learning and specialized secondary education, primary and secondary education and Ministries which administer the specialized schools (transport, communications, health, agriculture, etc.). The division between higher education and specialized secondary education, on the one hand, and primary and secondary education on the other is explained by the complex modern educational problems, as well as by the size of the numbers concerned (three million and a half students in higher education alone). From the standpoint of planning, the methods are also different.

While higher and specialized secondary education are developed in relation to manpower needs, general education is mainly determined by demographic changes and the duration of compulsory schooling (which at first was four years and later seven and is now eight years). Planning and plan execution are the responsibility of the Ministries of public instruction of the Republics (from 1966 a Union Ministry has co-ordinated their activities). Although the criteria governing programmes,

textbooks, and examinations are the same throughout, the Republics enjoy a large degree of autonomy so far as language and teaching methods are concerned. Educational projects up to the eighth year of study are prepared by the regional educational authorities (oblasti) and the local authorities (gorodo and raiono) on the basis of demographic perspectives. These evaluate the number of pupils enrolled, masters, inspectors of school buildings and the school's budget.

These projects are all collected, analysed and reviewed by the Gosplans of the Republics in order to harmonize them with the general draft plan of each Republic, having regard to the resources available locally. The draft plans of the various Republics, which now include education must go back to the Gosplan of the USSR. This body makes a general revision in order to consolidate all the partial plans into a single national economy plan. Education is finalized in conjunction with the Ministry for higher and specialized secondary education in the Union.

The plan is now ready and merely requires the ratification of the competent political body. The educational plan contains the overall targets of admissions and departures on the basis of Republics, Ministries and other educational institutions and on the basis of the type of education (regular, evening classes, correspondence courses) without any differentiation between the various disciplines. It is accompanied by a financial plan which is also submitted to the Council of Ministers which approves the annual budget appropriations for education.

In the overall framework of objectives, the organizations of the various Republics, in co-operation with the Gosplan of the USSR, work out the annual targets of admission and departures on the basis of individual disciplines. These objectives are in turn detailed by the educational establishment.

If there is no governmental policy or if it fluctuates or is unrealistic, there is no doubt that the planning effort will not yield any short-term concrete results. It nevertheless deserves to be tested

since it is in itself a valuable instrument for developing information and social communication, co-operation between the representatives of the various disciplines, the administrations, the public and the private sector. It enables some clarification of options to be made, testing of alternatives and such results as may accrue from them, and the placing of decision-making on a scientific basis, in other words, the rationalization of the development process.

Plan Implementation

As we have already stated, the task of plan implementation should be separated from that of plan preparation, which implies that they both come under different bodies. Plan implementation is even more important than plan preparation. The most carefully prepared plan may produce disappointing results if it is not well implemented, whereas a plan that is technically defective will give satisfactory results if it is correctly implemented.

Plan preparation and approval by the political or legislative authority do not necessarily imply that it would be implemented. There is no continuity between these two stages. Indeed, more plans are prepared than are implemented, and there are a number of reasons for this.

In the first place there is the case of the plan not being implemented simply because it defies implementation.

In the second place there are external circumstances which may arise and dislocate the implementation of the plan as a whole (war, reduction of foreign aid, a fall in revenue from exports, etc.).

The commonest difficulties are connected with unsuitable structures and procedures.

If the plan is to be properly implemented, it must make provision for the entire financing to cover the whole period and for a calendar of annual instalments. There is a problem in this connexion associated with the traditional rules of public finance, since the principle of

annual budgeting is the dominant practice in a number of countries. Financial procedures should be adapted to meet the needs of planning. Some countries have established multi-annual budgets, others use the "project" formula, but the two methods could be combined. The second, which consists in providing a definite volume of resources allocated to a given project for the duration of its operation (for example, experiments in functional literacy for adults, now taking place in Algeria, Mali, and Iran), is suitable for operations which are financed wholly or in part from specific resources (internal or international).

In any case provision must be made for expenses in connexion with investment and recurrent expenditure. As international aid primarily affects buildings and equipment, the national authorities have a tendency to overlook the recurrent expenditures entailed, and so difficulties of implementation arise since the rate of recurrent expenditure is very high in teaching. India has instituted a procedure to avoid such disadvantages by seeing to it that each investment project made provision for the corresponding recurrent expenditure, whereby the expenditure becomes the responsibility of the budget for equipment for the first five years.^{1/}

If there is no adequate financial provision, the plan cannot be implemented.

Plan Supervision and Revision

Supervision is very important both for current plan implementation and future plan preparation. By comparing the tasks assigned and the results obtained, the resources provided and the means used, it facilitates the avoidance of waste, the detection of difficulties and loopholes, improvement in implementation and the prevention of false orientations. Moreover, in planning which is a continued process, it is necessary to make adjustments in the light of more precise data (after a population census for example) or new facts (an increase in revenue from foreign trade or international aid).

^{1/} The Institute for the Study of Economic and Social Development, Les aspects administratifs de la planification sociale, Paris, February 1964, p.59.

The need for objective supervision means that such supervision should not be left to executive bodies, since they will not be at one and the same time judge and jury, but should be given to the organization responsible for plan preparation. Such an organization is the one best qualified for this task since it requires a perfect knowledge of objectives and means. This is actually the solution that has been adopted practically everywhere.

Alongside supervision as such, it is important to evaluate the results obtained. Evaluation, in the field of educational planning which is linked with economic and social development, consists in measuring (as quantitatively as possible) the social and economic results of changes brought about by education and training. It is not merely a question of examining the numbers of pupils and those who receive certificates or diplomas, but also the cost of their training, their level of knowledge and aptitudes, the conditions for adapting themselves to active life, the influence of teaching on production and the wages of workers, on the operation of a farm, a factory and the economy as a whole, on the social and political behaviour of men and women, in a word, educational productivity in all fields.

It is difficult to make such an evaluation, but it is nevertheless necessary. In the past such an evaluation has been neglected. A number of interesting experiments have taken place but we are without any detailed information on the results, causes of error or failure. Without such knowledge, it is impossible to learn any lesson from experience so as to improve the methods of action and determine the criteria for efficiency. Planning is a matter of choice, which aims at the optimum use of limited human and financial resources. To achieve this, it is necessary for planners to have accurate analyses of comparative yields in the different classes of investment and within the field of education itself, the various levels and types of teaching and training.

There is no doubt that the systematic evaluation of results is making headway. It is an integral part of the functional literacy

projects which are now taking place under the auspices of Unesco.^{1/}
If the administration is ill-equipped for this task, it should be undertaken by a university.

IV. STAFF

The quality of the staff plays as important a role as administrative organization, since men have to collect information, prepare programmes, execute and supervise them. Technical competence alone is not enough. It must be wedded to certain human qualities.

Planners receive technical training in national and international institutes. The United Nations and its regional commissions for Asia, Africa and Latin America organize courses in which specialized institutions participate. Courses are also given in the institutions at Bangkok, Dakar and Santiago (Chile). ILO has established an Institute of Social Studies in Geneva, UNESCO has regional centres for training educational planners in Beirut, New Delhi, Santiago, Dakar and Bangkok and an international Institute for the Planning of Education in Paris. OECD (the Organization for Economic Co-operation and Development) organizes travelling courses and seminars. The experts sent to the under-developed countries are also contributing to the training of national staff. Human resources planning does not call for a large staff since a small number of capable men is enough, provided they know how to stimulate the movement and get all the services and interested sectors to accept a collective effort.

Human qualities are equally important in plan implementation. The traditional administration may be content with the passive acquiescence of the population, but development programmes rest upon their active participation, not upon coercion. The civil servants who are responsible for local plan implementation should adopt a new attitude which should aim at explaining and convincing rather than imposing them in an authoritative manner.

^{1/} Compare Unesco, Provisional guide for the evaluation of experimental literacy projects, Unesco/Lit/Ev/3, Paris, 21 April 1966.

B. TECHNIQUES OF HUMAN RESOURCES PLANNING

B.1 Summary of Lectures

by

Prof. Le Thanh Khoi

PART II -- METHODOLOGY OF MANPOWER PLANNING

An approximate choice of objectives is made schematically to arrive at the vocational employment structure required and the system of training is planned to produce the staff with the necessary qualification.

This approach is fraught with many difficulties. In the first place, information is generally lacking on a number of essential points and there are few countries with accurate statistics on the qualification and educational level of workers on the basis of trade and age, the number who leave each trade every year or are pensioned off or die, vocational mobility (changes of employment and promotions) and the geography of manpower.

Economic theory, in the second place, is not so advanced in this field as in others. Knowledge is lacking as to the satisfactory method of measuring the educational contribution to economic growth and, even more, the relative contribution of various types of training. The fact is that there is no close relation between the employment structure and the level of development in any branch of activity or an economy as a whole, nor between the three qualitative aspects of manpower namely: profession, qualification and level of instruction. Another cause that leads to uncertainty is to be found in the difficulty of predicting the future in times of scientific and technological change or so far as the non-industrialized countries are concerned, because of political and economic factors outside their control.

Even when all these problems are resolved, there remains the freedom of the individual to choose studies or a profession, and this can upset the nicest calculations and any directives, however authoritarian.

In spite of all these difficulties, however, we believe this approach to be necessary. It gives concrete meaning to the national policy, serves as a guide to the orientation of studies, and reduces waste which would otherwise occur. There is no question of predicting the future, but rather of assessing, as Mr. Parnes puts it, "the way manpower should be distributed between the various trades or professions, if certain social and/or economic targets are to be reached. In other words, this idea (of the needs of manpower) is interpreted in a technical rather than in an economic sense".^{1/}

We might define the following broad stages in this method:

- (1) inventory of the situation in the base year;
- (2) employment forecast in the year when the plan matures or, better still, for each year of the plan duration;
- (3) calculation of recruitment needs during this period;
- (4) conversion of employment target to teaching targets;
- (5) confrontation of needs and probable resources at the different levels.

This methodology has been followed, with a few variations, in the socialist countries (in the Soviet Union since 1927), in France since the fifth plan, in the countries subscribing to the regional mediterranean^{2/} project, in the United Arab Republic, etc.

Theoretically, another approach might be conceived which would consist in choosing as the objective the full employment of educated persons rather than the growth of the national product. On the basis of the numbers already recorded in the educational system, a plan is

^{1/} Herbert S. Parnes, Besoins scolaires et développement économique et sociale OECD, Paris, 1962, p.18.

^{2/} The mediterranean regional project was launched by the OECD in 1961 to evaluate educational needs up to 1975 on the bases of long-term objectives of development in the following countries: Spain, Greece, Italy, Portugal, Turkey, Yugoslavia. The six national reports were published in 1965.

prepared indicating the number of outgoing pupils at different levels, according to the type of training they are given, and an evaluation made of the volume and structure of the national product which can absorb all the certificated school leavers. This method rests on the implicit assumption that the supply of qualified labour creates its own market. Actually, nothing can be less certain, as could be seen in the unemployment among intellectuals in India, the Philippines and elsewhere or the difficulties France experiences in finding employment for students of the humanities. All types of qualification do not have the same degree of productivity and all cannot be equally welcome to the economy. "Spontaneous tendencies" often result from wrong information, being given to students, creating surpluses which work against them. Consequently production should be the independent variable if only because it is production which ensures the financing of employment and even of education. We shall now examine successively each of these phases in planning for employment and training.

I. ANALYSIS OF THE ACTIVE POPULATION

Any forecast should be based on as accurate a knowledge as possible of the present position. What is required is not merely the collection of statistics, but more than anything else, their classification and analysis in terms of educational planning. In other words, efforts should be directed primarily to manpower distribution on the basis of trade or profession, level of instruction and branch of activity, as well as to the evaluation of the effectiveness of manpower, where it is lacking and where it is in excess.

Information Sources

The most complete source of information is the population census. In principle, it is this census which should supply the necessary data on the total active population on the basis of age and sex, unemployment and under-employment, the distribution of workers on the basis

of trade or profession, openings and level of instruction, etc. However, there are a number of difficulties. In the first place a census rests on individual statements which are not always accurate or precise (such categories as "civil servants" and "office employees" are very mixed). Furthermore, census processing is a cumbersome business and the results are published several years after it has taken place. Moreover, since a census takes place approximately every ten years, there is the need to complete it (or make up for its absence) by other sources of information.

Sample population surveys supply the same data as the census, but with greater expedition. However, they are faced with the same difficulties in regard to accuracy, since the information is always obtained from individuals.

Surveys carried out on industrial, agricultural and commercial enterprises, offer valid information when the sample is stratified in terms of the various branch activities and when the terms, professions or trades and levels of qualification are carefully defined. When a survey proceeds by correspondence, the employers are likely to give their own individual interpretation to the various professional or vocational categories. To define "employees" as "executive agents who play no part manually in the preparation or processing products", or "technicians" as persons who "execute the results of studies, research or synthesis", is quite clearly not accurate enough. Far better to refer to the definitions of collective agreements which provide the basis for a uniform interpretation.

In the non-industrialized countries, better results would be obtained from a direct survey (but the operation is more costly). Two conditions should be fulfilled: surveyors must be trained (an appeal might be made to students) and a nomenclature established for the various professions or trades (corresponding to the particular situation of the country concerned). Questions should be asked as regards age, sex, employment and qualification, training (whether in school or outside school) and the gross wages.^{1/}

^{1/} This was actually done in a census on wages in Mali in 1966, compare ILO Report to the Government of the Republic of Mali on the evaluation and planning of human resources, Geneva, 1967.

For certain classes of the active population, other sources may be tapped: statistics of trade unions and professional or vocational associations, of social security, records of the civil service and data on budgets.

These sources are very uneven in value, but all is grist that comes to one's mill in the newly independent States where information is a rare and uncertain commodity. Not infrequently, information cannot be accepted as given, and must be cross-checked with other sources. Generally speaking, the value of information depends on the quality of the staff supplying or collecting and processing it.

Organization of Information

Information collected is frequently ill-adapted to the needs of planning, and should be organized and classified.

1. The first stage consists in putting qualified manpower back into the overall active population. It should be noted that some countries have no knowledge of their overall population figures, and even less of the rates of activity on the basis age and sex, of unemployment and under-employment. Nevertheless, these data are not of crucial importance since the countries concerned do not at their level of development suffer from any lack of manpower, in fact, they cannot provide full employment for the population. The only point of interest is the knowledge of unemployed qualified persons, since they provide a reserve of workers, teachers and qualified persons (cadres) on which to draw in carrying out a policy for economic and educational expansion.

2. Manpower should be classified to make it possible to carry out employment forecasts which should be linked with the planning of the national education. The main problem is therefore to distribute manpower on the basis of trade or profession, because the various levels and types of education are a preparation for trades or professions or groups of trades or professions.

The usual distinctions in labour statistics as between management, executive staff, managerial staff, employees, workers etc., are not to be recommended because these categories are too varied. The principal international system is the standard international classification of trades and professions (SICTP) prepared by the International Labour Office.^{1/} It gives a list of 1,345 trades or professions (code numbers in five figures) distributed in ten large groups (plus a group for the armed forces). The classification is based on the types of work performed. No account is taken of the levels of qualification except in so far as they impinge upon the work done, and so SICTP draws a distinction between the accountant and the chartered account but not between specialized workman and the skilled workman. Very few basic groups are homogeneous as far as the length of vocational or professional training is concerned. Finally, the number of professions noted is too high (although there are a surprising number of omissions) for operational planning. Since the plan is a national undertaking, it is imperative that the list of trades or professions should tally with the national situation as regards manpower and education, while at the same time drawing inspiration as far as possible from the definitions given in SICTP, in order to facilitate international comparison. In point of fact, the number of trades or professions to be recorded depends on three factors: the need for an instrument that can be manipulated, the quality of the statistical data, the degree of complexity present in the economic life. One can and should be satisfied with a lower figure for planning than for analyzing the present situation.

In France, the National Institute for Statistical and Economic Studies (INSCE) codes 1,200 individual activities. In the results of the 1962 census, they are regrouped under 391 headings. The manpower

^{1/} ILO, Standard International Classification of Trades and Professions Geneva, 1958, Second Edition 1962. ILO undertook the revision of SICTP to improve it and bring it up to date. Compare the Geneva Report on Labour for the Revision of SICTP Document C.S. 164/5/10, 164th session Geneva, 2 February to 4 March 1966.

commission of the fifth Plan keeps only 105 professions which are actually grouped under 16 headings: agriculturalists and woodcutters; sailors and fishermen; workers and artisans; transport drivers; scientific and technical staff; commercial staff; administrative staff (apart from management); management posts; professions in the health and social services; teaching staff in public or private education; qualified staff in the legal services; artistic professions; personal care work; service staff and mixed transport agents, posts and telecommunications; staff for the army, police, Customs and fire brigade; religious worship.^{1/} In Mali, the nomenclature used for the census of wage-earners contains 241 professions or trades, which are reduced to 63 in planning.^{2/}

3. Trades or professions should be divided on the basis of activities.

In practice, a table is drawn up on a double entry basis, the professions on the lines and the branches of activities in the columns. This makes it easy to see how the numbers in a given profession are distributed as between the various branches of the economy (on the lines) or what is the employment structure in a given branch (in the columns).

There is a standard international classification on the basis of industries, for all the various economic activities which consist of 10 one-figure headings.^{3/} Details of national classification, as in the case of the trades or professions depend on the nature of the

^{1/} C. Vimeut, Ph. d'Hagues et M. Peslier, "La prévision de l'emploi dans le cadre du Vème Plan en France", Population, May - June 1966.

^{2/} S.I.T., already cited.

^{3/} United Nations, Statistical Studies, Series M. No.4, Rev.1, New York, 1958.

available statistics and the level of economic development. They should be as close as possible to the division used for national accounting. It would seem to be necessary to distinguish between 20 different branches:

1. Agriculture, sylviculture, hunting and fishing
2. Extractive industries
3. Building and public works
4. Manufacturing industries (details according to the structure of the economy)
5. Electricity, gas, water and sanitary services
6. Trade, banking, insurance, real estate
7. Transport, warehouses and communications
8. Governmental services
9. Health
10. Teaching and culture
11. Services provided to enterprises
12. Recreational services
13. Personal services
14. National defence

The number of processing industries to be recorded depends, as we have noted on the structure of the national economy. However, generally speaking, ten groups may be indicated: food industries, textiles, clothing, hides and skins; timber and furniture (paper, printing, editing); chemical, petroleum; rubber; non-metallic mineral products excluding by-products of petroleum and coal; metallurgical industries; mechanical industries; electrical industries.

In the non-industrialized countries, if statistics allow, a distinction can be made as between the traditional and the modern sector of agriculture and the artisanal character of industry, properly speaking. The criterion for making this distinction should be based on the "modern" character of the techniques used, and not on the dimensions (turnover, numbers of workers) of the enterprise or on the fact that the enterprise is a market one. It is, however, difficult to apply,

because a large number of enterprises include modern as well as traditional elements. From the standpoint of planning, the interest lies in the need to train for the traditional agricultural sector, not only "technicians" but also "extension workers" agents of community development.

Manpower classification on the basis of activities is necessary, because professional or vocational structure differs from one branch to another, and time variation is not the same for all branches. In other words, total employment growth during a period is not distributed proportionally in all branches; moreover, under the influence of technological and social factors, changes occur in the professional composition of each branch, and classification facilitates an analysis of the differences both internally and internationally.

4. Statistics on the level of instruction of manpower are the least common and most difficult to compare internationally. Not only do teaching systems vary from country to country, but also the indications differ in accordance with the question posed during the census. Any one of the following indications may apply:

- (a) number of years of study completed;
- (b) the last year of study completed;
- (c) the highest diploma or degree or certificate obtained;
- (d) school leaving age.

The total years of study may be increased by the fact that a pupil may have to repeat a class once or several times. The certificate does not take into account the years of study lost, because a student gives up an examination or fails to pass it. The age attained at the end of the study period only implies the same level, if all the pupils have gone through the cycle regularly. The last year completed would appear to be the most satisfactory indication, provided one knows what type of study is referred to.

Data would also have to be available on extra-curricula training: a worker may become qualified by training on the job, experience or private study. Besides, there is no single level of instruction for each trade or profession. Censuses carried out by certain countries facilitate the determination of the "training pattern" in the different trades or professions, in other words, the distribution of their members on the basis of level of instruction, whether general or technical. Unfortunately, this pattern is limited to school training.

As far as planners are concerned, the existing manpower distribution is not as important a factor as the levels of training of its youngest elements, because it is they who give some idea of what the recruitment norms would be in the future.

5. Other Classifications

Manpower classification on the basis of age is therefore useful, not only for forecasting educational needs, but also for calculating manpower renewal rates.

The same is true of sex. The distribution among male and female workers varies greatly according to trade or profession, the particular branch of activity, the level of instruction and is very different, too, from country to country. Replacement rates are not the same as in the case of men.

Finally, it is necessary to know the regional distribution of manpower when regional objectives are fixed by the plan. Regional distribution is of great interest, when studying the influence of teaching on geographical mobility. Finally, it is useful to know what the distribution is on the basis of nationality.

Critical study of the present situation

Planners cannot be content with knowing what the present manpower distribution is on the basis of trade or profession, branch of activity and level of training. They must study it critically, and determine the surpluses or possible shortages, so as to eliminate them from any future projections.

As far as liberal economists are concerned, market forces always tend to balance manpower supply and demand through a rise or fall in wages, or the possibilities for substitution between the various levels of training. As a matter of fact, this balance is not achieved immediately. The training of highly qualified staff takes a very long time and in the interval, there might be considerable losses. Moreover, wrong information on present and future markets in the absence of a plan may give rise to a phenomenon of cumulative imbalances known to economists as the "spiders web". Because of the length of training and technological changes, the individual who embarks on a course of study, runs the risk when he has completed it of failing to secure the employment he had hoped for. And so there are alternate phases of shortages accompanied by high wages and surpluses which force wages down.

In the second place, substitution possibilities are not unlimited. An engineer cannot replace a doctor, a (male) nurse might, but only in matters of ordinary treatment. Even when substitution is possible, it does not follow that the results will be the same. It is clear that an enterprise or an administration which cannot recruit the staff it needs, will continue to function, but the question is at what pace and with what kind of productivity. The equilibrium of the market should not be confused with the desirable degree of equilibrium (we prefer not to speak of the optimum).

How can this "desirable degree" be measured? It may be defined as the level and structure of employment necessary to enable a branch activity to secure the highest yield from labour in the existing conditions of the economy and the society. Reference is made to the yield of the worker, not to the growth of the product. Employment statistics do not reflect manpower needs in the sense in which we understand this term, but the supply of the labour force. The differences between needs and present employment may arise from shortages or (and) excesses:

1. Posts vacant because of lack of qualified staff.

2. Posts occupied by insufficiently qualified staff. This is a situation which is often met with in the States where independence has led to the rapid nationalization of the higher posts which until then were occupied by expatriate staff.

3. Under-employed manpower. The enterprise or administration might operate with a reduced staff but is prevented from doing so for political or social reasons, or because of labour legislation. It is also possible that an enterprise or the administration might keep their staff due to expansion, or finally that they may not have the necessary organization and techniques to use them to full capacity.^{1/}

To identify shortages and excesses, surveys must be conducted in enterprises, the public services and placement offices (although they only provide a limited channel). Processing of employment supply and demand published in the press, provides useful information as well as the study of the national budget which indicates the present functions and the original status of the officers of the State. It might be seen, for instance, that in such countries a registrar holds the post of judge, instructors who have not secured the school-leaving primary certificate hold teachers posts. Finally, comparison can be made between the changes that have taken place in wages on the free market, of workers belonging to the same group of trade or profession and with the same level of training. If, among engineers, those who work at electronics are paid a higher wage than their colleagues in public works, this means that there is a relative shortage of the former.

II. FORECASTING EMPLOYMENT

Once the present situation is analysed and, if possible also, the changes that have occurred in employment during the previous period, the second stage in planning which is the most important and the most difficult, is to forecast manpower needs. This stage includes four phases:

^{1/} Compare ILO, Manpower assessment, selected chapters, Geneva, July 1963, D. 5 (6) 1963 (Draft not for distribution).

- (a) the evaluation of the active population in the year the plan matures or, better still, for each year of the plan;
- (b) the determination of employment on the basis of branch of economic activity;
- (c) the distribution of such employment on the basis of activities and professions or trades.

A. Evaluation of total active population

The active population is at one and the same time the chief factor in manpower supply, and the ceiling of the total manpower demand by branches of activities. Nevertheless, this is a relative limit because the production capacity of any given manpower can be increased by lengthening the hours of work and improving health.

It is worth recalling that the active population is generally defined as being made up of persons who either have or are seeking employment in the production of goods and services. The active population therefore includes manpower which is employed as well as unemployed persons, civil workers as well as persons serving in the armed forces. The numbers of the active population depend on the volume of the total population, its structure on the basis of age and sex, as well as migratory phenomena.

In short, variations in the active population during the planning period may be schematized as follows:

Variations of manpower resources

TO	Active population	(Unemployment
		(Civil workers
		(Armed forces
From to	{ + Natural growth of active population to constant rates of activity	
t _n	{ - Effects of increasing the length of the school period	
	{ - Effects of a drop in activity rates of aged persons	
	{ ± Variations in the activity rates of women	
	{ + The net immigration of active persons	

Once the total manpower volume is determined, two general factors which influence production capacity should be taken into account.

The first is the hours of work. In the long run, the length of working time, measured in hours and working days per year, has tended to diminish in all the industrialized countries along with the rise in the level of living, and increase in productivity. However, in the short run, this length of working time depends a great deal on the business cycle in each country. In the less developed countries, working hours in the services are generally low and can be increased without difficulties. However, beyond a certain increase in the working hours, the yield does not increase any more, but rather decreases.

The influence exercised by the physical condition of the population appears to be more important. This physical condition depends on the eating habits of the people and the state of their health. It influences the size of the active population, and the number of working period it can supply. Actually, poverty, malnutrition and high mortality generally go hand in hand. They explain the fact that the output of manpower is higher, all the other conditions being equal, in the temperate regions than in the tropical countries where many debilitating diseases exist. It is thought that malaria affects 300 million people in the world every year, and each of them thus loses 20-40 working days.^{1/} As a result of an anti-malaria campaign in East Bengal, the rice harvest increased by 15 per cent.^{2/}

Malnutrition and under-nourishment sometimes stem from social factors. Even when the number of calories seems sufficient, there is a lack of protein due to the low consumption of meat. African herders attach more importance to the social value of their flocks, than to their value as food, and wait until the animals die of some disease or old age to eat them. Food taboos, and ignorance of the needs of good nourishment, cause

1/ United Nations, Causes and consequences of demographic changes, New York, 1953, p. 299.

2/ Winslow, The Cost of Sickness and the Price of Health, Coerière, 1951, p. 23.

illnesses which hinder the growth of children and adolescents. For this reason, investment in food and health and also in nutritional and sanitary education, is the most expeditious way of increasing manpower yields in the African countries.

B. Evaluation of employment on the basis of branch of activities

The previous stage helped in evaluating manpower resources. Let us now look at the position from the standpoint of demand to forecast manpower needs. None of the methods employed by the planners is completely sure: it is a good thing to make use of all of them in order to cross-check their results. In actual fact, the nature of the method often depends on the information available.

1. The method based on productivity. When there is an economic development plan, it indicates production targets according to branches of activity, and changes expected in productivity. The reference is generally to labour productivity which can be expressed as follows:

$$p = \frac{O}{L},$$

O being production, L the number of workers

Or better still

$$p = \frac{O}{H},$$

H being the number of hours worked during the year.

On the basis of the known rate of production growth (x), and the productivity growth (y) from the year o to the year n, employment in the year n is deduced as follows (L_n) =

$$L_n = \frac{(1+x)^n O_o}{(1+y)^n p_o} = L_o = \frac{(1+x)^n}{(1+y)^n}$$

O_o and p_o are known and also L_o .

This method seems simple and is frequently used. There is, however, nothing more difficult to forecast than changes in productivity. The rate varies not only in different branches of activity, but also in time

within the same branch of the activity. J. Kendrick studied productivity trends in the United States from 1899 to 1953.^{1/} This productivity was measured in two ways: by production per hour worked and on the basis of production per unit of factor. The last method which is described as "the total productivity of factors" takes into account at one and the same time capital and labour, every factor being weighed in terms of revenue on the base period, so as to eliminate any later progress. For 33 groups of industries, the average annual growth rates of the total productivity of factors was around 0.7 per cent for anthracite mines and 5.5 per cent for the distribution of electricity over the period 1899-1953. If ten-year periods are studied, the growth rates show variations compared with the time-honoured rate which sometimes are the same or even in excess. The average deviations vary between 0.8 and 4. As regards production on the basis of hours worked, the variations in the growth rates are even more marked according to the periods and the long-term rates.

However, the rates become steadier when industries are grouped because individual differences are compensated. It is therefore in the interest of planning to try to discover the optimum aggregation in individual branches of activity. In France, the Second Plan (1952-57) had forecast an increased of 2.5 per cent in the total number of wage earners in industry. The real increase was 3.5 per cent, which tallied fairly well. On the other hand, increase in production was very much higher than had been forecast - 46 per cent instead of 25 to 35 per cent. Productivity growth had actually been under estimated. If an examination is made of the different industries it will be found that the percentages of achievements in employment range from 92.5 per cent to 116 per cent. Similarly during the Third Plan (1956-61) productivity gains were greater than forecast, so that the targets were obtained with manpower

^{1/} John Kendrick, Productivity Trends in the United States, National Bureau of Economic Research, Princeton, 1961.

less than had been forecast - +2 per cent instead of +8 per cent. Here too there are great discrepancies from one industry to another between -11 per cent and +11 per cent in five years.^{1/}

If it is difficult for productivity to be projected in industry, the idea itself leads to definite reservations when there is a desire to apply it to a large number of "services" such as health, administration, education, banking and trade. Because these branches do not provide any material production, no satisfactory indicator for evaluating their productivity has yet been found and we have remained content with a ratio between their value added or the remuneration received and the number of officers in the branch. Anyone can see that it is possible in this way for "productivity" in trade or the administration to increase or diminish for purely exogenous reasons (population growth, increases in salaries for political reasons out of all proportion to the rise in the cost of living, a fall in international prices) without any real progress in technology being achieved. The same is not true in transport where production can be measured in tons per kilometres or in passengers per kilometres.

Other problems arise in the non-industrialized countries. Productivity forecasts cannot be made in all sectors where there is under-employment whether in agriculture, handicrafts, trade, or personal services. Because under-employment is defined by the size of manpower which can be retrenched without affecting production, an attempt must be made first to estimate the surplus, with technology remaining constant. In other sectors such as building or even certain industries, the social imperatives are bound to force some little increase in productivity to be forecast, so that as much manpower as possible might be employed. But manpower-intensive techniques are not incompatible with a large increase in productivity since they redress costs.

^{1/} J. Fourastié, "La prévision de l'emploi en France", in OECD; Prévisions de l'emploi, Paris, 1963, pp. 75-81.

It is not the maximization of the relationship between manpower and capital which should be the main criterion for investment, but the maximization of the relationship between production and capital.

2. Method based on employment elasticity. Attempt is being made to determine the relation between the employment trend and the trend of various economic parameters, the one most used being production. In this case, the relation admits an implicit assumption of productivity. The method can be applied globally or according to activity by branch. For example, Verdoorn established the ratio whereby employment shows an elasticity of 0.5 compared with production.^{1/} The Central Planning Bureau of the Netherlands determines employment by using the following equation:

$$a = 0.39 + 0.76 K + 0.07 p_{m-v} + 0.66 \text{ (in which)}$$

a = total employment

v = the total volume of sales (stocks not included)

k = gross profit per unit of production

p_{m-v} = ratio between the level of import prices and the level of domestic prices (corresponding to v).

The total employment is therefore influenced by three factors. It rises from 0.39 per cent if the volume of sales increases by 1 per cent; from 0.76 per cent if the profits from the enterprises increase by 1 per cent. The third factor measures the effect - fairly small - of substituting local products for imported products.^{2/}

The mathematical ratios which are deduced from an analysis of reversion to a past tendency, are historically valid. Their use for projections should take into account new factors which influence the future, whereas these factors did not exist in the past or were of little importance (unemployment, emigration, etc.). The method cannot be applied in economies or sectors where growth and technological changes are rapid and uneven.

^{1/} P.J. Verdoorn, Complementarity and Long-range Projections, Econometrica, 24 (1956), p. 429.

^{2/} P. de Wolff, "Les techniques de prévision de l'emploi aux Pays-Bas", in OECD Prévisions de l'emploi, Paris, 1963, p. 96.

3. Extrapolation. This is the simplest method. It avoids any recourse to productivity or the intervention of economic parameters. A projection can be made of the trend of absolute numbers or percentages (of employment in each sector in relation to employment in the sector as a whole, etc.) or even of relative variations in employment recorded during the previous period.

Linear extrapolation will not as a rule be possible. When there is a very great rise or fall, it is probable that it will not continue at the same rate. In certain cases, there is a risk of arriving at negative figures, for instance, the percentage of the active population in agriculture in the most advanced countries. The projection should therefore take into account the base period as well as investments proposed in future. During 1957-62, the number of wage earners diminished from 5 to 6 per cent in Kenya and Uganda or 10 to 15 per cent in Nigeria, Malawi and Zambia although their Gross Domestic Product in constant prices increased from 3 to 5 per cent annually. The main reason is that investment took forms which economize on manpower.

4. International comparison. Countries without statistics are tempted to forecast their manpower needs by reference to the structure of the more developed nations. The underlying assumption to this approach is that the growth process is secured by comparative stages in all economies, and consequently the distribution of employment between various branches of activity is determined to some extent by the distribution of the national product, which is a function of the stage of industrialization.

In order to verify this hypothesis, changes in the active population taking place in a number of countries since the middle of the 19th century have been recorded in Table 7. (This table can also serve as a basis for extrapolation hypotheses). Only three large sectors were noted: agriculture, industry and services, so as to reduce the differences in definition and the risks of error (which are in inverse proportion to the degree of aggregation).

The trends in agricultural employment are more regular than in non-agricultural employment. Even in agriculture, there is a steady regular drop in the oldest industrialized countries (United States, France, Great Britain, Sweden, Japan, except for the period of the Second World War). Industrial employment is substantially affected by economic crises, wars and revolutions. Employment in the services is a vestige of the past which is influenced by other factors. Its growth is not an index of industrialization (the high proportion of trade and personal services is characteristics of the under-developed economies); only one constant trend has been observed in Sweden.

If countries are arranged according to their per capita income (table) some trends will certainly be observed, but there will also be great fluctuations. In other words, the distribution of the active population does not follow a "normal" curve of growth, but depends rather on conditions peculiar to each country, and particularly on historical factors. The international comparison should therefore be handled with care and is no excuse for refusing to make a direct study of the structure of the economy in question.

Distribution of active population by sector in accordance with
the level of income

Country	Year	Per capita GDP	Agriculture	Industry	Services
Egypt	1960	130	58	12	30
Mexico	1960	350	55	19	26
Japan	1961	460	33	28	39
Poland	1960	660	48	28	24
Italy	1962	820	27	40	33
USSR	1961	1,000	37	33	30
Great Britain	1961	1,260	4	49	47
France	1962	1,350	21	39	40
Sweden	1960	1,480	14	45	41
United States	1960	2,530	7	40	53

At best, it can serve only as a means of verifying the "reasonableness" of forecasts, taking the level of development into account.

C. Evaluation of employment on the basis of professions or trades

This is the essential stage in employment forecasts because it is this which will make it possible to achieve the educational targets. The two previous stages are useful but can, if absolutely necessary, be neglected in a country whose statistics are really inadequate and a direct effort made in evaluating the trades or professions. In a large number of cases, however, it is used as a starting point to arrive at employment in individual branches through training rather than using employment in individual activities for determining the professions or trades of which it is composed, health, education and administration being the chief ones. In any case, it is possible to link the trades or professions not with employment in individual activities but with their production or even per capita national income.

The first problem which arises is that of the professions or trades to be evaluated. It is impossible and in fact vain - even in short-term planning - to forecast all individual trades or professions. In an advanced economy, they reach several thousands. Too much details would only increase the risks of error. It is thus necessary to group professions or trades. This grouping depends in the first place on the structure of the economy (the existence or absence of a particular industry) and the level of development (an agricultural society would need less trades or professions than an industrial society).

In the second place, the possibilities of substitution must be borne in mind. They are easier to achieve on the basis of level rather than types of training. Within certain limits, an electricity technician can replace an engineer, a nurse a doctor, but the technician cannot replace the nurse nor the engineer the doctor. The frontiers between the professional groups will therefore lie where substitution is not possible. The greater the degree of elasticity of substitution, the less need there is for a too detailed breakdown between the trades and professions and even the less the danger of creating structural imbalances, in other words, bottlenecks in one field and surpluses in others. The link between

employment and educational planning necessitates that any grouping of the trades or professions should respond to the structure of the national system of training. Certainly there is no question of forecasting all the levels and types of training which become more and more numerous as the economy develops. Here too one would have to give attention to the larger categories, the possibilities of passing from one category to another and reconversion in the course of studies.

Generally speaking, the degree of aggregation is a function of the forecasting period. For long-term planning (10-20 years) one can remain contented with a small number of trade or professional categories which correspond to the broader divisions of the educational system whereas middle-term planning should give a more detailed assessment of the trades or professions.

There is no one single and sure methodology for the forecasts. It is limited in the first place by the nature and amount of statistical information. It depends on the length of the projection: enterprises can give useful indications about their short-term needs, but for longer-term needs, other methods must be preferred. These also vary according to the individual activities and are not the same in industry and services like health or education. It is a good thing to use all possible methods in each case for cross-checking purposes and to work out several hypotheses to determine genuine changes.

In forecasting trades or professions, we find all the methods used for employment in individual branches: productivity, elasticity, extrapolation and international comparison. The disadvantages are the same. Other techniques are also applied: density coefficient, surveys of enterprises, analysis of the structure of the most advanced enterprises, and the direct study of needs. Macro-economic and micro-economic methods are combined.

In order to make coherence in the forecasting model, it should be based on a matrix which gives the employment structure on the basis of professions or trades in all branches of the national activity. But

alongside total employment, some indication should be given of the product of individual branches in such a way as to make it possible to calculate productivity.

The branch activities are placed in the columns and the professions on the lines. The total lines give the total numbers in the trade or profession and the total of the columns, the employment in the individual branches. Each square indicates the number of workers in one or other of the trades or professions employed in a given branch.

Branches Professions	1	2	3	4	...	M	Total no. in profession
a							
b							
c							
d							
...							
n							
Total employment							
Production							
Productivity							

For an economy made up of branches 1, 2, 3, ..., m, and the trades or professions a, b, c, ..., n.

The total numbers in the trade or profession are expressed as follows:

$$I_a = a_1 + a_2 + a_3 + \dots + a_m$$

The total employment in the branch is expressed as follows:

$$L_1 = a_1 + b_1 + c_1 + \dots + n_1$$

In a more general sense it is expressed as follows:

$$Li = l_{i_1} + l_{i_2} + l_{i_3} + \dots + l_{i_m};$$

$$Lj = l_{j_a} + l_{j_b} + l_{j_c} + \dots + l_{j_n};$$

i denotes the trade or profession, j the branch of activity.

The total employment in the economy L will be expressed therefore as follows:

$$L = \sum_{i=1}^m Li = \sum_{j=1}^m Lj$$

In calculating the percentage for each square in relation to the total, the figures in respect of a given group are distributed between the various branches of the economy; for instance, mechanical workers also perform some activity in industry and agriculture, administration or commerce. There are few trades or professions which are confined to a single branch or even two branches (agricultural workers, fishermen, teaching staff, etc.).

The percentage for each square in relation to the total numbers in a column (Lj) gives the distribution of employment in this branch on the basis of trades or professions: for example in addition to commercial employment properly so called, commerce employs administrative cadres, legal practitioners, office clerks, workmen, etc.

The relation between each square and the production of the branch could also be calculated. In this case one would have professional coefficients. In the same manner as a technical coefficient measures the consumption of a technical factor (raw materials, energy, semi-finished products) by unit of production, the professional coefficient indicates the total numbers in a given profession used in the production of particular kinds of goods or services.

These last two coefficients =

$$o_{ij} = \frac{l_{ij}}{L_j};$$

$$x_{ij} = \frac{l_{ij}}{Y_j}$$

where Y_j denotes production (value added) of the branch j and l_i the total number in trade or profession i employed in branch j , are the most useful for forecasting employment on the basis of trade or profession.

Nevertheless, a special difficulty arises here in connexion with the previous stage in forecasting employment branch by branch. As a matter of fact, whether an analysis is made of national or international statistics, one comes against the problem of comparing the data between two surveys or between countries: the nomenclature of the trades or professions and their definition may vary, artificially increasing or reducing the total numbers of a trade or profession. The same affect is obtained as a result of vague statements. This difficulty might be circumvented if the professions or trades are grouped, but then they might become too heterogeneous for making useful analysis: categories as large as the one-figure group in the international type of classifications are obviously not operational (group 0 for instance consists of engineers, doctors, nurses, priests, legal practitioners, artists, etc.)^{1/}

Let us now examine the different methods of forecasting. The basic hypothesis is that economic development and technical progress bring about changes in the distribution of employment between branches of activity and at the same time changes in the professional structure of each branch.

^{1/} This is a criticism that can be levelled against the study made by P.R.G. Layard and J.C. Saigal, "Educational and Occupational Characteristics of Manpower: an International Comparison", British Journal of Industrial Relations, London, July 1966. The two authors compared the large groups 0, 1, 2, 3 of the SICTP with the total and sectoral productivity in the number of countries.

1. Extrapolation. This is the simplest method, if we bear in mind what was said earlier about the homogeneous nature of the definitions of trades or professions. Absolute figures can be extrapolated or relevant variations or percentages (O_{ij}), taking the same precautions as in the case of forecasting employment on the basis of branches. The projection cannot be mechanical as everything will depend on the starting level and the level of development proper to each trade or profession.

Extrapolation is the oldest method used in manpower planning. It was used as the means for forecasting the needs of personnel with University degrees during the USSR 5-year plan (1928-32). A high-level manpower percentage (engineers and high-level technicians) was calculated in the total manpower over a number of past years and this trend was projected into the future after an estimate was made of the active population during the plan period. This method has the disadvantage of isolating the high-level manpower from other technical factors and factors in the production organization which directly influence the needs of engineers and technicians. In a period of rapid industrialization, there is a risk of considerably underestimating the engineers and technicians.^{1/}

2. Regressive equations may be expressed in various forms:

Logarithms may be used instead of natural values.

The equations may be complicated by introducing other parameters (per capita capital, consumption of energy, etc.) according as to whether use is made of the absolute total (l_{ij}) or the percentage (o_{ij}) of workers in the profession considered, the product (Y_j) or productivity ($\frac{Y_j}{L_j}$) of the branch:

$$\begin{array}{l} l_{ij} \\ ou = \\ o_{ij} \end{array} \left\{ \begin{array}{l} aY_j \quad (1) \\ a + b Y_j \quad (2) \\ a + b \frac{Y_j}{L_j} \quad (3) \end{array} \right.$$

^{1/} G. Skorov, "Manpower Approach to Educational Planning: Methods used in the centrally planned economies", in UNESCO Economic and Social Aspects of Educational Planning, Paris, 1964, p.136.

Equation (1) signifies that the growth in the number or percentage of workers in profession i in branch j is proportional to the growth in branch production.

In equations (2) and (3), coefficient b indicates the percentage of growth of l_{ij} or of O_{ij} when production or productivity increases by one per cent.

If the trade or professional coefficient L_{ij} are brought into play, the equation is expressed as follows:

$$L_{ij} = a + b Y_j \quad (4)$$

or

$$L_{ij} = a + b \frac{Y_j}{L_j} \quad (5)$$

However all these equations imply uniform linear functions of production which give rise to the familiar criticisms. In particular they imply that as soon as a certain technique of production is selected, there is no possibility of substitution between workers with different qualifications. The fact is that these substitutions are constantly being made. The professional or trade structure of an industry does not depend merely on the size and structure of the capital employed but also on the supply of existing workers on the market and remuneration the enterprises are prepared to pay them, having regard to the demand for goods and services and prospects of profitability.

3. These objections and a few others may also be advanced in respect of international comparisons. The basic assumption is that the trade or professional structure of an industry is determined by the level of its productivity (value added by the worker). An under-developed country can therefore be guided by the example of a more advanced country in forecasting its manpower needs. In Puerto-Rico for example, it was assumed that the levels of productivity and consequently, the professional

or trade structures of industry would be comparable more or less in 1975 to those of the United States in 1950.^{1/} In Italy, a study of SVIMEZ (the Association for the Development of Mezzogiorno) placed its targets for 1975 on the levels existing in France except for agriculture in 1960.^{2/}

The statistics available for an increasing number of countries do not on the whole warrant the corroboration of this thesis. This has been demonstrated by A.S. Crespo in an interesting study which relates professional or trade structures to the levels of instruction in 10 countries, as well as the sectors that are directly productive: agriculture, mines, mechanical and electrical industries and transport.^{3/}

International comparison must be treated with great care. It gives indications of varying validity on the professional categories and branches of activity. Its value as a forecast depends on their uniformity. A mere confrontation of trade or professional coefficients or percentages is not by any means enough. Consideration must be given to such factors as capital and the techniques of production used, the real level of qualification (not the declared level), the volume and structure of the demand for goods and services which influences the production capacity, and consequently the volume and structure of employment and finally the

1/ Commonwealth of Puerto-Rico Planning Board, Bureau of Economics and Statistics, in co-operation with the United States Department of Labour, Bureau of Employment Security, Puerto-Rico's Manpower Needs and Supply, 1957.

2/ SVIMEZ, Progresso economico e structure formative nell'Italia del 1975, Rome, 1963.

3/ A.S. Crespo, Niveaux d'éducation et structure professionnelle: une comparaison internationale, OECD, DAS/FF/66.16, Paris 28, October 1966.

structure of the supply of qualified staff itself and the cost of wages. All these factors help to explain certain important variations in trade or professional coefficients, which have been noted as a general tendency. It has been observed, for instance that in the under-developed countries, scientific and technical staff are relatively larger in certain branches than in the more industrialized nations. For example, Portugal has three times more scientists than engineers in the services than the United States, at least twice as many in building as the United Kingdom (Table 9). Such phenomena demonstrate the fact that scientists and engineers do not provide the answer to an increase in productivity, and that this resource can be easily wasted if industry does not provide them with sufficient employment.

(3) International comparison can therefore indicate the respect in which the national structures differ from the economic and general technical pattern of development. It is, however, no substitute for direct study and does in fact serve as a check on its results.

This study can take the form of a survey of enterprises and administrations. Through interview or questionnaire, enterprises and administrations are asked to prepare a list of their present needs (vacant posts or posts occupied by unqualified staff) and future needs, bearing in mind pensions and deaths and the "nationalization" of the cadres. Such surveys supply useful indications on the present situation and any possible shortages or excesses. They are more limited in scope, where medium- and long-term planning are concerned. As a rule, enterprises do not extend beyond two to three years and are primarily concerned with their own special interests which are not considered in relation to an overall framework of the general interests. It is a well-known fact that administrations invariably tend to inflate their demands, in order to preserve their identity.

A better method for long-term forecasts is the study of the most advanced firms with the most modern techniques in each branch, as their situation gives an idea of future development. Their organizational

plan is studied in connexion with the preparation of a list of posts to be filled by different categories of staff in each service (administration, investigation centre, research - development, production, stocks, etc.). Standard ratios are calculated between productive and non-productive staff, between engineers, technicians and workers, between engineers and economists, etc. These ratios are not fixed, but are constantly revised in the light of technological changes, and should take into account the scale of production.

(4) This method of norms can be applied also to agriculture and the services. In agriculture, an "optimum" number of engineers is determined for 1,000 hectares of cultivated land or 1,000 holdings. In education, the ratio of pupils to a master is frequently used, as will be seen later in detail. In administration, a calculation can be made of the ratios of top administrators to middle-level cadres and clerical staff. In health, coefficients of density are established between the number of doctors or nurses and the population (1 doctor to so many nurses, etc.). The target is determined by direct study using a more developed country as a model, or assuming that less-favoured regions will in a given number of years catch up with the richest areas. National income may be used instead of the demographic parameter. For example in the Netherlands, there were very good correlations between the national income at constant prices and the number of engineers (all engineers including those in civil engineering).

Any forecast must take into consideration the extent to which the demand and supply of qualified manpower impinge upon each other.^{1/}

1/ G.F. Pankert, "L'interdépendance de la planification relative à la main-d'oeuvre hautement qualifiée et de la planification économique", Revue internationale du travail, April 1964, pp. 380-396.

III. CALCULATING RECRUITMENT NEEDS

From the foregoing, a forecast could be made of employment on the basis of each branch and profession in the final year of the plan or, better still, for each year of the plan period (since needs vary each year as a result of development in each branch). If the total numbers in the base year are known, a calculation can be made on the basis of difference, of the development expected in each profession. Generally speaking, the total numbers will tend to increase, but in some cases there are decreases: for the industrial countries in agriculture, coal mines and the textile industry; for other countries in the civil service for example.

To this increase which stems from economic expansion, must be added the necessary manpower needs to ensure the renewal of the initial stock. Replacements must be provided for people who during the plan period will no longer be part of the active population either through death or the cessation of activity, change in profession or emigration.

Total recruitment needs are made up of two factors: expansion and replacement needs. This may be expressed as follows:

$$R = (L_n - L_o) + L_o (d + c + m + e);$$

where

R = total recruitment;

L_n = employment in the maturity year of plan;

L_o = employment in the base year;

d = rate of deaths;

e = rate of cessation of activity;

m = rate of professional turnover;

e = rate of emigration.

In the absence of statistics, an annual replacement rate of 3-4 per cent is generally accepted; corresponding to the total renewal of the initial manpower in 25-33 years. When statistics are available, a separate evaluation must be made for each of the terms of replacement.

IV. CONVERTING EMPLOYMENT NEEDS INTO TRAINING NEEDS

This stage is essential if manpower planning is to be linked with educational planning. The professions or trades provided for must be distributed on the basis of levels and types of training, in order to orientate the national education in the widest sense of the term, that is to say, by including in it school education and all forms of training not included in that term. It is not necessary to evaluate levels of qualifications of the total manpower in the future, but merely the levels of the workers who should be recruited during the plan period.

The method consists in preparing a nomenclature of levels and types of training and getting the professions to correspond.

The nomenclature of levels and types of training is bound to be national, in the sense that it must be based on the system of training in force. This undertaking varies in complexity, in accordance with the level of economic development which in turn produces a variation in qualification needs. Among the planners in France, the criterion for classification is the certificate or diploma which holders of corresponding posts should normally have. However, the important thing is that they should attain this level, even if by means other than the possession of a certificate or diploma or degree, for instance through professional experience.

Six levels have been noted. Levels one and two are the levels for the degree and the doctorate. They have been re-grouped because it has been thought impossible to distinguish between needs for staff holding degrees and those of staff holding doctorates. Level three corresponds to diplomas or certificates or degrees to be awarded by newly established university institutes of technology, level four to the technicians' certificate and the second part of the baccalaureat (GCE), level five to the end of the first cycle of secondary education (certificate of professional aptitude or of the first cycle), level six to the end of compulsory schooling.

Within each of these levels, there are several types of training: at levels I, II and III, on the basis of the traditional divisions of faculties (law and commerce, science, humanities, medicine and pharmacy, education); at levels IV and V according to sector of activity (agriculture, industry, administration, commerce). No distinction has been made in level VI, since at this level no specialization is included or required.^{1/}

In Mali, the basis used was the public service statute which lays down six categories of personnel, recruited through competitive means among holders of diplomas or degrees and persons with certain length of professional experience. Within each category there are the following types of training, corresponding to the structure of education: agricultural training, industrial, administrative, economic and commercial, medical and social, educational (in order to facilitate international comparison, in place of Malian diplomas the corresponding number of years of study is stated):

- A2 (17 years or more): medical, pharmacy, professors of higher education.
- A1 (15 to 16 years): administrators, judges, engineers, secondary school teachers.
- B2 (14 years): agricultural engineers, highly qualified technicians.
- B1 (12 to 13 years): agricultural inspectors, stock-breeding assistants, administrative translators, court registrars, technicians, teachers of the second cycle of basic education, State-registered nurses, mid-wives.
- C (9 to 11 years): masters, primary school teachers.
- D (6 to 8 years) : agricultural instructors, nurses, skilled and semi-skilled workers.^{2/}

^{1/} C. Vimont and N. Dubrulle, *op.cit.*, pp.903-904.

^{2/} ILO, *op.cit.*

Once the nomenclature of the levels and types of training is established, the problem is to determine who should have the various professions.

Some professions raise no difficulties because they are uniform from the standpoint of the required training. Doctors, pharmacists, judges, teachers in secondary and higher institutions should, if they wish to practice their profession, have a clearly defined university degree. It is not the same for most of the other professions in which different levels and types of training could be found. An "engineer" can come from an important institution, or may be promoted from the post of foreman or technician. A "higher-level administrative officer" may have had scientific, technical or literary training, a university degree, a secondary certificate or no diploma or certificate at all. The statistics available for a number of countries indicate how varied is the training in professions which seem to be precisely determined.

The data for any one single year of census are sufficient for projections on condition that they indicate the level of instruction on the basis of age groups. It is actually the position that exists among the youngest elements, which best expresses the present needs of recruitment.

When no census is available, surveys of enterprises and administrations must be carried out, at least of the most representative of them, to acquire some knowledge not only of the average level of the persons employed, but also of the standards of qualification they now apply and would apply in the foreseeable future for the recruitment of new staff. Their views would also need to be sought on the level and type of preparation they consider adequate for the posts offered.

The results of such surveys should be studied critically and completed by a direct analysis of tasks necessary for the smooth running of enterprises and services, particularly the most recent in each task, which should correspond to an optimum level and type of training. This normative method is similar to the one described earlier concerning

the determination of the various professions. The criteria proposed should be defined with some flexibility, bearing in mind the possibility of substituting between formal education, apprenticeship and experience.

A ~~guide-belt~~ could be established to enable the plan to be adapted if necessary to financial constraints or the "production possibilities" of the training system. For example, in Czechoslovakia a definition has been reached of the higher and lower standards of instruction for the employment of engineers and administrative cadres in some of the industrial branches. Finally, an attempt could be made to check the results obtained by these methods by international comparisons. But the heterogeneous character of the data and the qualifications required for each profession demonstrate the fact that extreme caution should be exercised in this direction.

Generally speaking, any forecast should take into account the fact that requirements for qualification rise as time goes on, first because of the growing complexity of the economy and the administration, and secondly because of the increase in the number of certificates or diplomas at all levels, owing to development in schooling: the supply position affects that of demand.

V. CALCULATING EDUCATIONAL OBJECTIVES

The foregoing stage has made possible the evaluation of manpower needs at all levels and types of training for each year of the plan or simply for the total duration of the plan. What now remains is to compare these needs with resources supplied by the educational system (in the broad sense of the term) to identify any possible excesses or shortages and calculate educational targets.

The possibilities of influencing the system of training depend on the period covered by the plan and the level of workers. The question arises above all for the highly qualified staff. A five-year planning cannot modify the production of doctors who require seven years for training after the end of their secondary studies. This production

is already determined by the numbers in the faculties. On the contrary, planning can influence the production of higher-level technicians trained in two years after the higher level GCE, it can affect at least two different batches of students. A ten-year planning makes it possible to affect the entire field of manpower resources at all levels.

The main supplier of qualified manpower is the educational system. Alongside new entrants, account must be taken of contributions made by professional turnover (promotions, changes in profession) and the employment of women who until then have been inactive. Professional promotion is often tied up with para- or post-school training systems and in the non-industrial countries with adult education.

The school system itself in certain cases contains several facilities for the training of a given type of worker.

In conclusion, the possibilities of making a better use of existing staff should not be neglected. In countries which are not all under-developed, it has been noticed that a large number of the higher-level qualified staff lose their time and waste their energy in performing routine tasks because they have poor seconds, while the junior staff which is neither directed nor supervised display no excessive zeal for work. Better organization would lead to a greater improvement in the efficiency of the administration and enterprises.

Cultural needs and economic demand

The approach to manpower needs does to some extent regard education as a "consumer activity" since it means that girls and boys are not an active part of the population while they are pursuing their studies. Nevertheless, there is a great risk that a "purely productive" outlook may cause the social and cultural needs of the large mass of the population to be neglected. It is not impossible for the two approaches to be combined.

Basic education should affect the largest possible number of individuals for the longest possible time. Ideally, it should last until

differentiated aptitudes become clear, in other words, until the age of 14 or 15 years. The poor countries should begin by making sure that children receive a minimum of four years' study, the period being gradually increased as they develop. In this sense the starting point of planning would be the demographic variable.

On the other hand, secondary and higher education must be planned as a function of the targets of economic and social development but with the greatest possible flexibility, because of the risks of error inherent in this kind of forecast.

Employment forecast without an economic plan or statistical series

So far, we have examined the case in which manpower planning could start from an economic development plan drawing its support from a series of statistics. It is not, however, unusual for planning to be undertaken in more difficult conditions in the absence of an economic plan or any precise data. An attempt at planning must be made whatever the uncertainties and possibilities of error (these will always exist in any case). Even an approximate and provisional attempt can provide useful indications for student guidance.

An attempt of this kind was made in Mali in 1956 when there was no development plan (the first Five-Year Plan ended on 30 June 1966 but work on the preparation of the second plan had not begun) nor a series of statistics on the development of production and employment. The only data available was a survey on wages in industry and commerce distributed on the basis of large professional or trade groups. The only official indications related to the continuation of investments proposed by the first Plan and not completed or not yet undertaken.

In these circumstances, the following procedure was adopted. A start was made on the analysis of the present economic situation and the results of the first Plan. These results disappointed all hopes and the targets were in fact too ambitious, it being anticipated that there would be an annual increase of 8 per cent in production and 14 per cent in

exports. The profitability of investments had not been seriously studied in advance, and insufficient attention had been given to problems of organization and management. And so the profits expected from public enterprises which were supposed to finance growth, were not achieved. On the contrary, their continued deficit placed a heavy burden on the budget. However, the first Plan did set up a remarkable infrastructure (roads, bridges, dams) which should produce effects before long.

Given these situations, the watchword is stabilization. It is likely that the next plan will not be an expansion plan, but one for consolidation and organization. No further large investments will be made, but rather there will be a determined effort to make better use of existing installations which have been created.

To reduce inflationary tendencies, unemployment and the trade deficit, priority must be given to agricultural and industrial production. Health is equally important. It does not constitute consumption, at least for the large mass of the population, but rather an investment, since any improvement in health increases the labour capacity. Basic education (nine years) has made remarkable progress and might increase at practically the same rate as the population. A large expansion in secondary education must be provided for in order to meet the needs of the middle- and higher-level cadres. Finally there is the administration which calls for more serious rethinking where its structures and operation are concerned, rather than any great increase in the total number of officials (since clerks are already far too many, at least in the capital).

On the basis of these general assumptions, a rough forecast of employment was made for the period 1966-1971 (second Five-Year Plan). The first action was to identify posts at present vacant or occupied by non-qualified staff, either through direct survey of enterprises and administrations or by examining the budget which gives an indication of present functions and the original status of the civil servants (for example most of the posts of judges are held by former registrars, many teachers in primary schools

are not teachers at all but mere instructors who have had only 6-7 years of study). Some attention was then paid to the needs expressed by administrations and enterprises, these needs being criticized in the light of their importance for national development, present organization and what was desirable, the satisfactory or unsatisfactory results of farm holdings, the administrative areas into which the country was divided, and finally the replacement of technical assistance personnel.

As Mali has a relatively uncomplicated economy, needs were evaluated not on the basis of sectors of activity, but on the basis of types and levels of training: agricultural, industrial, administrative, economic, medical and educational. This method makes it possible to forge a direct link between needs and resources, in other words the educational system to "production". Had evaluation been made on a sectoral basis, it would have constantly involved the addition of various types of need: qualified administrative staff, engineers, economists, office clerks, etc.

From the agricultural standpoint, the traditional activities are differentiated from those of the modern sector. Theoretically, the rural population is organized in basic sectors (150-200 holdings extending over 1,000-1,500 hectares) which are themselves grouped in rural extension zones. The first are animated by instructors and the second by agricultural officers. For every technical staffing unit there is a corresponding co-operative structure. To achieve these objectives, several plans were required. It was proposed that the following modest staffing norms would be achieved for 1951: 1 instructor to 500 holdings, 1 agricultural officer to 5 instructors, 1 works engineer to 3 agricultural officers, 1 engineer to 2 works engineers, 1 veterinary officer to 13,000 head of cattle, 1 assistant stock-breeder to 4 veterinary officers, 1 stock-breeder engineer to 2 assistants.

The modern sector is represented by the "Office du Niger" and a cotton company. If the cotton factory operates satisfactorily, the Office would have to bear a disproportionate burden of infrastructure (rice, cotton), and a heavy and costly bureaucracy. The question of profitability

should be carefully studied as it has a direct bearing on the forecast of manpower needs. It is not possible to make a mechanical projection by accepting given rates of production and productivity growth. Actually the Office can increase its production with its actual numbers even with a reduction in Office staff. It needs only a few administrative cadres, higher-level technicians primarily, for rationalizing the organization of labour and studying the profitability of investments.

In the industrial area, an evaluation was made of the need for engineers, technicians and workers on the basis of the following factors: desirable organizational pattern for enterprises (their management and activity would be increased by the establishment of investigation centres which would be responsible for all problems concerning supplies, operations, stocks, organization, and the search for markets); trends in the development of branches (provision can be made for expansion in certain branches: energy, mechanics, edible oil and soap-making factories, printing, etc., while the activity of others like public works would be reduced after the heavy investment period); present position in enterprises (even large investments); the present situation of enterprises (even when they belong to a sector which is expanding, their total numbers should not increase very much if they are already excessive); finally creation of employment linked with the construction of new factories.

Study centres for enterprises would include economists as well as engineers. It is proposed to establish some of these in administrations, in order to rationalize labour and improve the yield. Human resources planning ought to provide an opportunity for re-examining the administrative structures that were inherited from the colonial period. Present institutions, transplanted from a socio-cultural environment which is completely different are unweildly and complex; besides, they are traditionally orientated towards management and supervision or control with scant regard for economic life. Such an administration could act as a break on development. It is important, therefore, that the newly independent States should give some thought to their structures, in order to

adapt them to the needs of economic and social development which implies organization, planning, communication and stimulation.^{1/}

In this context, investigation centres in the ministries would have to organize a rational division of labour between the various services, to simplify administrative and financial routine procedures, try to effect economy in staff and co-ordinate the tasks of the various ministries. In the economic and social departments, they would also bear responsibility for functions of planning, as the role of direction and general co-ordination is still being fulfilled by the Plan. Finally, every region should have its economic and social planning office.

Let us now examine the social sectors.

Where food is concerned, Mali citizens get a sufficient ration in calories, but their food is deficient in protein, calcium and vitamins. Further, their physical resistance is reduced by a number of endemic diseases such as malaria, river blindness, gastro-enteritis, different forms of dysentery, tuberculosis and bilharzia. If we exclude the towns, there is less than 1 doctor to 80,000 inhabitants. The para-medical services are more numerous and are closer to the people, but not sufficient to deal with the task.

Consequently, the Ministry of Health has prepared a ten-year programme for the health services. The emphasis is being placed on preventive medicine which is much more profitable than curative medicine, and the medical co-ordinating services arrange for individual care through mass medical procedures: mobile units to control communicable diseases, extension of maternity and child welfare, public, urban and rural hygiene, sanitary education of the masses. Activities regarding health care, preventive measures and education will be integrated into the basic units whose functions will be miscellaneous. The needs in staff are evaluated on the basis of theoretical norms, accepted for each type of medical

^{1/} Of Administration: frein ou moteur au développement ? Development and Civilization, No. 29, March 1967.

training: hospital (1 doctor to 40 beds, 1 nurse to 8 beds), medical centre (1 doctor, 1 mid-wife, 2 State-registered nurses, 6 nurses), mobile units (1 doctor, 1 State-registered nurse, 3 nurses, 1 leprosy controller, 8 vaccinators), etc.

Since independence (in 1960) spectacular progress has been made in education. Education now absorbs 18 per cent of public expenditure and is the largest allocation in the budget. This effort can hardly be taken any further and, in fact, the rate of expansion had recently to be slowed down. Having regard to that situation, it is proposed that basic education should be developed during the next plan at the same rate as population growth. When the economy will really have got under way and increased the country's financial resources, there will be time enough to embark upon mass education.

On the other hand, a very large expansion in secondary education has been forecast. The numbers in secondary schools will be increased four times, and this has been made possible through past progress in basic education, and is necessary because of the lack of middle- and higher-level cadres. On these assumptions, a forecast of needs in teaching staff has been made, using a ratio of class to teacher to pupil to master and taking into account the replacement of foreign teachers.^{1/}

In short, it does not seem impossible for a rough employment forecast to be made, even if there is no economic plan or any series of statistics. The direct study of needs in each branch seems to be the best method, bearing in mind the level of the country's development and the economic and financial situation. But it can hardly exceed five years.

^{1/} ILO, Report to the Government of the Republic of Mali on human resources evaluation and planning, (by Le Thanh Khoi), Geneva, 1967.

B.2 Summary of Lectures

by

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FORECASTING MANPOWER REQUIREMENTS

Lecture 1

Alternative Approaches to Educational Planning

The introductory lecture discusses the ways in which education may be related to economic growth and goes on to discuss ways in which the extent of this contribution to growth may be measured. In these cases education is seen as the dynamic stimulator of development. It is also possible to see the relationship of education to development in a different way, with education, as it were, acting as the dependent variable. Here, a pre-determined output objective indicates the amount of education that is provided (i.e. the amounts and types necessary to achieve the output objective). It is this latter aspect of the relationship of education to economic development that forms the basis of the lectures that follow.

The concept of educational requirements is not unambiguous. We use the term in the very specific sense of the size of the total manpower stock (differentiated by occupation or education) that is necessary for the achievement of certain national economic targets.

Illustrations will be given of the different uses of the term "educational requirements" and a distinction will be drawn between "feasible" and "optimal" manpower stocks for the achievement of economic targets.

Lecture 2

The Manpower Forecasting Approach - an Overview

The first part of this lecture provides a general view of the manpower forecasting approach to educational planning. By way of introduction to the more detailed step-by-step discussions of the model given in lectures 7 and 8. In particular, a schematic diagram of a planning process is presented, the objectives of which are to forecast future manpower requirements (by occupation and education) and to compare these requirements with the probable supply of manpower.

The second part of the lecture discusses the importance of having available, at the outset of the forecasting exercise, as full a statistical picture of the manpower situation as possible. This provides a base for the projections but, more important, is a means of understanding the context within which the forecasts are to be made. The need for detailed manpower statistics broken down by economic sector (or sub-sector), occupation and education. The fineness of the breakdown used for classifying the existing employed population will depend upon the precision and detail required in the ultimate forecast. A primary task of the manpower forecaster is to improve and widen the scope of existing manpower data.

Attention is given to the problem that, if the existing manpower stock is non-optimal, there is a danger of projecting present disequilibria into the future. Should present vacancies be added to the existing level of employment to provide the projection base? The view is taken that they should not; otherwise there is the implication that additional educated people have a zero marginal product. The problem of existing malutilization of educated manpower is one to which detailed attention is given in the lecture.

Lectures 3 to 6

"Direct" Forecasting Methods

Before elaborating the projection model, a number of more direct forecasting techniques that are widely used, are evaluated. It is suggested that, whilst not constituting adequate forecasting methods in themselves, they can be incorporated into the general forecasting model that is advocated in lectures 7 and 8.

A large number of projection methods have been developed. There is no ideal method and any thorough manpower forecasting exercise must involve combination of these methods.

(a) Establishment surveys

It would seem that the most obvious method of discovering future manpower requirements is to ask the people who will be responsible for future employment - the employers. The supposed advantages are:

- (i) Simplicity of method; no detailed statistical data required.
- (ii) Diffusion of the responsibility of the forecast, amongst employers.
- (iii) Estimates provided by people with knowledge and practical experience of the phenomenon being studied.

But, although useful for indicating short-term demands it is an unreliable procedure:

- (i) In a growth economy, many future employers not yet in business; some present ones will cease to exist.
- (ii) Problem of consistency, with firms all taking an optimistic view of their future market shares.
- (iii) In practice firms have not been able to foresee future manpower requirements. Low status of personnel administration; forecasts over-sensitive to the present mood.

Some forecasts using this method will be discussed. But it is concluded that forecasts by establishments are to be seen as part of an assessment of the existing situation rather than a long-term manpower forecasting device.

(see Ref. 7, for a manpower forecast based on this method).

An alternative is to contact not all (or a sample of) existing firms, but only the best-practice firms.

The forecaster then draws upon the experience of the best-practice firms the assumption being that in the target year firms generally will have "caught up" with the technology and manpower structures now existing in the present up-to-date firms. But we are not always able to identify the best practice firm, and it is difficult to gauge the speed of diffusion of these techniques.

(b) Trend extrapolation

The method consists of extrapolating past trends in the size of the labour force, or in occupational or educational categories of the labour force, through to the target year. There are both practical and theoretical objections to employing this method in isolation.

- Results will be ambiguous unless sufficient data on past trends is available. Adequate data on past trends are seldom available.
- The results are biased in favour of the shape of past trends, which are expected to continue in the future; but development planning implies that the future will differ from the past.
- We may be extrapolating not requirements, but supply.

(c) Impressionistic, rule-of-thumb methods

Trend projection does not attempt to relate manpower requirements to future changes in the economy; also sufficient data may not be available. Professor Harbison has suggested a method that takes these two points into account. His "rule of thumb" is that if GDP is to grow by

x per cent a year, the stock of high-level manpower should grow at 2x per cent; of second-level manpower at 3x per cent and total employment 0.5x per cent annually.

The method has advantages of simplicity and has been applied on a number of occasions in Africa. But there is no empirical evidence to support the view that, as the number of graduates and total output grows, the former growth must exceed the latter, by a significant margin. Also, Rado and Jolly (Reference 8) have shown that the application of the rule seems to result in a plethora of educated manpower within a few decades.

(See Ref. 9 for an example of a forecast based on this method)

(d) International comparisons

This method assumes that developing countries, as they grow, will follow the manpower patterns of more advanced economies. Thus the present or past attainment of one country may approximate the development target of a developing country. In brief: find another country rather more highly developed and assume that in order to reach its level of output by a certain date, its pattern of employment also must be reached by that date.

The fundamental assumption is that there is a unique series of manpower patterns that trace out a "manpower growth path" through which all countries will have to pass in the process of development. The method has been widely used; the most famous, pioneering use of this method, by the Puerto Rico Planning Board, will be discussed.

A critical paper by R. Hollister (Reference 10) shows clearly that the assumptions of the approach are such as to obviate its use in its crude form.

An alternative approach, associated with Professor Horowitz of North Eastern University, Boston, is based not on international comparisons of whole economies, but on comparisons of the Labour Structures of particular industries. This method is reviewed in detail.

(e) Regression models

This lecture discusses the use of regression analysis as forecasting device. It distinguishes between the use of time series data and cross-sectional data and presents the well-known Tinbergen regression equations that relate the required stock of high-educated and secondary-educated manpower to the level of national production and national income per head.

The lecture will be more technical than the proceeding ones, in that the results of some multiple regression analysis will be presented. But apart from the mathematics, attention will be given to the main conclusions for policy that may be derived from this work. In particular, one conclusion of the Tinbergen equations is that high-level manpower needs to grow at approximately the same rate, as national income. This contrasts dramatically with the Harbison rule of thumb.

Lecture 7

An Introduction to the OECD (Parnes) Model

This lecture provides an introduction to the work of the OECD Mediterranean Region Project (MRP), perhaps the most ambitious example of the use of the manpower forecasting method in educational planning. The MRP is an attempt by the six OECD Mediterranean countries (Greece, Italy, Portugal, Spain, Turkey, Yugoslavia) to relate education to needs of the economy. Since the logic of the whole approach is to link the targets of the educational system to those of the economy, the starting point consists of an output forecast for the whole economy. The method then proceeds in stages, to a forecast of the stock of educated manpower required in the target year to achieve the economic target of the economy. Each successive step in the forecasting procedure is discussed, and a general critical appraisal of the whole method will be given.

Lecture 8

The OECD Model Elaborated

The method proceeds in stages from an estimate of target levels of total output in the economy, (as derived from a prior economic plan) to a supply of educated manpower required to reach this in the target year. The steps are as follows:

- (1) Estimate of target output in the economy.
- (2) Estimates of sectoral output, such as for agriculture, manufacturing, transport etc.
- (3) Estimates of sectoral labour-output coefficients (i.e. inverse labour productivity). These estimates are multiplied by sectoral output estimates (step 2), to provide a forecast of labour requirements by sector.
- (4) Estimates of future sectoral occupational distribution. These estimates, multiplied by estimates of the labour force by sector (step 3) give estimates of the number required in each occupation in each sector.
- (5) Estimates of total numbers required in each occupation in the labour force. These are derived from a summation of the occupation by sector estimates (step 4).
- (6) Estimates of the education associated with each occupation. Multiplying these estimates by the numbers required in each occupation (step 5) gives the ~~numbers~~ required with each level of education in each occupation.
- (7) Estimates of the required educational stock. The total of the education requirements for all occupations (step 6) provides the estimate of the educational stock of the labour force required in the target year.

The method as a whole can be summarized by the following expression:

$$L_{ije} = (\text{GDP}) \frac{\text{SGDP}_i}{\text{GDP}} \frac{L_i}{\text{SGDP}_i} \frac{L_{ij}}{L_i} \frac{L_{ije}}{L_{ij}}$$

where, GDP = Gross Domestic Product

SGDP_i = GDP originating in sector i

L_i = Labour force in sector i

L_j = Labour force in occupation j

L_e = Labour force with education e

and L_{ije} = Workers in sector i in occupation j with education e.

The following additional steps convert the total manpower requirements by education, into net requirements from the educational system over the planning period.

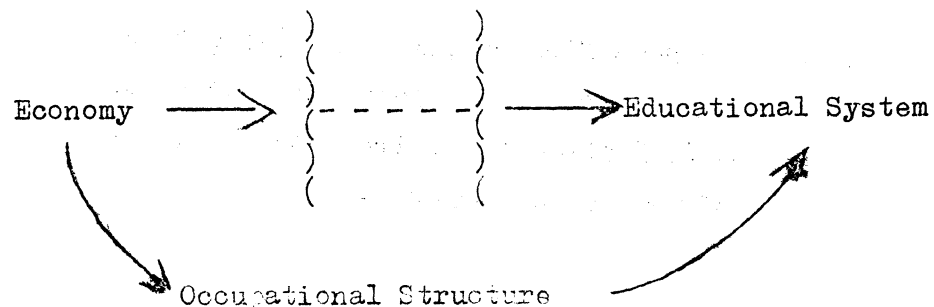
- (8) Estimates of the increment of manpower by education. The numbers of those already in the labour force, with each educational level, who survive until the target year is subtracted from the education requirement stock estimates (step 7). This, with allowances for net migration, gives estimates of the increment of manpower stock by education.
- (9) Estimates of gross required graduate flow. The estimates of step 8 are multiplied by the inverse of participation rates by education category.
- (10) Graduate flow requirements (step 9) are compared with the output from the educational system over the planning period, to indicate net requirements of graduates in order to achieve planned output targets.

Lecture 9

Forecasting Occupational Structures

The core of the OECD method is forecasting the future occupational structure of the labour force. Changes in the occupational structure over time is the results of two underlying changes: changes in the industrial composition of total output and employment (different industries have different occupational structures) and changes in the occupational patterns within given industries. We are concerned in this lecture more with occupational structure change within a given sector.

The manpower planning literature reveals a clash of opinion between the experts concerning the appropriate occupational classificatory scheme. The basic problem is, What is an occupation? We use the term "occupation" to refer to a skill category defined in terms of the tasks to be performed, irrespective of industry in which performed and irrespective of educational level required. Occupation relates to the job, not to the characteristics of the incumbent in the job. Some forecasting methods define occupation by the education usually required, i.e. in reality ignoring the occupational step in the forecasting procedure by classifying the labour force at the outset of the forecasting exercise into distinct levels of educational attainment. But occupational analysis (though intermediary and interpretive in manpower planning) constitutes an essential link between the needs of the economy and the consequent demands on the educational system.



Alternative occupational classifications (in particular, the ISCO) is discussed. How much aggregation? At a minimum, the 10 major occupational groups of ISCO might form a basis for classification, with those major groups of special interest to the educational planner being treated in greater detail; possibly a grouping into some 30 categories is feasible.

The methods actually used in some occupational forecasts will be discussed, including forecasts which jumped the occupational forecasting step.

Lecture 10

Sensitivity Analysis

All forecasting methods are subject to errors. The basic question posed by sceptics of the manpower forecasting approach to educational planning is: can forecasts be made with sufficient confidence to justify basing educational programmes on them?

Sensitivity analysis is a simple technique which examines the extent to which the actual final forecasts depend upon the particular assumptions and estimates made during the forecasting process. As described by Hollister (Ref. 11) the technique consists of varying the key parameters, variables or assumptions and tracing the effect of these variations on the final forecasts.

Sensitivity analysis has two major functions, relating respectively to the forecaster and the decision maker. To the forecaster, sensitivity analysis is useful in directing his attention to those aspects of the forecasting procedure to which the final forecasts are particularly sensitive. He may then wish to give more attention to these aspects of the forecasting procedure, with a view to minimizing errors in the final forecast. Secondly, it will be possible to present alternative final forecasts to the decision maker, based upon different, probable values of those key parameters to which the final forecast is highly

sensitive. The policy maker may wish to adjust policy decisions to take account of this lack of precision of the final forecasts; by direct government action, he may influence the actual value or range of uncertainty of the key parameters in order to narrow the probable range of the final forecasts. Hollister's evaluation of the MRP shows the final forecasts were particularly sensitive to the assumed growth rate of final output and of sectoral productivity. The importance of providing multiple-value forecasts, based on various assumptions about the magnitude of key variables and coefficients, cannot be over-emphasised.

Lecture 11

Manpower Forecasting and Flexibilities in the Economy

This lecture examines some of the theoretical assumptions underlying the manpower forecasting approach to educational planning. Following Bowman and Anderson (Ref.12) we can construct a framework of theoretical assumptions implicit in manpower forecasting of the type discussed in preceding lectures. This includes the assumption of near-zero skill substitutabilities and a very long lead time for increasing the supply of specialized manpower. This implies that any shortfall in the supply of specialized skill will prevent the achievement of national economic goals; any surplus of such manpower will lead to their underemployment.

In the real world greater flexibility exists both in the economies requirements of educated manpower and in its ability to train its manpower. The difficulties of forecasting the economy's future needs of skilled manpower (and in particular of forecasting the incidence and effects of technological change), has resulted in increasing efforts being put into the manpower forecasting function in many countries. Parallel with this should be an attempt to make both the formation and use of human skills more flexible, so that any errors in the forecasts can be accommodated by the economic system. But as the economy becomes more flexible, so the need for manpower planning lessens. The implications of this are twofold:

- (i) Very detailed manpower planning should not generally be undertaken because of the intrinsic difficulty of such forecasting but also because flexibilities in the economy's demands for manpower of different types makes it unnecessary. Manpower forecasting can concentrate on broad occupational and educational categories.
- (ii) At the same time, the government should complement manpower forecasting with the pursuance of an active manpower policy: e.g. making the labour market more flexible through the establishment of placement centres, the diffusion of labour market information and a flexible wages structure. The educational system should be made more flexible (e.g. later specialization), but also, more emphasis should be placed on industrial training and other non-school educational institutions.

Lectures 12-13

Employment Problems in Developing Economies

An obvious difference between developed and developing economies is the relatively full use of human resources in the former and their relatively low utilization in the latter. The desire to increase employment in developing countries, for welfare reasons but also because manpower is an underutilized resource - disguised unemployment both on the land and in the town (e.g. in the service sector), as well as open unemployment.

In developed economies, unemployment is not a real problem because of the possibilities of using Keynesian methods (via the multiplier) to eradicate it. Capital equipment is available and can be used to absorb the unemployed in the short run; in the long run capital capacity can be increased readily. In developing economies, the multiplier does not lead to economic growth by absorbing the unemployed because of the limits of unemployed productive capacity. Capital thus constitutes a real bottleneck to growth.

This suggests that developing countries would encourage relatively labour-intensive production techniques, making use of the abundant resource (labour) and using frugally the scarce resource (capital). In practice, many development plans are geared towards capital intensive projects and have only limited employment implications.

This might be rational:

- (i) On comparative cost grounds - capital is scarce but particular skills even scarcer. Machine methods requiring low skills might be economic.
- (ii) Abundant labour not always cheap labour - difficulties of training in a labour force, problems of acclimatization to factory discipline, high absenteeism, labour inefficient, etc.
- (iii) Appropriate (labour-intensive) methods not known or available. In particular, the adoption of a well tried, capital-intensive method already employed in advanced countries may be cheaper than pioneering new labour-intensive methods.

Capital-intensive technologies are more frequently adapted in less extenuating circumstances:

- (i) Preference for advanced technologies on grounds of prestige or sheer lack of economic reasoning.
- (ii) Artificially high-priced labour (because of welfare elements in wage payment, minimum wage legislation and expatriate-related salaries) encourages capital intensive methods.
- (iii) Capital might be relatively cheap (though scarce) e.g. because of the overvaluation of foreign exchange.

Governments in developing countries may counter the bias towards capital intensive development by influencing the pattern of investment in the direction of labour-intensive methods. In part this can be done by influencing the relative prices of labour and capital. A number of

measures, including employment subsidies in one form or another, are discussed in the ILO book, Employment Objectives in Economical Development.

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B. Summary of Lectures

by

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Lecture 1

The Nature and Basis of Manpower Planning

The lectures that went before have shown the importance and the logic of development planning in general; and the relation between manpower on the one hand and economic development on the other.

Planning is essentially "a process of thinking ahead, a method for anticipating difficulties and seeking, through reasoned action based on fore-knowledge, to guide the course of development toward desired goals. Planning approaches the future with the aid of systematic analysis, so as to minimize surprise and uncertainty and to eliminate mistakes and waste".^{1/} In the realm of manpower, planning involves ultimately the development of a strategy for appraising the human resources of a nation, preparing it and equipping it for productive employment and ensuring not only that it is fully utilized, but also that it is as highly productive as techniques, knowledge, and other economic resources would permit.

The aims which a good manpower plan should fulfil, therefore, are:

- (a) To clarify the manpower situation as it has developed, as it is, and as it is likely to develop under a set of given circumstances (including the influence of a given Development Plan).
- (b) To maximize job opportunities by promoting employment creation as an integral part of the development strategy. The major steps in this direction have been mentioned in the preceding lecture.
- (c) Identifying needed skills and reducing these into training requirements and programmes.

^{1/} Richard A. Lester; Manpower Planning in a Free Society, pp. 4-5.

- (d) Providing the necessary educational and training institutions and gearing their curricula to the needs of the economy as previously identified.
- (e) Placing the trained personnel in employment where they will be of maximum utility.
- (f) Developing management and labour policies and techniques, working conditions and labour relations in order to ensure maximum productivity.

For effective manpower planning it is necessary to have a properly thought-out and phased development plan. Manpower planning will then consist of a series of steps designed to ensure the proper distribution or redistribution of the human resources, and also training the labour concerned for such skills as are required by the various sectors of the economy.

Manpower training and development however, normally requires a long lead time; it is necessary therefore to set economic priorities well in advance. Some of the main steps which manpower planning must under-go in order to ensure a successful manpower development programme have already been mentioned. Normally the forecast year should be the target year of the existing development plan since manpower requirements have to be related to the goals of the plan. Nevertheless in view of the long lead time required for education and training, forecasts should be made for up to ten to fifteen years and tied to census periods.

The most important steps in manpower planning may be summarized as follows:

- (a) Organize the government machinery charged with responsibility for effective manpower planning and administration.
- (b) Study the trends of the economy in the recent past to determine their effect on the manpower situation, i.e., their effects on current manpower demand, supply and distribution.

- (c) Undertake an initial manpower appraisal based on current demand and supply of labour and how these might be affected by the Economic Development Plan.
- (d) Set manpower targets for a given date (or dates) in the light of the economic structure likely to result from the Development Plan.
- (e) Determine training policies to meet manpower targets.
- (f) Determine labour policies to ensure efficient utilization of the available manpower - wage policies, incentives, effective industrial relations machinery, etc.

Statistics: The most essential basic step in the manpower planning process is the estimation of future manpower requirements and what this is likely to mean in terms of education and training programmes and investment. Forward targeting, however, can only be reasonably done on the basis of adequate statistics. The most important ones are:

- (a) Census of population - analysed by geographical distribution; age, sex, educational levels attained, and occupational and industrial distribution.
- (b) Industrial Employment and Productivity - data on employment by industry in relation to levels of production (volume or value); number of employees by economic activity; average earnings by main occupations; average weekly hours worked by industries.
- (c) Vital statistics: related to the population statistics under (a), to provide data on birth and deaths by sex and by age.
- (d) Household and Labour forces statistics: to determine the size of the labour force in relation to total population; labour force participation ratios by age and sex; distribution of labour force by type of activity and employment status: self-employment, wage-earning, apprentices, etc.; unemployment and under-employment; education status and levels, etc.

- (e) Education statistics - enrolment in various types and levels of educational and training institutions, by age, sex and disciplines.
- (f) Development Plan Targets - analysis of the development plan to indicate the expected industrial structure in the target year, especially the GNP by major industrial sectors, and the relative rate of growth in levels of productivity.

References

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Lectures 2 and 3

The Techniques of Manpower Programming

A basic function in manpower programming is to provide some meaningful idea of the future manpower situation. This is often referred to as manpower forecasting. Because the term "forecasting" savours of crystal gazing, it is sometimes objected to, in favour of terms like "manpower targeting". The use of even the latter term, however, has its own drawbacks, as it suggests a deliberate predetermined and inflexible allocation of manpower by magnitudes to various economic activities. At any given time, there is, or is bound to be, such allocation but it is the result of complex social and economic interactions. The term "manpower budgeting" may therefore look more attractive because it is of the essence of a manpower programme, however determined, that it should attempt to strike a balance between manpower demand and supply. Whatever term is used, however, the essential thing is to provide, as already mentioned, a meaningful idea of the manpower situation at a given future date, on the basis of certain assumptions, or as a result of the implementation of a Development Plan or other social policies. In spite of its deficiencies the term forecasting will be largely used in this lecture.

As previously indicated certain statistics are essential for effective manpower forecasting. But they are not always available. A manpower forecast may therefore have to be undertaken under one of three conditions:

- (a) Where negligible or no historical statistics at all are available.
- (b) A reasonable amount of historical statistics available.
- (c) Reliable and adequate statistics available.

We shall examine the procedures to be adopted for forecasting under the three different conditions. Perhaps a note of warning is appropriate here regarding the tendency to invoke a number of statistical or mathematical formulae. It needs to be emphasized that there is no generally applicable formula for forecasting manpower requirements. Much of the formulae that exist have usually been derived from the experience of one

or two countries. Invariably the strength of the inter-relationships of the variables are significantly different from country to country. When a manpower forecast has been made, however, it is useful to check the result against available formulae or models to see to what extent these apply or can apply with modification to your particular economy. The techniques indicated here are of pragmatic nature and intended to indicate step-by-step procedure under the three basic conditions specified.

A. Manpower forecasting where no historical statistics exist

Where no historical statistics exist, a detailed manpower forecast should be made only for a relatively short period, i.e. three to five years. Forecasts for 8 to 10 years should be done on very broad lines. In the meantime strenuous efforts would need to be made to build up the necessary statistics of the nature already indicated.

Step 1

Derive an approximation of the existing employment structure. This should be done by means of an establishment survey. The information requested from employers should provide for:

(a) Total employment

- (i) By sex and categories of manpower: Senior, Intermediate, Other.
- (ii) By occupational titles under the Senior and Intermediate categories.
- (iii) Where a large expatriate body of personnel is known to exist, information on this fact for the Senior and Intermediate manpower employed should be requested.

(b) Existing vacancies -- Should be indicated by the same occupational titles used under (a) (ii). This will not only show areas of acute manpower shortages (bottlenecks), but also the total employment potential when taken together with information under (a).

- (c) Training and educational requirements - This should be shown for each occupation under (a) (ii). Information should include number in training by employers for each occupation.
- (d) Estimates of future manpower needs - for each occupation under (a) (ii). But estimates should not normally be required for a period of more than three years ahead.
- (e) In respect of teachers - derive concurrently not only the numbers employed, but the pupil enrolments by age, educational level, etc. This will help establish teacher/student ratios, etc.

Step 2

Analyse the information to provide you with a picture of existing employment structure indicating in particular, total employment by sex, industry, manpower ratios (e.g. Senior, Intermediate, total employment). Make allowance (by informed judgement after consultation with employers etc.) for incomplete coverage. Let present total employment = A ; and for each major occupation, a^1 , a^2 , etc.). The occupational titles should be collated to provide the nucleus of an occupational register by industries. Note importance of Government employment (usually up to 50 per cent of total).

Step 3

Estimate the total and occupational distribution of future employment, using first, the overall growth rates indicated in the establishment survey by industry and adjust by reference to expected changes in relative importance of industrial sectors in the economy as a result of implementing the development plan if any exists. Otherwise for the short period of the forecast (3-5 years) the relative distribution of manpower by industries as well as the occupational ratios do not usually differ very much. (Let total estimated employment in target year = B , and for each major occupation - b^1 - b^2 , etc.)

Step 4

Obtain net additional manpower requirements: Total = $B - A$; by occupation = $(b^1 - a^1)$, $(b^2 - a^2)$, etc. Allow for withdrawals by death, retirement, etc. In Nigeria an overall rate of 3 per cent p.a. of existing employments has been used. But the rate differs between industries and occupations. Normally it is much higher in Government Service, foreign-owned enterprises, and specialist occupations where expatriates are employed in large numbers. Add the cumulative allowance (C , c^1 , c^2) to the net requirements and obtain the additional total and occupational manpower requirements for the forecast period $(B - A) + C$; $(b^1 - a^1) + c^1$, etc.).

Step 5

Obtain the sum of the out-turn from training institutions and employers' apprenticeships, etc., by occupational categories. Allow for drop-outs in training (approximately between 5 per cent and 10 per cent p.a.: use informed judgement after consultation with employers and institutions).

Step 6

Cast a balance (manpower budget) between demand (Step 3) and supply (Step 4), indicating likely surpluses and shortfalls by occupational categories.

Social services: The manpower forecast for social services (e.g. Health) must depend upon clearly stated relevant social objectives: e.g. doctor/population ratio; or hospital bed/population ratio. Similarly the forecast for teachers must in the final analysis reflect the pupil enrolments and the accepted teacher/pupil ratios at various levels of education.

B. Forecasting manpower requirements where a reasonable amount of historical data exists

The procedure here depends a great deal upon what data are available. The essence of such data is that they can be analysed to show trends, which can with reasonable assumptions, be projected into the future

e.g. total employment trends by each major industrial activity, agriculture, manufacturing, services, etc.; manpower composition patterns, trends in educational and training output and patterns, etc.

The procedure used in forecasting when no historical data exists should be utilized; checks should be made in sectors for which historical data exists to determine if and what modifications may be desirable. Enlightened judgement is of crucial importance in determining what weight to give to the projections based on historical data, as against the targets based on the establishment survey. Indeed the establishment survey should normally be given precedence since it reflects both the factual situation as it exists and also forecasts based on the best available judgements of those directly concerned with employment. Extrapolation has its value, but it should be remembered that deliberate judgements such as those embodied in development plans create discontinuity in normal historical trends - which to that extent may become misleading.

Once more the manpower forecast for the social services are best done on the basis of ratios as previously mentioned.

C. Forecasting where adequate data exist

The adequacy of data for manpower forecasting is always relative. Generally statistics would be regarded as adequate if those identified in the preceding lecture are available. Care needs to be taken, however, in utilizing statistics - in particular, in determining the causal relations between variables. The advantage of the availability of adequate statistics lies in the fact that it enables alternative methods to be used in manpower forecasting. The results can then be compared both globally and sectorally, the final forecast being made on the basis of informed judgement. An example will suffice:

Example

Available statistics - historical data on employment and output
(volume or value) -

- (a) Obtain the volume (or value) of output by industry for the target year either by projecting historical trend to the target

year if no development plan exists; or if one exists obtain the proposed volume or value of output by industry as contained in the plan.

- (b) Obtain the output/employment ratios for each of the previous years for which data are available: take the average.
- (c) Use the ratio in (b) to determine the expected employment level in the target year e.g. (i) average output (L)/employment ratio based on historical data - $\frac{L600}{1}$, 600:1. (ii) expected value of output in target year - $L60m$: Expected employment in target year - $\frac{60,000000}{600} = 100,000$.
- (d) Determine additional net employment by subtracting current (base year) employment (A) from the estimated target year employment (B) i.e. additional employment = $B - A$.
- (e) Allow for deaths, retirements, etc. by using available replacement ratio, if data exists. If not a replacement factor of about 3 per cent p.a. should normally be used. This assumes a working life of 30 - 35 years. This would give you $A \left(\frac{r}{100}\right)^n = C$.
- (f) Accordingly total additional manpower requirements = $(B - A) + C$.
- (g) Use existing manpower and occupational ratios (as previously indicated) to determine occupational requirements.

Note

If available, the volume of production is preferable to the value of output. This is because changes in prices are more rapid than changes in technology over a given short period. Where either is likely to be significant however, the first employment approximation obtained at (d) must normally be discounted to allow for the change.

Additional manpower requirements can be obtained by using other variables, following the same basic steps as well as by the establishment survey method. Compare and check for wide differences.

The method for determining trained manpower supply has been indicated. It is relatively fixed and straightforward.

The labour force potential

The manpower forecast as so far determined indicates the potential manpower demand and trained manpower supply. A good manpower policy however, must look beyond this at the whole employment situation. This implies that manpower demand be considered in the light of the possible labour supply; and requires an estimate of such supply in the target year. This is done simply by projecting the population to the target year and determining the labour force potential, using the labour force participation ratios by sex and by age groups. These ratios are available from census figures; or can be obtained by special labour force sample surveys.

Lecture 4

A Manpower Strategy

The importance of manpower forecasting lies in its ability to identify the major human resources problems likely to be faced by the economy: manpower shortages, labour surpluses, training bottlenecks, etc. Once these have been identified, machinery must be set in motion, policy must be enunciated, and methods must be worked out, to overcome the problems effectively. This is the essence of a manpower strategy. The basic elements of such a strategy as enunciated by Harbison are mainly three.^{1/}

- (a) the building of appropriate incentives,
- (b) the effective training of employed manpower,
- (c) the rational development of formal education.

Building incentives

The purpose is to encourage manpower development in the skills needed to meet the requirements for economic development. This implies that compensation, particularly in the form of wages and salaries, should be geared to the relative importance of a job within the economic milieu.

^{1/} Frederick Harbison: Human Resources Development Planning in Modernizing Economies (International Labour Review, May 1962).

This means that the present apparent practice, whereby salaries and amenities are tied to levels of formal education or tradition, should be reviewed. It also means that persons in the usually critical areas - engineers, agricultural officers, trained science teachers should normally be remunerated relatively highly. In addition persons required to work in rural areas should receive special incentives. "Admittedly", as Harbison points out "pay alone may not be a sufficient incentive; the status of an occupation is of equal if not greater importance; but a rise in relative pay in itself may contribute to the raising of the status level of a job" (op.cit.).

While agreeing in principle with Harbison, it must be noted that wage structures are notoriously rigid. Tampering with them also has grave political and industrial relations implications. Incentives therefore need to be concentrated perhaps at the source of manpower supply. Thus in Nigeria, Government scholarship awards are geared to the manpower needs of the country. In a situation where education is expensive and poverty general, this has proved a most potent incentive to channel human resources into areas of vital importance for the economy.

A more general incentive designed to arrest undue rural/urban migration derives from the concept of balanced growth. This required the modernization of rural life to provide for good and reliable drinking water, electricity, a minimum of effective health services, etc. It requires also that effort should be made to improve agricultural incomes, not so much by thoughtless large-scale mechanization, but by introduction of fertilizers, agricultural credit, storage facilities and better marketing systems, etc.

Training of employed manpower

Schools, colleges and universities provide the basic knowledge upon which effective training can be predicated. They do not and cannot normally provide the training itself. This must in the final analysis be acquired on the job. It follows therefore that a good manpower strategy must acknowledge this fact and shift as much responsibility

as possible for training manpower to the employing institutions. Most of the technical skills which provided the basis for technological progress in the more developed countries were predicated upon the apprenticeship system. Even today, in Great Britain and Germany for example, it remains the most significant institution for acquisition of middle-level skills. As much as one-third of the non-graduate employees in industrial employment in Britain, every year, enter into formal apprenticeship. In Nigeria large hordes of primary school leavers apprentice themselves to tradesmen of all kinds. But the latter are themselves usually ill-qualified and the quality of the apprentices leaves much to be desired. What is required is an acceptance by the Governments or planning agencies of this form of training as an essential prerequisite to manpower development and the introduction of policies and legislation (if need be) to regularize the apprenticeship system and other forms of in-service training. In particular the granting of permits in respect of expatriate quotas, for the large commercial and industrial concerns should be tied to agreements by the firms to undertake the training of local staff, wherever necessary, on the basis of counterpart. A prerequisite to the utilization of foreign experts should therefore be that they should train indigenous counterparts. Every Government department, every firm of any significance at all, and every public corporation should have training sections charged with responsibility for manpower training through in-service programmes, in co-operation wherever possible with educational institutions.

It cannot be too strongly emphasized that training is a continuous process of human resources development rather than, as Harbison puts it, "a simple pre-employment indoctrination" (op.cit). "If the employing institutions are shouldered with the responsibility for a considerable amount of training, they will have an incentive to provide it. If they have the incentive to provide it, the technical means of carrying it out are available from a variety of sources". (Op.cit.).

In these days of military coups and military governments, the military have assumed a role far in excess of their traditional functions. In terms of manpower, however, the military provides important avenues for skill formation. Where, as tends to be generally the case nowadays, large proportions of public revenues are being voted for defence, it becomes even more necessary that the military should be utilized for that purpose. Indeed most of the telephonists and telegraphists, motor drivers, mechanics etc., which to a large extent, made possible the economic development of Nigeria, immediately following the 2nd World War were demobilized servicemen. The military can assist in skill formation in three ways:

- (a) By running courses on a part-time basis for civilians, to supplement the work of formal and in-service institutions; and
- (b) By making military service compulsory for a period of say two to three years, during which the recruits learn various skills;
- (c) Military personnel with requisite skills can be attached to institutions to assist in the training process.

Formal education

As we have mentioned, training, i.e. the acquisition of skills for particular jobs, must in the final analysis be acquired on the job. But many skills are in fact developed through the formal educational process - e.g. graduate engineers, teachers, agriculturists, lawyers and economists. Indeed the importance of education as an investment in human resources is only beginning to be emphasized. It has resulted in a sterile debate as to the real role of education in society - whether education should be liberal and regarded as social consumption, or whether it should train and provide manpower for the economy. My view is that in developing countries there is no room for such debate. Education which enhances human aspirations without equipping the individual to contribute to the attainment of such aspirations, is inadequate. On the other hand education

geared only and solely to the manpower needs of the economy is bound to be equally inadequate because man does not live by bread alone. Yet manpower shortage is so acute, and the development of the economy so fundamental to the attainment of other goals of society, that the out-turn of manpower to meet the needs of the economy, must be a primary function of the educational system.

A manpower strategy must therefore determine not only the allocation of resources to education, but the priorities in education. In this view universal primary education, as socially desirable as it may be, has to be approached with caution. Primary education, more than any level of education, is incapable of (indeed not designed to) providing functional skills. Unless a right balance is struck therefore a policy of too rapid development of primary education tends only to lead to increasing unemployment. This is the experience of Nigeria. To contain this tendency I hold the view that a general guide to the development of an educational strategy can be found in the manpower mixes, by category, in the employment market; and this can be adjusted to reflect some provision of education for its own sake. On these grounds, I hold that educational development should be planned on the basis of enrolment in higher, secondary cum-intermediate, and primary education in ratios of approximately 1 : 15 : 50. The effect of this would be that for every senior category manpower subsequently turned out, five will be trained for intermediate-skill categories and 10 secondary school graduates will be available for non-technical or skilled jobs as clerks, salesmen, etc. On the other hand the ratios indicated would provide manpower proportions of one high-level manpower (Senior + Intermediate) to 10 of total employment. These ratios are based on economic considerations only and presume that all educated persons from primary to university would insist on entering wage employment. To the extent that this is not the case the ratios can be liberalized to allow for more enrolments at secondary and primary school levels. It needs hardly be said that this view is already subject to serious debate and has been variously criticized. It is predicated on the view that

educational enrolments should not normally be provided in excess of the absorptive capacity of the economy for educated and trained persons. In Nigeria in 1963 the educational enrolment ratios were in fact of the order of 1 : 27 : 708. Unemployment among secondary school leavers was just beginning to manifest itself -- that among the primary school leavers had become and remains a deluge.

The experience of India (and to some extent, Nigeria) suggests that "education for its own sake" merely leads to "high-level unemployment". At the level of higher education in particular, therefore, disciplines and enrolment should be geared to the needs of the economy. Since most of the institutions are usually financed by government, and are generally at an early stage of development, it is not such a difficult aim to achieve. Scholarships and fees geared to the same end provide potent instrument of such a strategy.

Unemployment

In addition to Harbison's three elements of a manpower strategy, there is need to develop effective policies to combat the unemployment situation. Manpower forecasting by itself is not a strategy - it provides a picture, which normally reflects for the generality of the developing economies, a tendency towards increasing unemployment. As we pointed out when discussing the employment objective, the need for full utilization of human resources demands that measures to deal with unemployment should be an important part of any manpower strategy. The actual method adopted will depend on the situation of the particular country. The use of labour intensive methods, e.g. in public works, training of educated unemployed to equip them with requisite skills, development of handicrafts, improvement in agricultural methods to make farming more attractive, rural and community development schemes - all these have been tried with varying successes in different countries. The unemployment problem will be the subject of other lectures.

B.4 Summary of Lectures

by

K.F. Smart and Mr. Coulon

Unesco Regional Group for Educational Planning,

Dakar (Senegal)

Lecture 1

by K.F. Smart

Educational Planning - Introduction

In order to be able to consider education in the context of social and economic development, it is necessary to define the points of contact of the educational system with the elements which make up this context, and to be aware of the factors subject to rapid change and likely to induce imbalance.

The educational system itself contains numerous features which are measurable and from which conclusions can be drawn regarding its productivity.

Influencing its inputs are factors of demographic change, nationally (population growth or decline, or change in age-structure) and regionally (migration trends).

Its outputs form the major contribution to the country's "educational stock", in which employed manpower forms an important component. Manpower needs can have a determining influence on the content of education and even on the structure of education. The extent to which these influences are accepted and taken into account is a matter in which conscious political decision is possible.

For purposes of this argument, the term "educational system" includes all forms of formal education, and also informal and out-of-school education (e.g. in-service training in industry) and publicly supported cultural activities (e.g. radio, museums, libraries).

The whole of this educational system works upon the socio-economic environment, and is itself influenced by the environment (e.g. a community

development programme may increase acceptability of formal educational institutions; education of children may improve civic sense of parents).

Education is a great consumer of resources - land, buildings, equipment, personnel, teaching materials, "opportunity costs". However, its consumption in itself stimulates certain sectors of the economy, e.g. construction, furniture, printing, whilst its output of trained or trainable manpower contributes to development or improvement of industries.

Thus education is at the very centre of economic and social growth, and the planning of education is a key element in planning for overall development.

Lecture 3

by K.F. Smart
Educational Planning - Data

A. Data external to the educational system

I. Data relevant to "inputs"

Population - by age and sex

- by regions

- by ethnic groups or language

Population growth, by regions

Migration tendencies

Birth rates and infant mortality rates

Regional variations in school attendance rates

Increase in school attendance rates, by regions.

II. Data relevant to "outputs"

Survey of educational stock, by regions

Illiteracy, by regions

Occupational survey, by regions.

III. Data relevant to socio-economic environment

Indicators of economic situation - GNP, budget, balance of payments
position

Economic structures

Social indicators - classes, attitudes, importance of subsistence economy, mobility

Natural resources - climate, soil, energy

Infrastructure - social, transport, communications, services.

IV. Data on resources

Local building materials

Building costs

Machinery for land acquisition

Relevant industries, standard costs of equipment, etc.

Costs of teaching personnel, social services, administrative and inspection functions

Breakdown of financial resources available by source and type.

B. The collection of educational data

I. Administrative factors

Variations between countries in degree of decentralization.

Variations between regions (within the country) in level of development.

On the basis of these two criteria the decision must be reached whether planning can be undertaken of an integrated service or whether a regional approach is necessary from the outset.

Importance of non-aided private schools and feasibility of obtaining information on them will determine whether they are to be taken into account in planning.

II. Composition of the student body

Promotion

Repeating

Dropping-out

Transfer.

The importance of each factor needs to be gauged, and a decision taken on whether it is to be measured each time or combined with another factor or ignored.

III. Measurement of the system

Measurements of flow rates, expansion rates and yield can be undertaken only if accurate data are available on all the elements which are or will be present.

- i. Population trends
- ii. Enrolment rates
- iii. Schools
- iv. Classes
- v. Teachers
- vi. Student body.

Relations between these data form the basis for our assessment of imbalances.

C. The evaluation of educational data

I. Evolution of a cohort (calculation of yield)

Major factors are rates of promotion and repeating; decision is necessary on whether to ignore other factors.

Difference between hypothetical yield and real yield due to unmeasured factors, especially repeating and drop-out.

II. Drop-outs

If drop-outs are in fact transfers, there is an impairment of the accuracy with which the system is being measured, detrimental to sound planning.

If drop-outs are genuine drop-outs, they represent waste of resources, an indication of imbalance.

III. Repeating

May be controlled by regulation (e.g. no more than two repeats) or uncontrolled (hence "tripling") or effectively uncontrolled (where a regulation exists but is not enforced).

Some of the causes of repeating:

- bad teaching
- bad syllabus
- language problem
- unsuitable examination, etc., etc.

Repeating may itself aggravate some of the defects which have caused it.

IV. The search for imbalances

Disproportion between the sexes

Large proportion of drop-outs

Excessive repeating

Structural defects

Unequal success rates in exams - between schools, between areas, between classes or between generations (cohorts).

Lecture 5

Educational Planning - ^{by K.F. Smart} Levels of Educational Attainment and their Relationship with Levels of Manpower Requirements

I. Manpower requirements are generally stated in terms of occupations within sectors defined according to the employing bodies. The following problems emerge.

- (i) Too many occupations are listed.
- (ii) Some employers (especially government itself) require a wide variety of skills.
- (iii) Actual occupation often does not correspond with kind of qualification possessed.
- (iv) A requirement is often stated for a date in the relatively distant future, but accurate estimates can only be obtained in the very short term.

II. Output of education and training institutions is generally stated in terms of broad categories, in which only level and branch are indicated. The delay involved in making changes in structure or curriculum means that there is unavoidable delay in meeting precise manpower needs.

- III. The adjustment of education output to manpower needs involves:
- necessity of accurate manpower figures,
 - simplification of manpower categories to conform to educational levels,
 - timetabling of output, bearing in mind the desirability of avoiding the alternation of shortage and surplus (N.B. danger of over-production of highly specialized personnel required in small quantities).
- IV. Further points for consideration:
- Geographical location of technical training institutions should correspond with economic trends.
- Syllabuses of technical training should correspond with real vocational needs.
- Syllabuses of general education should be in accordance with the country's real needs.
- Need to replace expatriate staff should not lead to over-hasty establishment of expensive specialized institutions.

Lecture 7

by K.F. Smart

Educational Planning - The evaluation and Control of Education

- I. The criteria for evaluation of any sector of education are derived from the explicit and implicit aims of that sector.

Some qualitative inferences may be drawn from quantitative data, but others may be expressed in qualitative terms, the significance of which may be a matter of arbitrary decision or subjective interpretation.

For example, some of the criteria, according to which primary education may be assessed, are:

- (i) sufficient command of the spoken usage of the mother tongue for all purposes of adult intercourse;

- (ii) in most African countries, permanent literacy in an "international" language;
- (iii) sufficient command of basic mathematical processes for all purposes of normal adult life;
- (iv) sufficient understanding of social relations within the community (family, village, church, etc.) and of the racial, political, religious and economic determinants of human activity within the given situation, to play an understanding part in adult life as a citizen.

It is to be noted that the relative importance attached to these criteria may vary, and that the criterion which may in many circumstances be regarded as the most important (the fourth) may prove to be the most difficult to evaluate objectively.

II. The process of evaluation is aimed at ascertaining the appropriateness of the education provided to the broad aims of society and to the needs of the individual. Inadequacy shows itself as:

total failure

general retardation

partial failure or retardation (i.e. in a part of the syllabus, or in one subject)

lacunae (gaps).

Any of these kinds of failure may occur in an individual or in a group or even a whole cohort, so whatever methods are used to diagnose them must be such as to lead to both individual and group conclusions.

In the case of individual or local failure, the causes may be sought in the individual or local circumstances (e.g. individual teachers) but in the case of a group or generalized failure, the causes may be sought in generalized inadequacies, e.g.

teachers as a whole;
the medium of instruction;
the vocabulary in use;
the intrinsic appropriateness of the whole syllabus;
the sequence of subject matter;
methods;
text-books, etc., etc.

III. Several controls exist, which may be applied by the educational planner to rectify deficiencies observed.

The most important internal control is the examination. An examination can have one of two functions - it can be a check on the effectiveness with which a syllabus has been covered, or it can be a mechanism of selection for an ensuing stage or year. An attempt to make one and the same exam fulfil both functions simultaneously almost invariably leads to conflicts, e.g. if one tries to use a primary school leaving exam as a selection procedure for secondary education (the rate of award of the primary school certificate is to be maximized, but the number of secondary places available may be very small). The adoption of foreign standards is not justified unless one wishes to encourage continued adherence to foreign models of higher education (e.g. low success rate in baccalaureat exams in French-speaking African countries).

Formal control over the content of education may be exercised through the operation of standing commissions on curriculum and text-books. Both formal and informal control may be exercised through the inspectorate. Inspectors must play a large part in the introductory stages of any syllabus or method reform, as they must carry out the considerable amount of in-service training of teachers required.

In the evaluation of all aspects of education, both qualified and not, recourse should be had to the expertise available in training colleges and universities, but it must be borne in mind that the aims of a university and a ministry of education may not be identical.

External controls on education are exercised by public opinion (any educational reform must be accompanied by a propaganda exercise) and by all employers of labour, through the value they attach to certificates. Higher-level institutions themselves exercise a downward pressure on syllabuses and standards, both informally and formally (by their own selection criteria).

Although many of these pressures cannot be measured, their existence should be located and their relative importance assessed.

Lecture 9

by K.F. Smart

Educational Planning - The Reform of Education

I. The stages in educational planning are:

- (i) Survey of the milieu - population, social, economic, manpower.
- (ii) Survey of the educational situation - past, present, forecast of future.
- (iii) Determination of needs and formulation of policies.
- (iv) The plan.

II. The third stage is the stage at which decisions are taken and reforms envisaged.

This stage is a team enterprise involving university, various ministries, the general public, etc.

Numerous statistical exercises must be carried out (analysis of past trends, projections of flow rates, etc.).

Strategy must be based on general objectives as well as manpower needs.

Account must be taken of existing provisions.

Before final decisions are taken, a serious attempt must be made to measure their impact on:

flow rates
teacher requirements
equipment needed
premises
recurrent costs.

III. Various reforms are possible, and each possibility involves a different set of impacts, such as:

class size
teacher-pupil ratio
type of teachers required
accommodation
equipment
unit costs.

The possible kinds of reform include:

curriculum
structure of the system
number of years in a cycle
change in level for beginning of specialization.

An exercise such as the current English plan to "go comprehensive" involves almost every conceivable complication.

IV. Factors presenting special problems include:

- (i) Any change in the length of teacher-training courses leads to a reduction in output, which can only be compensated for by large increase in enrolment of teacher-training colleges or by a big change in the structure of the training course.

Teaching practice arrangements always call for careful planning.

- (ii) Any change in the ratio of boarding to day schools involves changes in unit costs, staffing needs, etc.
- (iii) Any development of ancillary services (audio-visual aids, school meals, libraries, etc.) leads to a need for supplementary technical services and replanning of future recurrent expenditure.

Lecture 11

by K.F. Smart

Educational Planning - The Planning of Literacy and Adult Education

I. Literacy and economic development

Is education an investment? Is literacy an investment? If so, What benefits does it bring?

Need for integration of literacy programmes into overall development plans. Failure of non-integrated schemes.

Development depends on people -

- their skills
- their attitudes.

Relation of literacy to the objectives of society and the aspirations of the individual.

Integration of literacy programmes into development plans brings them into competition with other projects, as regards allocation of resources (money, accommodation, personnel). Therefore, those literacy projects should be favoured which are likely to bring about increase in production or to induce a desire for change.

II. Literacy and education

Literacy campaigns provide a supplement to education for those whose education has been incomplete and a substitute for schooling for those who have never been at all.

Literacy work is a new form of education, with its own validity.

It can be applied alone or in combination with formal instruction.

It is essentially functional and this implies that it must frequently be selective. Selection of beneficiaries on basis of:

- social priorities (e.g. women)
- economic priorities (e.g. industrial workers)
- geographical priorities (e.g. area of tourist development).

General priority to active elements in population as they are motivated and most likely to build on the foundations laid.

Hope for "contagious" effect of a successful programme (stimulation of interest in neighbouring areas or social groups).

III. Programming and Administration

Two opposed tendencies already present -

- tendency to formalism (copied from school education)
- tradition of voluntary effort (sometimes excessively informal and unsystematic).

Formalism is to be avoided: literacy is part of a life-long process and should adapt itself to the informality of life-long education.

There is however a need to harness voluntary effort, but to make it more systematic and efficient.

Since each programme is devised to meet specific needs, there can be no uniform national pattern for literacy campaigns. A national policy, but local projects.

IV. Execution

Two stages - (a) acquisition of literacy; (b) utilization of literacy.

Unsuitability of primary school materials and methods. Timing and physical planning must be adapted to needs and nature of class.

Material encouragement by employers, etc.

Personnel are of varied origins, but all need training. Remuneration is desirable (financial control a means to professional control). Control and assessment stimulate enthusiasm as well as being economically desirable.

V. Evaluation

Measurement of results (by sociological research as well as by testing).

Costing.

Financing can be achieved by incorporation in national budget; in budgets for development projects; by international aid.

Lecture 13

by K.F. Smart

Educational Planning - The Training of Educational Planners

I. Qualities required

- (i) Foresight (e.g. reserve land for schools even before concrete proposals for construction);
- (ii) Integration - solving problems by relating them to each other;
- (iii) Retention of final aims (not confusing ends and means);
- (iv) Retention of an open mind;
- (v) Relation of education to its social environment;
- (vi) Clarity of vision of the planning function, viz.
 - to survey the field
 - to present alternatives
 - to work out implications of any selected hypothesis.

II. Principles of training

Plan the planning; and plan the training of the planning personnel.

Levels of training:

- (1) 6-8 weeks, offered by Regional Group for Educational Planning, Dakar;
- (2) 5-6 months, offered by Regional Group;
- (3) 10 months, offered by International Institute for Educational Planning, Paris.

Fellowships should be included in the biennial programmes of requests for technical assistance (UNDP). If not so included, training may be financed by the government itself.

Fuller details of these training schemes and of possibilities of national courses in educational planning may be obtained from the Director, Regional Group for Educational Planning, Unesco, B.P. 3311, Dakar.

For officials from Sudan and North Africa, appropriate information may be obtained from the Director, Regional Centre for the Advanced Training of Educational Personnel in the Arab States, P.O.B. 5244, Beirut, Lebanon.

Lecture 2

by Mr. Coulon

Educational Planning - Education systems and school systems,
from the point of view of their objectives

From the educational point of view, it is necessary to envisage a **certain** planning-organization of the school system - complementary to the planning of the economists, so as to arrive at a maximum of effects with the minimum of means.

Is planning useful and essential? It is the authorities' normal technical, scientific response to a complex problem. Education has become a favoured meeting-ground, the hunting-ground for every kind of planner, and this by reason of fairly obvious ends and means.

From the point of view of ultimate objectives, it is interesting and useful to bear in mind the objectives pursued successively by the school, because some of them have left an "ideological and methodological sediment" in our present-day school systems. The planner must know the origin and the present value of these traditional and other influences, so as to situate them better in the present system and to measure their importance. They are:

1. The primitive system: an aim of simple apprenticeship (still present: shepherds, fishermen, illiterate workers, etc.).
2. The religious system: instructing the faithful, then the clergy.
3. The élite: ensuring the succession of noble or middle-class élites: educated "gentlemen"; schools for the sons of leaders.
4. The colonial system: training servants loyal to the metropolitan power, and agents for the colony itself.

5. The socio-economic system: the present concept of education as investment.

One must not forget that for humanity at large, education remains "a technology of happiness" in the broadest sense, which implies that by its intellectual, philosophic, religious and artistic aspects the problem extends well over the limits of economic factors.

In conclusion, an educational plan, manifest especially in a school system, rests on several sets of data -

- demographic data, giving the dimensions of the problem, at present and in future;
- politico-social data, giving the general and particular options adopted by the nation;
- economic data, which measure and define the options and the means available;
- psychological data, to guarantee for the operations a solid foundation in the mentality of the people and to avoid major disappointments.

These data and psychological researches seem to be lacking in Africa, and constitute a serious lacuna for the work of planning, which thus runs the risk of finding itself in a false position, e.g. in connexion with certain aspects of the problem of "mentality", note the disharmony between the operational dialectic and the idea of "negritude" illustrated by L.S. Senghor.

Lecture 4

by M. Coulon

Educational Planning - The Structures (General)

- I. From the planning point of view, there exist two sorts of country:
(i) old countries with long cultural traditions in which the planner must take considerable account of what already exists (institutions and habits); (ii) new countries in which the traditions, much more modest in their cultural level, offer less resistance.

The attitude of the planner must obviously vary according to his situation.
- II. The major terms of reference which must guide and inspire educational planning are:
(i) general planning, indicating the broad lines of the policy to follow;
(ii) school and educational traditions;
(iii) the psychology of the people, including the extra-economic factors - philosophic, religious, etc.
- III. In the present situation of things, and given present rates of school-attendance, educational planning must:
 - remain rather modest in scope;
 - limit itself to what is plannable;
 - not be led astray by optimistic dreams, which could give rise to disappointment.
- IV. The unity of educational planning - unified in unitary States (France, Algeria, Dahomey), it varies in federal States (Switzerland, USSR, USA, Argentina).

In general, one divides countries according to their cultures, in accordance with each culture's right to define its own institutions.
- V. Power is located at various levels: federal, provincial, municipal, etc., so planning must be carried out at various levels too.

In general, the private sector of education is included in the planning and is also included in the statistics.

- VI. At the level of the Minister and the Ministry, it is desirable to concentrate all the nation's educational activities, having recourse if necessary to under-secretaries of State if the task is too great.
- VII. Legislation must be generalized and minimal, based on several inclusive statutes. For detailed instruction, the executive can act through regulations and circulars.
- VIII. In general, educational and vocational guidance has not been accorded the attention it deserves. This guidance should be based on (i) knowledge of the child; (ii) occupational descriptions (e.g. those of ILO); (iii) information on the labour market.
- IX. Finally, geographical planning is essential, at the local, regional, national and international levels, according to need.

Lecture 6

by M. Coulon

Educational Planning - Internal Structures of the Educational System

- I. Permanent rivalry between
 - system of school education
 - system of out-of-school education (apprenticeship, on-the-job training, youth organizations, battle against illiteracy, community development).

Advantages and disadvantages of these various approaches.

Competition between two budgets - but plans attach more and more weight to school education, for reasons of educational and human promotion. Rates of school attendance, however, remain low, in spite of the evident needs.

II. Criteria for the structuring of systems of school education.

(a) The sexes: education of boys and girls. In view of the errors committed in modern society, as far as the education and status of women are concerned, this question needs to be considered seriously. Women must be given (at school, in society and in the productive process) a place appropriate to their own nature, aspirations and needs. Even in technical education and vocational training, women have the right to a form of education of the same level as men (and specific to them if possible).

(b) The ages: the structures of education must be based on the evolution of the child. According to Unesco, triennial cycles are appropriate, viz.

3 - 6 nursery schools

6 - 9 - 12 primary

12 - 15 - 18 secondary

18 + higher

(c) The situations:

Geographical - rural education and urban education. Need to avoid sacrificing the former (especially to avoid over-large classes).

Social - influence of children's social origins (children of office-workers, factory-workers, farmers) on their intellectual development and school behaviour. Measures to be taken to enable less-favoured children to make up for their drawbacks. Democratization of education.

III. Reference to manpower - each form of education, according to specialization, leads to a career open at a certain manpower level. One must think beyond this stage, however, as education must not be a mere conditioning process.

Lecture 8

by M. Coulon

Educational Planning - Organization of
time at school and work

- I. The nature of school attendance - the student's day and the worker's day.
- II. Division of time into activities:
 - the school year and the organization of holidays. (Competition between climatic imperatives and social imperatives, the latter victorious);
 - the working week: 25, 30 or 35 hours
 - five days (two days off)
 - the most favourable system
 - one day in a factory or workshop;
 - the working day:
 - the continuous day (8-13 lessons)
 - the 50-minute lesson
 - the half-time system.

The importance of homework.

The need for supervision - for holidays and weekends and leisure-times

 - for the evenings and homework.
- III. Forms of regular school attendance.
 - Voluntary and compulsory attendance.
 - Tendencies towards standardization.
 - Boys' and girls' schools
 - Town and country schools
 - General and technical education.
- IV. Complementary (further) education.
 - Especially for workers.
 - (i) The "tandem" system (school and factory)
 - (ii) Vocations in productive work
 - (iii) The "polytechnic" approach to school work

(iv) The role of the army (apprenticeships, etc.)

Numerous theoretical advantages.

Even more practical disadvantages (hence drop-outs).

Teaching by radio and television.

Teaching by correspondence. Necessity of combining methods. Need for repetition.

Teaching by programmed methods and teaching machines.

V. Special schools - for abnormal young people.

Obligation to attend to this problem and to develop an educational approach "ad hoc" (very varied).

Responsibility of manpower services for appropriate installations - protected workshops, etc.

Free provision of education (scholarships). General application of provision made. The position of the worker-student. Social advantages. Accommodation. Allowances.

Lecture 10

by M. Coulon

Educational Planning - The Content of Education, for the man and for the Worker

I. Africanization

Analysis of the content of training, to discover two sets of elements:

- elements specific to the region
- non-specific elements.

Among the non-specific (universal) elements, one includes the sciences (mathematics, physics, chemistry, etc.) and technology.

Need to present them with local references (problem of text-books and documentation).

Among the specific elements, one obviously includes history, geography, botany, zoology, art, religion, etc. (Again, problem of text-books). Need for a documentation centre, for collection of material (museums, etc.).

II. The language of education

The choice of language (medium of instruction) is a universal problem which presents difficulties all over the world (question of minorities).

One possibility - to use the vernacular for basic education (and in the battle against illiteracy). Obvious advantages.

Some disadvantages:

- difficulty of arriving at a choice of language
- lack of material
- delayed problem of initiation into the international language.

Conclusion: major (written) vernacular for basic education and literacy, then a major world language (a question to discuss).

III. An official syllabus?

Is this necessary for all kinds of education, in schools or not? Formerly a controversial question in the Anglo-Saxon countries.

As with inspection, there are pros and contras.

For adult education especially, flexibility is necessary.

The cult of diplomas - necessary to avoid arbitrary judgements.

IV. Content of syllabuses

The battle against illiteracy. Definition of illiteracy. Basic education.

Knowledge of techniques - writing, reading and counting - is this essential for education?

Systems of literacy work.

Lecture 12

by M. Coulon

Educational Planning - Internal means

Introduction

Necessity for "concrete" teaching, based on the reality of things. Unfortunately, educators take pleasure in disdaining reality and in avoiding it by book-learning or the use of mere representations (pictures, films, etc.).

The best representation of an object is the object itself: this is too often overlooked in education. Hence the need for collecting, for the "active" school, for school gardens, etc.

I. The first evocation of reality: books.

Need to illustrate text-books, to adapt them to the national reality.

National editions, prepared in competition.

We must do our utmost to make it possible for children to take their schoolbooks home and keep them.

II. Need for each substantial institution to have its own small documentation centre.

Documentation devoted especially to national realities.

III. Audio-visual methods (mass media)

N.B., these methods remain substitutes for reality, therefore inferior in quality to the reality itself. We must nevertheless take account of "the magic" of the picture.

Two main categories exist:

(a) Imposed from outside:

Radio (transistors)

- certain to be influential for adult education
- not significant for school education.

Television

- some of the same basic characteristics as radio, but with more precise and profound effects.

(b) Means proper to education.

More useful, whether purchased or (even better) created by the school itself, e.g. film, tapes.

For seeing: films and slides (should be shown several times).

For hearing: records, tapes, language laboratories (need for training of personnel).

IV. Programmed teaching and teaching-machines.

Techniques are still in their infancy, and useful especially for certain branches of education (science and technology) with students who have already had some instruction.

Are teaching-machines useful? For a programmed instructional process.

Lecture 14

by M. Coulon

Educational Planning - External Means, and
Teaching Personnel

I. School buildings

An important aspect of all forms of education, but always very neglected. No doctrine, only superficial planning efforts.

Frequent errors of European architects, when left to their own devices.

Need for an international office for school buildings, with regional and national branch offices.

Importance of art, hygiene and general presentation wherever it is a question of educational functions. In workshops, use of significant colours, e.g. various colours for different parts of machines, for both aesthetic and safety reasons.

Norms for classrooms: primary - $\pm 50 \text{ m}^2$
for a class of 40-45

secondary -- $\pm 50 \text{ m}^2$
for a class of 30-35

Need to interest the authorities and educators in school building questions.

II. The training of teaching personnel

A plea for the school, even for the classic type of school.

The craft of education cannot be improvised. It must be studied and prepared for (psychology, educational principles, etc.).

Even for future workers, education cannot be reduced to a mere conditioning.

Shortage of teachers almost universal.

Need to reward the function as it deserves, and to avoid imposing more and more demands on it.

Main categories to be trained:

- teachers for nursery classes (important for working mothers),
- primary teachers, familiar with local realities,
- lower secondary level teachers (many required, and important).

III. The productivity of the educational system

Advantage of having precise data on the situation, and statistics.

We must plan what is "plannable", and measure what is measurable.

But not more !

There remain all the imponderables of the art of education, which are of decisive influence. Education is for human happiness!

B.5 Summary of Lectures

by

Dr. J.A. Denny

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Lecture 1

Scientific Advance and Social Change in Relation
to Manpower in the Field of Health

In presenting the health aspects of Human Resource Planning in Africa, I propose to deal with the subject under four headings:

1. Social change and scientific advance in relation to manpower in the field of health.
2. Education in medicine and allied fields and the national structure.
3. The organization of education in the field of health to meet the changing needs of society.
4. Planning new programmes in manpower in the field of health.

In undertaking this assignment on behalf of the World Health Organization, I am conscious of the tremendous importance of the subject and of its difficulty, and I would assure you that manpower in Africa is a major preoccupation of the World Health Organization and has been the subject of continuous public reference by our Director-General, Dr. M.G. Candau.

As the first heading of my four presentations indicates, it seems necessary to consider from an over-view, some factors or forces which must be taken into account in any study of African Manpower Planning.

The first great factor is the incredible advance of scientific research and discovery. A second is the social change which is taking place not only in Africa but throughout the world. These two factors are inter-related and their effects not yet properly understood but for better or for worse they affect the lives of countless numbers of mankind and must influence any approach of the planning of human resources in development.

Let us consider first the scientific revolution. Few have any idea of the magnitude of this revolution and of the scientific research race which began in the middle of the second world war and which, in terms of scientific output, the manpower engaged and the money spent, seems to be doubling every twelve years. Bernal states that world scientific potential is increasing by 20 per cent per annum. Table 1 from an OECD (Organization for Economic Co-operation and Development) Publication shows the estimated gross expenditure on research and development for the United States and six European countries for 1962. Table 2 again from OECD, shows the estimated manpower engaged on research and development for the same year for the same countries and the USSR.

If one looks at the two tables and considers that even since 1962, the figures have probably increased by another 50 per cent, one can get some idea of the magnitude of manpower and money devoted to research and development. But as J.D. Bernal points out, this very success of science and research, however, also marks the failure of the research revolution to spread effectively over the two-thirds of the world which are just struggling out of the old colonial regime. In terms of science, on the one hand, we can now appreciate the immense, indeed the almost limitless possibilities of accomplishment realizable through the informed and intelligent co-operation of a large number of human beings, temporarily subordinating their individual aims in favour of some common objective and on the other, the need to direct such power towards objectives which are for the real benefit of mankind.

We are just at the beginning in four main areas of advance which have consequences which at present are incalculable. One, is the availability of energy, which in the future will be unlimited. Another, is the development of the computer as a fantastic extension of man's brain. Another, is the deeper understanding of biological processes and as one consequence the ability to cure or eradicate diseases hitherto incurable. And a fourth the revolution in communications science and again, as one consequence, the effect of this revolution on Education.

Table 1
Estimated Gross Expenditure on Research
and Development (GERD)
and Gross National Product (GNP), 1962

	United States	Western Europe ^{a/}	Belgium	France	FR Germany	Nether-lands	United Kingdom
GERD in National Currency (millions)	17,531		6,625	5,430	4,419	860	634
GERD in US\$ (millions: official exchange rate)	17,531	4,360	133	1,108	1,105	239	1,775
GNP at market price ^{b/} in national currency (millions)	557,590	-	646,200	356,300	354,500	48,090	28,566
GERD as % of GNP at market price	3.1	-	1.0	1.5	1.3	1.8	2.2
Population (Millions)	187	176	9	47	55	12	53
R and D expenditure per capita (in US\$)	93.7	24.8	14.8	23.6	20.1	20.3	35.5

^{a/} Belgium, France, Germany, Netherlands, United Kingdom.

^{b/} If GNP is taken at factor cost instead of market price the ratios are as follows:

United States	...	...	...	...	...	3.5 %
Belgium	...	...	...	...	...	1.2 "
France	...	...	...	...	...	1.8 "
Germany	...	...	...	...	...	1.5 "
Netherlands	...	...	...	...	...	1.7 "
United Kingdom	...	...	...	...	...	2.5 "

Table 2
Estimated Manpower Engaged on Research and Development, 1962

	Scientists and Engineers Engaged on R and D	Other personnel engaged on R and D	Total personnel engaged on R and D	Total popu- lation	Total working popula- tion (aged 15-64)	R and D personnel per 1,000 population	R and D personnel per 1,000 working population
	('000's full-time equivalent)	('000's)	('000's)	(Mil- lions)	(Mil- lions)		
United States	435.6	723.9	1,159.5	186.6	111.2	6.2	10.4
Western Europe ^{a/}	147.5	370.8	518.3	176.1	113.9	2.9	4.6
Belgium	8.1	12.9	21.0	9.2	6.0	2.3	3.5
France	28.0	83.2	111.2	47.0	29.1	2.4	3.8
FR.Germany	40.1	102.1	142.2	54.7	36.7	2.6	3.9
Netherlands	12.6	20.2	32.8	11.8	7.3	2.8	4.5
United Kingdom	58.7	152.4	211.1	53.4	34.8	4.0	6.1
USSR							
"Conservative" estimates	416	623	1,039	220	142	4.7	7.3
"Project" assumption	(487)	(985)	(1,472)			(6.7)	(10.4)

^{a/} Belgium, France, Germany, Netherlands, United Kingdom.

Alexander King says if, as now seems probable, governments begin to look at science as a social, economic and cultural force to be reckoned with, and not just as the result of inter-acting economic forces or as an embellishment of cultural life, to be supported when times are good, they will have to begin to tackle its support and exploration in normal policy terms. In the present situation one can distinguish four categories of country distributed in a spectrum, to each of which the present problem of science policy is essentially different. Firstly, there are the giants - the USA and USSR with great resources - who in spite of questioning about the moon-shot and warnings by their own scientists, hardly recognize how nearly they are approaching the ceiling. Secondly, we have the middle-sized countries such as Britain, France, Germany and Japan, some of whom dream of a continuing self-sufficiency in science as in other areas of policy. These find nuclear energy in its more extravagant forms a little difficult and space performance almost beyond them. Then comes a whole group of small, industrialized and scientifically advanced countries such as the Netherlands, Belgium, Scandinavia and Switzerland, some of which are already aware of the dilemma of scale in science. Finally there are the less well-developed countries, which tail off in a long line to the most primitive and simple, with little or no organized science. The third of these four categories of countries is perhaps at present the most significant considering the world trend towards ever higher expenditure on science. These countries already feel the constriction of their best resource ceilings, yet are fully conscious of the promise of science for their future. It is such countries which have immediate and clear need of deliberate science policies. Priorities in research expenditure are inevitable in such countries and these priorities must be related to long-term national objectives. There seems to be the complementary approaches, concentration of effort in a few major directions and extension of resources through wise and selective participation in international research schemes.

I have treated this subject of scientific development at some length, in this - which I might call my key note - because I believe it is essential

to keep it in the forefront of planning for the future in the field of health in Africa, especially as regards human resources.

A second factor influencing the planning of human resources is that of social change. Independence in Africa has brought about an unprecedented rate of social change and social mobility and people have become exposed to a new variety of ways of looking at the world. Social mobility, that is, the movement from one social structure to another is occurring through industrialization, urbanization or other social or organizational changes. For example, wherever industrialization occurs, a new dynamism is injected into the social system. Masses of people begin to change their social position in groups or as individuals. While usually this change is in an upward direction, it may mean detribalization and the creation of urban slums. With this movement an individual's biography often involves a considerable journey not only through a variety of social groups but with the intellectual universes that are so to speak attached to these groups.

Recently, I was in contact with a group of young diplomats undergoing training in a UNITAR Course. They were from 23 newly-developing countries. They showed this social mobility and progress through groups commencing, with their homes, perhaps in villages, through schooling, primary and secondary - then the universities and finally to this group. It was interesting to see how already they were part of the institution of diplomacy, defining institution as a distinctive complex of social actions. Their conduct was patterned by the 'mores' of international diplomacy. Already they were playing the "role" of diplomat. A role being defined as a typified response to a typified expectation and international diplomacy has predefined the fundamental typology. Their identity as diplomats had been socially bestowed, socially sustained and they had been socially transformed. Not only were they themselves living the "role" of diplomat, now quite unconsciously but their "identity" as diplomats was accepted by the approach of WHO to them in our lecturing and teaching. Finally, they had achieved, through social affiliation, a reference group; a collectivity whose opinions, convictions and courses

of action are decisive in the formation of opinion, conviction and courses of action. The reference group provides a model for the participants with which they can continually compare themselves and this model is the model of international diplomacy.

What I have said for my group of young diplomats might be applied to young doctors, young engineers and young teachers or nurses and even to presidents or ministers. In Africa, as in the rest of the world, in adapting our human resources to needs, to develop growth points or what A.W. Lewis calls "leading sectors", one needs to know more about the factors of role, identity and reference groups. As yet they are imperfectly understood. An African medical association can be as conservative and, as a reference group, as powerful and plagued by the same mythologies as anything elsewhere in the world. These sociological factors can make or mar the success of human resources planning and must receive consideration.

Whether we like it or not there is one science, growing increasingly powerful and providing a common bond for all scientists and providing a language and means of communication which they all understand. This must, because we cannot avoid it, govern our planning and it is clear from the syllabus of this course that it is based on this scientific approach to manpower planning.

Equally, because people are very much the same everywhere, there is one sociology and even in the new Africa it is crystallizing in forms very similar to the rest of the world.

It is in the framework of these two concepts and in relation to the needs of African manpower that I hope to present any further ideas on manpower planning in Africa in the field of health.

Lecture 2

Education in Medicine and Allied Fields and
The National Structure

In any developing country which undertakes national planning to secure balanced national and community development, a scheme of priorities is essential. Even in the most advanced countries, because of the lack of such a scheme of priorities, imbalance can occur.

A scheme of priorities is necessary because every nation has its peculiar endowment of natural and human resources which calls for a specific mode or tempo of development over space and time. Moreover the institutional framework and the sense of values will vary from nation to nation, providing different concepts and approaches to material and human development. In spite of their differences, developing countries do present certain formal similarities in their approach to rapid economic development. In the first place they all ask for a rapid rate of increase in the standard of living of their people, which economists believe they can measure and indicate by a reasonable rate of increase in their per capita real income. This quest for a rapid increase in per capita real income is, in the second place, often split, at least in the case of extremely populous countries like India, into two distinct movements, the first aiming at a conscious and deliberate control of their population, which of course can be achieved also by emigration, as in Ireland, southern European countries and Holland, the second, at increasing employment opportunities and raising the efficiency of labour. One of the surest ways of increasing efficiency of labour in a developing country is industrialization, including the modernization and transformation of a traditional agriculture. Once new industries are started in which the marginal efficiency of labour is greater than in traditional occupations, the economic development of a country gathers a momentum which carries it forward to the stage of self-sustaining growth.

Industrialization and modernization of an economy cannot be considered only in narrow economic terms, for this process is based, at least under

modern circumstances, on an improvement in the health and educational conditions of society. This calls for the simultaneous building-up of the social infrastructure in terms of health and education, including technical education, along with that of economic infrastructure and new productive potential.

Again, to sum up the priorities in planning such national development, one might say that a country has to develop its economic infrastructure in the sense of power, transport, communications and irrigation; to build up simultaneously its social infrastructure in terms of education and health; and thirdly, to build up its productive potential in the form of industrialization and the modernization of its agriculture. The emphasis which a particular country may place on any of these priorities at a particular time, depends on circumstances.

These circumstances vary enormously from country to country. The state of preparedness of the community in absorbing development in terms of skills, organization and motivation varies from one developing country to another. If the community is lacking in some of these essential preparations for realizing economic development, then national planning has to forge in the community those ingredients which are in short supply. In other words, there is need for balancing community development against national development. While industrialization and the building up of an economic infrastructure favour the latter, the building up of a social infrastructure and the fostering of new agricultural practices make the former possible. It is for this reason that sometimes social services are pitted against agricultural and industrial development as opposed priorities in planning. But this opposition is in fact only apparent, for each step forward in agricultural and industrial development requires a proportionate step forward in social development, and each advance in social development is only viable if a proportionate measure of agricultural and industrial development can sustain it.

But 'health' is something unique and has qualities not possessed by economy or industry. These and many other socio-economic elements are a means to an end, namely the promotion of human well-being. Health is a state of well-being, thus it is a goal in itself, but it is also an instrument of development, since its presence contributes to the success of other means in reaching the objective more quickly and for greater numbers.

Let me give an example. Nearly thirty years ago, in one of a series of medico-social surveys, I graded a group of women workers by income per capita in their families and related these to the number of demonstrable health defects which I found on examination. One could show that as income increased, the number and seriousness of the defects became less. The question which I have not been able to answer over thirty years is: Did they earn less because they were less healthy, or was the better health of those who earned more due to their higher income? While I have not answered this question I did demonstrate the relation of income to health or of health to income.

Article 485 of the preamble to the Constitution of the World Health Organization states that the events or happenings in one country is the concern of all. In the matter of manpower in health it is truly one world, since there is no country without problems in this area. In the developed countries, because of the science explosion and sociological factors, such as those discussed in the first lecture, there has developed an imbalance between needs or wants and the organization existing to supply them. If one regards health services as an industry, it will be seen that as regards men and money it is frequently the largest industry, or one of the largest, in many developed and developing countries. Also, as regards diversity of fields and careers it is a most complicated industrial structure. It has many unusual features. For example, in health, the consumer has less control over the utilization of the service than in any other industry, but due to forces, many of which are not understood, there is a malaise abroad and, for example, there have been medical strikes in a great number of developed and prosperous countries.

Leaders in the health professions are concerned with this and there has been a multiplicity of Congresses at a world or continental level, of expert committees, of study groups, of research projects, and efforts by the great Foundations held to study the problem, or problems.

In 1962 the World Health Assembly decided that the Executive Board should carry out an organizational study on 'measures for providing effective assistance in medical education and training to meet the priority needs of the newly independent and emerging countries'. From all this it is apparent that the system of education amongst other factors requires review and that the training of the physician, for example, should be better adapted to changing world circumstances. This is of course of special importance in the development of manpower in the health field in developing countries. Let me give some examples of the problems encountered in the developed countries. In Great Britain, 45 per cent of all the junior medical staff of hospitals come from abroad and number nearly 5,000. Relative to the increase in the population of the country, the number of general practitioners is falling and there is dissatisfaction in this medical group as well as the junior hospital staffs. It is becoming increasingly difficult to fill one-man practices and practices in areas with lesser social amenities. This difficulty in filling one-man or single-handed practices reflects the world wide trend towards group-practice, a fact of importance to manpower planning in Africa. The Ministry of Health has established a manpower unit.

In Germany, I am told that 25 per cent of all the public health posts are vacant and that the proportion of junior hospital posts staffed by doctors from abroad is similar to Great Britain. Scandinavia is running short of doctors, and Norway for instance now sends students to study in Ireland and Switzerland.

In the United States, 25 per cent of all hospital internes are foreigners. There is a serious shortage of paediatricians, and it is estimated that with the increase in the population there is a need for 20 more medical schools, each costing \$100 million to construct. Yet,

if the 'output' of the medical profession could be increased by 4 per cent of services, the need for new schools could be scaled down by 15. An estimate of the requirements for nurses for 1970, put at 750,000 has had to be scaled down to 500,000 because it was realized that they just could not be recruited. There are nearly 4 million people engaged in the health field and it is estimated that this will double (8 million) by 1980. Expenditure will also double. Today 95 per cent of all young American doctors are specializing and the development of group practice is accelerating. Economic incentives are necessary to attract people to work at lower levels in the health field and the anomaly of income gradation is apparent when one is told that 40 per cent of the hospital orderlies in New York draw welfare assistance pay to enable them to live. These, and a multitude of other problems, have led to the establishment of a manpower unit in the Office of the Surgeon-General.

If one considers the tremendous material assistance given by the United States to Latin American countries in the field of health, and weighs it against the cost of those countries of training the medical and nursing personnel who have emigrated to the US, the balance of giving is very much on the side of the Latin American countries. This raises the questions of brain-drain and the equivalence of medical qualifications which is now the subject of much international study. As an example of brain-drain, which will be my sole comment at this point, let me quote the Director of the Health Services in Dahomey in 1964.

"The considerable effort made by the nation to train qualified staff has not yet produced the results expected in the matter of health, at any rate, so far as service to Dahomey is concerned. In these circumstances, it seems almost impossible to do any planning in connexion with such staff, as the plan estimates have been completely invalidated by defections on a massive scale. For instance, the 1962 national budget had made provision for the recruitment of 15 medical practitioners, on the basis of scholarship holders who would by then have completed their studies. Only one of those doctors have returned to Dahomey and, out of desperation, 2 other doctors were recruited on contract.

Nevertheless, the years ahead hold out better promise. We now have the assurance that several doctors will return from France. May this "back to the homeland" movement increase, and the students of Dahomey become aware of the needs of their native land and the sacrifices necessary to build it up". A.M. 1964

In India, K.N. Rao, Director-General of Health Services, estimates that there were 227 doctors for every million of the population by the end of 1964. Of these 201 were men and 26 women. The medical personnel requirements for the various States of India had been estimated according to economic feasibility. The Health Survey and Planning Committee recommended that there should be one medical college for 5 million population to give a target of one doctor to 3,000 population by 1976. The present admission capacity in the various medical colleges is 11,000 per year. It is proposed to increase the admissions to 20,000 by the end of the next five years by establishing 30 more medical colleges.

Every country has especial problems and the bottleneck in India is the shortage of medical teachers. Rao estimates that there is a shortage of 1,500 teachers in the country in the existing medical colleges alone and the shortage is most acute in the basic medical science departments. With the proposed expansion in medical education during the next five years, an additional 3,750 teachers will be required in the very near future. To this number must be added the requirements for teachers for six new post-graduate Institutions which it is also proposed to establish. A corollary of this problem will be the difficulty of maintaining standards in the face of this expansion.

And now for Africa, I can best present the problem of health manpower by figures from a study made by my colleague Dr. Vysholid of the Regional Office for Africa of WHO. Dr. Vysholid studied the numbers of doctors and nurses in relation to the population and to population increases in a number of African countries.

In the group of nurses and midwives in seven English-speaking countries, (Basutoland, Kenya, Mauritius, Nigeria, Seychelles, Tanzania and Uganda) there were in 1962 a total of 32,782 trained nurses, auxiliary nurses, and midwives. Of these 18,793 (57.3 per cent) were trained. In 1965 the number of trained nurses and auxiliary nurses and midwives was lower, at 25,559, but in the same period the percentage of such personnel who were trained increased to 71.9 per cent. The ratio of trained nurses

and midwives to the population, which in 1962 was 2.96/10,000, was only 2.17/10,000 in 1965.

In nine French-speaking countries (Cameroun, Congo (Brazzaville), Gabon, Dahomey, Madagascar, Mali, Mauritania, Niger and Upper Volta) in 1962 from the total of 9,162 trained nurses and auxiliary nurses and midwives, there were 1,276 (13.9 per cent) trained. In 1964 there were 1,399 (15.3 per cent) trained. The ratio to the population was 0.48/10,000 in 1962 and slightly higher in 1965, being 0.49/10,000.

In the sixteen countries as a whole, the percentage of trained within the group of nurses and midwives increased from 35.6 per cent in 1962 to 43 per cent in 1965. At the same time, due to the increase of population, the ratio of trained nursing personnel has fallen from 1.72/10,000 to 1.33/10,000. Concerning doctors, Dr. Vysholid found that in a group of thirteen French-speaking countries (Cameroun, Congo (Brazzaville), Chad, Central African Republic, Dahomey, Gabon, Côte d'Ivoire, Madagascar, Mali, Mauritania, Niger, Togo and Upper Volta), there were 1,526 doctors (expatriates and missionaries included) and the doctor/population ratio was 0.44/10,000. In 1965, there were 1,567 doctors in these countries but the ratio had fallen to 0.41/10,000.

In 1965, from the total number of doctors there were 805 African nationals, giving a ratio of 0.20/10,000 of one African national doctor to 50,000 people. The minimum doctor/population ratio in 1962 was in Niger, 0.14/10,000, and the highest in Gabon, with 1.63/10,000. In 1965 the figures are Upper Volta 0.13/10,000, and Gabon still highest with 1.72/10,000.

However in 1965 there was no African national Doctor in Gabon, and the ratio for African nationals was 0.01/10,000 in Chad, Central African Republic, Mauritania and Upper Volta. The highest ratio in this respect was Madagascar but there, doctors with the local qualification are included. In the group of thirteen English-speaking countries (Basutoland, Bechuana-land, Ghana, Kenya, Liberia, Malawi, Mauritius, Sierra Leone, Swaziland, Tanzania, Seychelles, Uganda, Zambia), the total number of doctors,

including missionaries and expatriates, in 1962 was 3,235 or a ratio of 0.73/10,000 of the population. In 1965, the total number of doctors in these countries had diminished considerably, falling to 2,848, as well as the doctor/population ratio to 0.60/10,000.

In 1965, from the total, there were 947 doctors, African nationals, giving a ratio of 0.21 per 10,000 of the population, or one African national doctor to 50,000 people.

The minimum ratio in 1962 was in Malawi, 0.28/10,000, and the maximum in the Seychelles, 2.72/10,000. In 1965 the lowest ratio was still Malawi with 0.19/10,000, and the highest 3.04/10,000 in the Seychelles.

There were no doctors, African nationals, in Bechuanaland in 1965, and the minimum ratio was 0.01/10,000 in Zambia, but in Mauritius there were 2.52 African national doctors to 10,000 of the population.

Amongst the comments which Dr. Vysholid made on his figures, he concluded that in some countries the population is increasing faster than the health personnel; that in others the ratio of auxiliaries to qualified staff, particularly medical, is now 10 to 1 and that this constitutes a danger in view of the low population density, the large distances and difficult communications, which makes effective supervision practically impossible. He finds that the reasons for the small increase in the number of doctors and professional nurses and midwives are multiple, but there is still a lack of suitable candidates with adequate educational backgrounds, a lack of teaching facilities and teachers, and a shortage of funds to train as well as to absorb more health personnel in some countries. Low salaries and competition for candidates from other better-paid occupations are a factor.

French-speaking countries were less interested in the past in the training and employment of fully qualified nurses and midwives, but one understands that the situation is changing.

The situation in the English-speaking group of countries is characterized by a continuing loss of expatriates, especially of doctors. This is different from the French-speaking countries where the expatriate doctors are mainly supplied by the French technical assistance and stability is greater. Bennet's study in 1963 in Uganda is indicative of the situation when he showed that by 1970 70 per cent of all expatriate doctors would have returned home. On the other hand, other factors may compensate for this. In the report to the World Health Assembly in 1963, the Executive Board found that the population of the WHO African Region, excluding South Africa, was 170 million, and that the total number of fully qualified physicians was 7,000, or less than 1/20,000, or one physician to 21,000 people. In order to bring the ratio to 1/10,000, a figure which has crept in as an index for Africa, it would be necessary over the next twenty years to produce each year 1,200 medical graduates (350 to meet wastage, 350 to bring the ratio to 1/10,000, and 500 to allow for population increase). The maximum potential output of the existing schools in the area by 1970 will be 450 a year. An output of 750 more graduates is needed each year. Assuming an average annual output per school of between fifty-five and sixty-five graduates, thirteen new schools are needed in the area - and it should be borne in mind that on the basis of this calculation, these thirteen schools should be starting to function now, and then the report ends sadly - 'but this is not realistic'.

Vysholid calculates finally that for the group of French-speaking countries he studied, it will be necessary to train in the next ten years 3,500 graduates, and for the English-speaking group nearly 5,000 graduates in ten years. The Unesco Tananarive Conference in 1961 advised that the number of medical students in Middle Africa in 1966/67 should be 2,480; in 1971/72 about 5,610; and in 1980/81, 9,075.

Even if there were an adequate number of students with the required secondary education, there is no guarantee that they will undertake medical studies. A recent experience in Dar-es-Salaam Medical School showed that, from a planned intake of 25 students for the year 1966/67,

only 11 were enrolled. This highlights the difficulty. Vysholid feels that it is unrealistic to expect the African Medical Schools to produce the 8,500 medical graduates in the next ten years to meet the low ratio of doctor/population 1/10,000. He feels that education abroad is still necessary for young Africans and that the question of the training of auxiliaries to medical doctors, who could be competent to carry out under adequate supervision and instruction, some of the basic diagnostic treatment, and other measures, especially in rural areas, is becoming more and more important and urgent.

Medical manpower is a world problem, but nowhere is it more acute than in Africa, nowhere are the needs greater, nowhere are the resources less.

Lecture 3

The Organization of Education in the Field of Health to meet the Changing needs of Society

In the first two lectures I have shown the overriding influence of the conflicting and yet inter-related factors of the recent science explosion and of sociological features in the evolution of health services. The world problem of manpower shortage in the health field has also been described and the growing failure in many countries to provide a balanced, contented health force to meet population needs, whether at a ratio of more than one physician to each 1,000 of the population or at the much lower level of 1 to 20,000 as at present pertains in Africa has been discussed.

The concern of medical administrators and educators for this problem has been demonstrated and in this respect one might draw attention to the paper by Dixon presented at the 76th Meeting of the Association of American Medical Colleges in which he called for a world programme of medical manpower. Similarly, the two WHO Organizational studies, already quoted, the ongoing WHO study on the equivalence of medical qualifications,

national and international studies on the "brain-drain", the World Medical Association, World Conference on Medical Education, held last year, all show that world thought is being focussed on the problem.

The round table Conference on Health Manpower and Medical Education in Latin America, sponsored by the Pan-American Health Organization and the Milbank Memorial Fund recommended that studies should be focussed on three main fields:

1. The measurement of health needs and demands and the establishment of health goals.
2. The resources needed for health services to attain these goals.
3. The modifications required in the patterns of medical education.

They reviewed the techniques used in studies of manpower and quoted several methods, such as:

1. Physician to population ratio or the physician-patient ratio.
2. The relationship of mortality and morbidity to physician services.
3. The producer approach (a measure of the average number of patients seen by physicians per unit of time).
4. The consumer approach (the number of contacts which patients have with physicians per unit of time).
5. Economic growth factors as indicators of physician need (gross national product, consumer estimates for medical care etc.).
6. The prevalence of preventable disease as an indication of the need for health workers.
7. Unfilled professional positions (vacancies as indicators of special needs for physicians in given institutions, e.g. unfilled positions in medical schools, hospitals etc.).
8. Studies of function or utilization.

The Conference concluded that each of the above techniques can provide only a particular type of information. This limits the questions which can be answered through any one technique. For example, the physician-population ratio approach which is very widely used, has serious limitations.

One must view the need for physicians in the context in which work will proceed, taking into account the national health plan, the variety of duties expected from the physicians and the availability and functions of supporting personnel. Sophisticated planning and reorganization becomes vital in the search for a balance between effectiveness and economy. Economy not just of funds, but the optimum utilization of the physician who is scarce and costly both to train and maintain. This question of balance enters into every approach to manpower planning in Africa. There is need for balance between the day-to-day care of the population at the one end of the spectrum of medical services and a need to develop the scientific aspect, to relate with world science and to adapt its advances to the benefit of the country. There is a need in Africa to balance between mobile and static health services, between curative and preventive services, between nationally based services and those relating immediately to the community. Whatever the policy of a country, its needs or state of development, the essential and basic health services which should be provided at the community level are summed up by the First World Health Expert Committee on Public Health Administration as:

1. Maternal and Child Health.
2. Communicable disease control.
3. Environmental sanitation.
4. Maintenance of records for statistical purposes.
5. Health Education of the public.
6. Public Health Nursing.
7. Medical Care (to an extent varying with the needs of the area and the accessibility of larger hospital centres).

Although these recommendations are now some years old, they still stand as a guide to the essentials of community care.

In a supplement to the Second Report on the World Health Situation 1961/62 the special topic chosen for review was the education and training of health service personnel. In undertaking this review it was apparent that great confusion existed as regards the different categories of health workers. Accordingly, the authors of the review drew up a classification which would provide definitions and which would have a world-wide application and validity. This is given as Chart I and is a schematic presentation to illustrate relationships of professional and auxiliary personnel in medicine and the paramedical professions, limited to some of the most common members of the health team. With experience over the last few years it has been shown that this schema is a simple but most effective way of classifying health workers.

In its work of assisting governments, particularly those of the developing countries, WHO has long-term, intermediate and immediate objectives. The long-term objectives are proposed in the Constitution of the Organization and define health as a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity, the intermediate, in four-year programmes of work, commencing in 1952. We are now implementing our fourth such programme. The immediate being set out in our Annual Programme and Budget document, planned ahead over a two-year period.

In an analysis of trends of evolution and development in the four-year programmes since 1952, three main features emerge: One, the strengthening of national health services through improved public health administration and national health planning, a second, the extension of biomedical research on a global basis, particularly as regards the global epidemiological control of communicable and acute and chronic diseases and a third, in Education and Training. These three features of our evolution are inter-related and inter-dependent and indicate world thought since they have been determined by the World Health Assembly, on essential features on the creation and development of health services.

CHART 1^{1/}

Schematic presentation to illustrate relationships and auxiliary^{2/} personnel in medicine and the paramedical^{3/} professions, limited to some of the most common members of the health team

Level of education and training	Medical profession	Professions allied to medicine and/or paramedical				
		Nursing	Midwifery	Sanitation	Laboratory	Dentistry
<u>Professional</u> (Post secondary education of a widely accepted pattern, University or Technological)	Doctor	Nurse	Nurse-midwife Midwife	Sanitary engineer Sanitarian Sanitary inspector	Biologist Biochemist Bacteriologist Technologist	Dentist
<u>Auxiliary</u> ^{4/}						
Assistant level (sub-professional or middle level) Profession-wide range of skills and general training. Could be part of secondary or "middle" education	Medical assistant Feldscher therapeute Practicante Behdar Officier de santé	Assistant nurse Practical nurse	Assistant midwife	Sanitary overseer	Laboratory technician	Assistant dental officer Dental assistant School dental nurse
Aid level (cluster of skills ^{5/} and general training)	Infirmier Dresser Dispenser	Nursing aid Ward orderly Hospital attendant	Trained "dai" Birth attendant	House-to-house inspector	Junior technician	Dental hygienist Dental laboratory technician
Single-skill level and/or undifferentiated general training	Scouts for yaws or filaria lesions, etc.	Vaccinator Injector Sterilizer		Mosquito collector Disinfecter	Microscopist Urinanalyst	Chairside assistant

CHART 1 (Cont'd)

- 1/ World Health Organization (1964) Supplement to the 'second part on the World Health Situation 1961-1962 Part II Education and Training of Health Service Personnel (unpublished WHO document MHO/PA/29b.64 Rev.1), as revised in March 1966.
- 2/ "A paid worker in a particular technical field with less than full professional qualifications in that field who assists and is supervised by a professional worker." (United Nations, Administrative Committee on Co-ordination (1954) Report of the ad hoc inter-agency meeting on the training of auxiliary and community workers, p.10 (unpublished document Co-ordination/R.170). Quoted in: Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (1956) World Health Organization techn. Rep. Ser. 109, 44).
- 3/ Paramedical personnel includes all the professions allied to medicine, which together make up the team of health personnel, i.e., nursing and midwifery, sanitation, dentistry, veterinary health, pharmacy, physiotherapy, statistics, microbiology, etc.
- 4/ Auxiliaries' training and terminology depends on local conditions and practices; the vertical classification of auxiliaries shown is somewhat arbitrary and may not correctly indicate proper ranks, as titles may mean different training and responsibilities in different countries; equivalence of levels, horizontally, needs to be viewed with even more caution.
- 5/ Skill is familiar knowledge of an art united with dexterity in the practice of it.

While there have been tremendous successes achieved in the control of disease and the promotion of health, nevertheless much more needs to be done and our Director-General has called attention repeatedly to a lack of progress, even to a deterioration, in certain health situations. The question of manpower in Africa is certainly one of these.

In the development of a manpower structure, particularly in Africa, the approach might be regarded as conservative. For example the 1962/63 study recommended that "training should in general follow the patterns with which the countries are familiar and which have proved useful elsewhere. It is not advisable to introduce totally new concepts likely to meet resistance and to provoke contradictory advice". One does not criticize this view since it was advanced with sincerity and in the light of the knowledge available a few years ago. However, the approach to manpower formation in relation to the organization of effective health services can be approached in two ways, (a) by building it up from a detailed analysis of requirements for specific projects or activities, by techniques such as "instrumentation", or (b) by establishing it on general grounds and trying to effect development within this framework. Hitherto, we have proceeded mainly in the second approach. This has been inevitable, partly because we had not the techniques available but partly because even with the techniques, planning must be largely a function of knowledge and experience and in the final outcome - of common sense.

Nevertheless the failure to develop an adequate manpower structure in Africa must be faced and more effective methods sought. World research and study and developments in other fields show promise in this respect. In Latin America particularly, efforts are being made in the field of national health planning, to relieve the constraint which lack of manpower imposes on development in the health field.

The basic change in attitude to manpower planning is the adoption of the Systems Analysis approach. This involves looking at the whole question of the health of a country as a total system. It involves the

formulation of objectives, the identification of problems, the formulation of questions to be answered, the description of the components of the system and their inter-relationships and the external and internal factors which influence them. It proceeds to design alternative ways in which the system should be handled, in order to meet the objectives of the system most effectively and at least cost. Methods of evaluation are introduced which inform the system through feedback, so that constant modification and improvement are applied to secure greater effectiveness. Operations research techniques can be utilized such as Linear Programming network diagrams, algorithms, task sequence analysis such as PERT (Programme Evaluation and Review Technique) and other methods ranging from advanced computer-based analytical procedures, down to the simplest applications of logic on a simple empirical basis.

Systems analysis is as much an attitude of mind as anything else. It asks the question "what are we trying to do", it makes us clarify and define our objectives and in this way can provide us with information by which the processes of achieving these objectives can be worked out. Systems analysis looks at the "mission" as a whole and not simply the operation of departments of an organization. It can have the same effect on the organization of the defence forces of a country, as on a parish priest who should be primarily concerned with his mission, rather than fussing over the painting of his church.

In systems analysis, there is no one technique universally applicable and there are many roads to achieve a final purpose.

At the risk of repetition let me quote again the three fields of study recommended by the Milbank/PAHO Round Table Conference, they are:

1. The measurement of health needs and demands and the establishment of health goals.
2. The resources (men, material and money) needed for health services to attain these goals.
3. The modifications required in the patterns of medical education.

In measuring health needs and demands, in establishing health goals and determining the necessary resources, and bearing in mind the systems analysis concept, one might mention several methods of approach:

1. Analysis of needs.
2. Analysis of requirements.
3. Comparative analysis.
4. Cost benefit analysis.
5. Planned Programme Budgeting.
6. Operations research techniques such as Linear Programming.

1. The analysis of needs

To comment on these approaches, one might say that WHO has been concerned over the years with the question of the analysis of needs. Countless surveys and studies have been carried out on a national and international basis and much information is available on a world basis. Nevertheless these studies have been usually limited to a certain disease or the application of a certain technique of eradication or control. However new thought is emerging on this basic question. In Latin America, in Colombia a study to measure needs and to determine health goals was established. It is worth describing this study as an example of one approach.

There were seven objectives:

1. The maximum utilization of resources and information available in health services, medical schools and other institutions.
2. Utilization of sub-professional personnel in duties compatible with their educational level and training.
3. Concentration of efforts in a relatively short period, involving simultaneous activities in different areas.
4. Inclusion of national specialists as advisors and use of international technical experts for specific tasks.
5. Small studies undertaken to verify the proposed methods in the environment.

6. Limiting research to matters of the first priority in Colombia
7. Adoption of techniques and procedures suitable for Latin America.

The study included a number of operations:

1. A census and study of the activities of both the physicians and nurses. A statistical sample was taken of doctors, nurses and auxiliary nurses, to study in detail, by means of personal interview, items such as the professional education, socio-economic status and practice pattern of the personnel.

2. By direct interviews and visits to the seven medical schools and six schools for nurses the following aspects were investigated:

- (a) The institutions. Objectives, administration, State and university relations, directives, stability, departmental organization, financing, relations with hospitals and health centres.

- (b) The students. Origin, socio-economic level, systems of admissions and withdrawals.

- (c) Faculty. Census, distribution of time per activities, education, regulations in force.

- (d) Curricula, and systems of education.

- (e) Methodology for evaluating the relations between education and actual manpower and the capacity of such institutions to follow new courses in personnel training.

3. Study of health institutions

This includes an inventory of health institutional resources for open and closed medical care and to examine the most important characteristics of its operation.

Based on a representative sample of medical care institutions, a cost-analysis is being carried out of activities, with particular

reference to medical and nursing personnel, both professional and sub-professional, as well as a study on hospital morbidity, reflected by diagnosis of discharged patients and outside consultations.

4. National survey on morbidity

This gives a cross section of the country's morbidity and the socio-economic impact that disease exerts on questions concerning disability, incapacity and cost of medical care: investigates the characteristics of medical care in relation to its availability, quality and cost and makes an attempt to verify the degree of reliability of certain vital phenomena.

The study is based on statistically selected samples of areas of the country. The basic principles of the national survey of morbidity are:

- (a) The subject is a representative sample of the Colombian population.
- (b) Standardized techniques and procedures with a reasonable uniformity have been achieved by adequate training, use of manuals of detailed procedures and by careful supervision.
- (c) Rigid control of the quality of information in the most critical aspects of data collection.
- (d) Voluntary participation is the basis of the study.

The national study obtains its information through two well-defined phases, whose principles, objectives and methods have been integrated to produce complementary results and conclusions.

- (a) The phase of domiciliary interviews obtains its information through personal interviews of 10,000 families (approx. 70,000 persons), in their respective homes, directed by trained medical students.

- (b) The phase of clinical evaluation obtains its information through clinical examinations of 5,000 selected individuals made by internal medicine and paediatric residents from medical schools and odontologists from public health services, assisted by trained nursing auxiliaries.

5. Studies on mortality

Comprises an analysis of the most important causes of death, its trends, geographical distribution and age groups distribution.

6. Socio-economic studies

Analyzes the value of the physical, social and economic environment in health, in order to explore the reciprocal relationships between morbidity and mortality and such factors as educational level, family income, social security, accessibility of health services and living conditions. This area includes a previous delimitation of the health sector and a financial analysis of it.

7. All information collected should provide the basic data for the elaboration of a National Health Plan of which the medical and para-medical education plan will be part.

This study, which met with an excellent response, is already beginning to produce results in education of manpower and the new training programme of the University of Vali at Calle is most enlightened and stimulating. The study is an example of the study of needs necessary for a systems approach. In Africa, much thought has been given to such questions by educational leaders and Professor Thomas of Lagos University and Dr. Ogunlesi, the Director of the Ibarapa project of the University of Ibadan have written on the subject.

WHO has undertaken national health planning projects in five African countries and is training its own staff in these new technical approaches. Our first course in National Health Planning for African nationals will take place at the end of this year or the beginning of 1968.

2. The second method, which is complementary to the analysis of needs is the Analysis of Requirements. This largely a technical determination, once the objectives have been established. It differs from the analysis of needs, in that, needs depend on the circumstances of the situation, are largely a question of values and are the bases on which objectives are established. If, for example, it was decided as an objective after a study of needs that the infant mortality of a country should be halved and that information was available on which certain alternative means to achieve this, with their costs, were available, Requirement Analysis would be utilized as a technique to estimate manpower requirements, education, training etc.

Requirement Analysis would be used also to relate or co-ordinate the manpower necessary for child-care in relation to the other programmes included in a national health plan.

Requirement Analysis is also necessary in relating the national health plan manpower needs to the needs of other sectors in the overall national socio-economic development plan.

Requirement Analysis is necessary in demographic projections, where future staff needs must be related to population increases.

Finally, Requirement Analysis is a valuable tool in relating resources to objectives, such as in the "balancing techniques" used in socialist planning.

If one builds a hospital, the requirements of staff, equipment, finance and even the construction materials are balanced against their availability. In the health field, Requirement Analysis has been a technique in use for a long time. There is a great deal of expertise and knowledge available. Its use however is too often empirical, it is not used sufficiently in relation to an Analysis of Needs and seldom is thought of as part of a tool systems approach to the problem of health services.

3. Comparative Analysis, which is the use of data from other countries, as a means of estimating one's progress or evaluating one's methods is of great value. In this field, WHO has a most important role. As the disseminator of information on world health, the Organization classifies, standardizes and informs the countries of the world. This task is increasing in magnitude as its value is being more and more appreciated and the Organization has now established a special Division of Epidemiology and Communications Science to develop further this method of analysis.

4. Cost Benefit Analysis differs from Requirement Analysis in that it proceeds from causes to effects while Requirement Analysis proceeds in the reverse direction, from primary objectives to the various means or instruments for achieving these objectives. Cost Benefit Analysis is the economist's answer to the challenge and indeed the necessity of costing, quantifying or otherwise evaluating the social consequences of economic action. It represents a tremendous broadening in economic thinking and already economists are excited by it. From the practical point of view of its utilization as a management tool in manpower planning in health, it is marginal. It has obviously wonderful possibilities, but a lot more work is needed in this field.

5. Planned Programme Budgeting

It is of central importance to connect planning to budgeting. In many organizations the overall budget is the sum of the budgets of individual divisions and departments, each having its own ceiling within which it develops its programme. This internally oriented, bit-by-bit approach makes it very difficult to develop plans as a total organization and particularly with a total systems approach. It applies very specially to manpower planning in the health sector. What is needed is a way of thinking about the allocation of funds and of men, that permits an organization to be considered as a whole from the top down, rather than as a collection of pieces from the bottom up. Budgeting should be connected directly to planning. missions or objectives are the fundamental point of departure. What is a country trying to accomplish with its total

organization or services in the health field? This question should serve as the basis for an allocation of men and money. Planning and budgeting are now integrated into long-range programming in a planning-programming-budgeting process. In this, the components are linked through programming in which systems analysis is used, to determine the cost-benefit (that is, the development of a desired capability at the least cost) of alternative choices. This technique was first developed in the US Department of Defense and is now being applied in 21 non-defence departments of the US Government as well as in many major business enterprises. It utilizes the budget as an instrument of planning, measuring the effectiveness of a programme against its cost and alternatively planning programmes in relation to its cost in men, money and materials.

Planned programme budgeting in health is in its infancy, but it has been adopted as the instrument for replanning the US health services. This decision was taken because it was felt that there is a need for looking anew at health as a total system, at fundamental health problems themselves, at the resources available and at the assumptions, spoken and unspoken, of the mythology, which underlies existing health services. There is a need for identifying the major purposes or missions of the health services, for designing alternative ways in which resources could be used more effectively in accomplishing these purposes and then for continuously assessing that effectiveness. Planned Programme Budgeting has its limitations, it is new, will encounter opposition and mistakes will be made before it is fully perfected for use in the health field.

6. Lastly let me mention Linear Programming, since in the field of Tuberculosis WHO has made progress in the development of this technique in the context of the Indian Tuberculosis problem. In tuberculosis control the problem facing the health administrators is one of choice between many possible alternatives. All the elements of: What kind of health services? How much of each kind? and, to whom should they be given? come into the decision process. Linear Programming as a form of mathematical programming endeavours to find the optimum relationship

between a number of independent variables and as a means of determining the best course of action, where many such courses exist. It renders explicitly what goes on implicitly in the mind of the decision maker. There are two requirements: that all the elements entering into the process should be measurable and that the aim of the planner should be defined in quantified and comparable terms. It works something like this:

Firstly, a set of health activities is defined. The health activities are then expressed in such a way that in each, the unit of health activity is referable to an individual recipient.

Secondly the inputs required to implement one unit of the health activity are qualified. For example, in terms of costs, thus enabling unit costs to be calculated.

Thirdly, the outputs are expressed in terms of health and other benefits accruing to the individual as a result of one unit of health activity. It may be indicated that health benefits could be defined in terms of positive health, at least in principle, but it is preferable to consider them in terms of the reduced risks and reduced extent of the disease and of its consequences. The reduction of temporary disability on account of the disease in its acute phase, as also the reduction of permanent impairment resulting from the disease and the reduced risk of dying from the disease are considered as the health benefits that accrue to the individual recipient of one unit of health activity.

Fourthly, the weight attached by the individual beneficiary himself and by society, to each of these health benefits - will be specified.

Fifthly, the constraints that limit the choice among alternatives must be specified. Constraints on inputs express, for instance, restrictions on money, doctor-time, beds, etc.

Inputs, outputs and constraints are expressed in the form of linear equations. The various elements of the linear programming model having been defined, the objective can be formulated.

The authors have carried out three test-runs of the model on the computer and the maximization process has led to satisfactory solutions in terms of both the model methodology and the public health decision making. They conclude that it has been possible to quantify all the elements coming into play in the decision function in tuberculosis control and forecast that it should prove possible to extend the use of the model to communicable disease control problems and public health administration ultimately.

In conclusion, I have reviewed briefly the current thinking of health administrators and educators on the subject of manpower planning in the field of health. It is clear from this that manpower must be regarded as a component in the overall complex of national health planning, which in turn must be based on a definition of national goals or objectives, based on research through analysis of needs. From this, through analysis of requirements, one determines the manpower necessary.

Lecture 4

Planning new Programmes for Manpower in the Field of Health

In the three previous lectures, I showed something of the impact of the scientific explosion and of social change on society and described, however briefly, the world problem of health manpower. It was also shown that manpower is a component part of the health system and that manpower must be related to the structure and functioning of the total system.

Let me say a few more words about the impact of the advance of science on manpower in developing countries. The great benefit coming from these advances are that the new discoveries give us the means to control or eradicate disease, and to relieve suffering, and are the means to achieve a better life for people. On the other hand they imply increasing knowledge on the part of health personnel, increasing specialization, increasing demands for services, since people realize their

effectiveness; increasing costs, increasing shortages of personnel, increasing complexity, and an increasing need for organization if the full benefit of scientific advances are to be made available to the population.

The effect of sociological change means that for professional groups, they adopt the standards of developed countries, which are already outdated to some extent in these countries. There are advantages in adopting such standards in one sense since they give a certain quality and efficiency. On the other hand, they are limiting, and have unforeseen effects in developing countries. Actually we do not know enough about the behavioural or sociological aspects of the development of new social classes in developing countries, and this is a fruitful field of research. Let me also emphasise again, that the 'health industry' in most countries is usually one of the largest employers of labour, that it is labour-intensive, that even in the US 3/4ths of the costs are spent on salaries, that it is complex in its career structure, that in a developing country it needs and can absorb large numbers of young people who have had a secondary education, and that it is essential for the well-being, security and prosperity of any country. As I have said earlier, education and training or manpower formation is part of the national health system, and its development must be part of a national health plan to achieve the national health objectives of any country. Nevertheless it is possible to put some ideas and principles before you as a basis for discussion of a programme or strategy for manpower and in relation to some of the concepts introduced in the earlier lectures.

I have prepared a matrix chart, which is a combination of 'who does what?' The 'WHO' part coming from the WHO scheme of staff categories, and the 'WHAT' being largely based on the list of essential health services which should be provided for any community and as presented in the 1st Expert Committee Report on Public Health Administration. I have divided the service side into national or provincial oriented and community oriented services and show the two ends of the spectrum-the national and provincial and the village levels. It is very simple and provides a framework for our discussion on a strategy for manpower in the field of health.

CHART I

Category	NATIONAL AND PROVINCIAL ORIENTATION			COMMUNITY ORIENTATION AT VILLAGE LEVEL			
	Service A	Service B	Service C	Service D	Service E	Service F	Service G
Professional Doctor Engineer (health) Technologist (laboratory) Nurse/midwife (2 years basic education)	Planning Epidemiology Research Organization of training and educa- tional methods Teaching	Specialist medical care in hospitals Teaching at main centres Supervision	Administration of health ser- vices Organization and develop- ment of health services and PH campaigns Social aspects of PH centres				
Auxiliary Medical Assistant Assistant nurse Sanitary over- seer Laboratory technician (2 years basic education)				Medical care Health edu- cation Supervision Records	Sanitation Health Edu- cation Records Supervision Communicable disease control	Maternity and child health Health edu- cation Public Health nursing Records	Laboratory Service

CHART I (Cont'd)

Category	NATIONAL AND PROVINCIAL ORIENTATION			COMMUNITY ORIENTATION AT VILLAGE LEVEL			
	Service A	Service B	Service C	Service D	Service E	Service F	Service G
3) <u>Aide level</u> Dresser- infirmier Nursing aid Birth attendant House-to-house inspector Junior technician Dental Hygienist (6 years basic education)				Medical care Hospital nursing	Sanitation Health educa- tion	Village birth attendant	Laboratory Service
4) <u>Single-skill level</u> Scouts (yaws, etc.) Vaccinators Disinfectors Malaria spray men, etc. (preferably 6 years basic education)				Hospital attendant	Communicable disease work Vaccination		

In health, this strategy must be governed by three main requirements:

- (1) Provision for scientific research and development planning.
This is necessary if a country is to keep abreast of world science and to be able to understand and to apply the benefits to its people. Since every country should have a science policy, it should operate inside the framework of that policy.
- (2) Provision for a public health administration and reorganization system.
- (3) Provision for a medical services system to provide an integrated preventive and curative system.

Intelligence, Direction, and Service.

If one looks at the table under Service A one sees that it is necessary to develop a group who will become responsible for planning, epidemiology research, and the organization of training. Where there is a medical school, the group can be part of it or associated with it. Alternatively, this group can be the nucleus from which a school or research institute can originate. Members of this group might attend the WHO National Health Planning Courses. They can be responsible for research and can articulate with overseas schools or institutes and relate world scientific advances to their countries. The group should be multi-disciplinary and related to, and not exclusive of, groups B and C. Such groups may exist either in whole or part or can be developed from existing national cadres. They may be formal or informal and their composition depends on the needs of the country. They should be regarded as the Development Group and be trained accordingly. They should themselves organize training and have a specialist knowledge of training methods. Service B should contain a group who are interested in the 'quality' of medical care, on the application of new methods of treatment, and should participate in training programmes organized by the development group A. They would also be concerned with hospital efficiency

and supervision. Group C are the organizers and administrators. Their task is to build up the administrative system of the health services, and maintain their supervision and efficient operation. They should have training in management and the behavioural sciences.

Men and women in these three groups should be selected on a basis of merit and should have special post-graduate training for their tasks. Such development groups, whatever their form, are essential if progress is to be made. Development in the health field can only come from the application of expertise of a technical nature and active participation on the part of nationals of capability and with suitable training in the health field. Development requires the political support of statesmen and must be carried out within the framework of an overall socio-economic plan developed by national planners, who are usually economists, but in the last resort, and if it is to be successful, it must be based on the careful investigations and the enlightened expertise of competent, trained personnel in the health field. The example of the Colombian study is a useful indication of what needs to be done in this respect.

I have shown one part of a suggested strategy, the establishment of national development groups; let me turn now to another.

It is apparent that in Africa, there is not the slightest hope of providing an adequate supply of doctors to meet the needs of the people within a reasonable space of time. Estimates of the development of medical manpower have been wrong, and as Vysholid shows, we are not even keeping up with the population growth.

If one relates the conventional medical education to the functions and services he renders of the average medical man practicing in Africa, there is lack of relationship. On the other hand, he is trained in skills he does not need or rarely uses; with the advance in science his training is taking longer and longer; his training is largely oriented towards caring for the sick individual; and his services have an insufficient impact on and do not promote the health of the community where he works. His training is long and costly and while well worth the money

and time, if properly used, is uneconomic and socially ineffective as employed in the case of a great many African doctors. This criticism is not related to Africa alone. As a first step in the planning of the health services in many countries from the systems point of view, people ask, what should the doctor really do and how should he be trained to do it? How can personnel such as doctors and trained nurses be used in order to have maximum impact on the health of the people? Where there is one doctor to 50,000 people who should have the first diagnostic contact with patients, and under what circumstances? What are the alternatives? How do the alternatives compare in cost effectiveness? Health services are still being built up today around professional mythologies - that it must be a doctor who does this or that. Why I have laboured the sociological aspect is, that even if one provides answers, which are scientifically accurate and indicate simplification or other changes, nothing will happen so long as the role and identity of the physician and the traditional attitudes of the medical reference groups remain unchanged. The Ministries of Health in Africa face a difficult task with inadequate resources. They need new solutions through better planning and organization of services, and through experimental, low-cost groups of paramedical and auxiliary personnel. They must also recognize that the mere provision of medical manpower is not enough, and that different demand characteristics of the developing countries must elicit a different response in terms of supply. To take an example quoted from Peter Ruderman, an economist on the staff of WHO, Paediatricians in Latin America spend much more time, and tie up many more beds and pieces of equipment, rehydrating dehydrated children, than do their colleagues in the industrially advanced countries. In addition, many of these children are so under-nourished that they are kept in hospital after rehydration, to feed them up. Yet the child is then discharged into an environment that practically guarantees in many strata of society that six weeks or six months later he will again be suffering from diarrhoea and marasmus. For a thorough going solution of the problem as viewed by a systems analyst, the services are required of well drillers,

pipe layers, health educators, nutritionists and sanitarians, as well as doctors and nurses and other aides, if the problem of infantile diarrhoea and marasmus in a particular rural community in an under-developed country, is to be solved.

In a recent analysis in the US, quoted by Kissick of the work of paediatricians, it was found that 50 per cent of the paediatrician's time was spent on well-baby care, requiring simple advice on feeding, on food supplements and on immunizations, which could equally well be given by a trained nurse; 0.25 per cent was spent on minor disorders, such as mild upper respiratory diseases, usually requiring only symptomatic treatment; 18 per cent of the paediatrician's time was devoted to what might be described as acute undifferentiated syndromes of an emotional nature with a social background and could be better handled by a social worker, and, finally, only 2 per cent of his time was focused on cases which were seriously ill. Only a trifling time spent doing the things they, the paediatricians, had spent long years learning to do. The approach to manpower through job analysis is already showing results. Formerly, as you may have seen from the films, medical internes 'rode the ambulances', now 'medical emergency technicians' are being trained, in order to save medical manpower. Duke University has started to train 'physicians' assistants'. They are usually naval medical corpsmen of the rank of pharmacist's mate. There is a serious examination going on into methods of training manpower and some of the conclusions are almost revolutionary. I mention this because of the various attitudes towards the 'key' auxiliary, the medical assistant whose numbers should be increased in Africa as part of a manpower strategy in health. Firstly, WHO, and this represents world opinion as expressed by our governing bodies, is strongly against the concept of the Assistant Medical Officer, the second-class, sub-professional, near-physician. The Organization believes in a middle-level assistant, with less than full professional qualifications, who assists and is supervised by a professional worker. There is confusion and lack of appreciation of the definition, since the medical assistant is not an assistant medical officer but a true auxiliary.

His training must be based on and related to the functions he will perform. He is a complement to the physician, not a replacement, and his usefulness depends on adequate and informed supervision. He is not in competition with the physician, he supports and is supported by the physician. He has a future; the assistant medical officer has none. The gap between the professional and the near-professional is too close for the near-professional to be a realistic solution to the shortage of medical manpower. The assistant medical officer drawn upon the supply of senior high school students, already desperately short, whereas the medical assistant should be recruited from middle school level. The medical assistants are expected to, and will work in rural areas. Their training should not be an abridged physician training, but should be geared to a specific area of medicine and to a defined limit of competence. This should be determined by national studies on function. Medical assistants are sergeants and as sergeants are the backbone of any army; they can become the backbone of any service.

With a training of 2-4 years, depending on the skills they require in relation to a country's needs, they can assist physicians in the wards and outpatients' departments of hospitals. With experience they become well-versed in clinical medicine and many of the skills. They can supervise aides or dressers. As they develop they can be placed in charge of health centres and supervise the district team of health workers. They can be trained in specialities such as anaesthetics. When a health centre is established, the health staff or the team can be trained to work together under the charge of the medical assistant. The post of 'Charge Assistant' carries prestige, and because it is sought for by assistants, the best can be selected.

Fendall, who has written with authority on this subject, quotes the cost of training a medical assistant as \$3,000 (4 years) in Kenya; \$1,400 (3 years) in Uganda; and \$2,100 (2 years) in the Sudan. This can be as low as 1/10th the cost of training a doctor. The capital costs are less. The Medical Training Centre in Nairobi, a comprehensive centre for training

paramedical and auxiliary staff which accommodates some 300 students, cost \$6,000,000, whereas a medical school would cost at least five to six times this figure.

The staff of the basic health services unit at the community level must be thought of as a team comprising the medical assistant, the sanitarian, and the public health nurse/midwife. These three provide a service which covers the seven factors laid down and which are necessary for a comprehensive basic community health service, and which are:

- | | |
|------------------------------------|----------------------------------|
| (1) maternal and child health | (2) communicable disease control |
| (3) environmental sanitation | (4) maintenance of records |
| (5) health education of the public | (6) public health nursing |
| (7) medical care | |

Such teams require supervision and support from professional staff and on this supervision and support depends much of their success. Teams must be part of a system, they cannot function in isolation. The whole question of supervision and support is a matter for study and research in the formulation of a national health plan. Equally in implementing a national health plan, professional staff must be trained in this aspect of their duties.

I have given a brief description of two features of a manpower strategy, but without great detail. One establishes development groups, without which nothing can be done, and the other shows the way to provide the key personnel to basic health services at the village level.

As I have explained in my last lecture, in manpower planning in the health field, a national health plan, based on a series of studies must always be developed first, and then from this must flow the manpower programme. The medical study teams must work with you, as educators, since you must provide the supply of educated young people who can then be trained for the health services. Harbinson gives three components necessary in any strategy of manpower planning:

- (1) the building of appropriate incentives;
- (2) the effective training of employed manpower;
- (3) the national development of formal education.

In discussing the questions of incentives he advocates flexibility in terms of pay and conditions, for example if you need people to work in the bush, then pay them more. Concerning the tendency of people to choose literary occupations as lawyers or civil servants, he says that they will be changed only when the system of rewards and status in a modernizing society are changed and the initiative in making changes must come from the government itself in the form of a complete revision of the entire system of compensation of government employees. At the same time he admits that it would be difficult to do this. Sir Arthur Lewis, in his book 'Development Planning' recommends stricter control of university entrance and restriction in the number of places in the Arts and Law Faculties. Lewis, on almost the last page of his wonderful book, writes (in italics) 'The possibility of higher individual earnings is the fuel of economic growth.' I have studied this book, and also his 'Theory of Economic Growth', on the subject of incentives and always the answer seems to be 'more money'.

Somehow or other, I am sure that this is not the whole answer. The history of mankind gives another answer. Men who die for their country, the heroes, do not do it for money. Saints are not saints for the money that's in it. While we are not all saints or heroes, there is a little of the saint or hero in each of us. What makes one football team the champions? What makes a regiment stand out in an army as a model of efficiency and courage? What makes a contented, happy work force in one factory compared with another, where the pay is the same, but discontented workers show their unhappiness through frequent strikes. There are social answers to these questions and I submit it is the business of the planners of the new Africa to look for them. Harbinson is right. Incentives are necessary, but we have to find the right ones.

The second, the training of employed manpower, is an essential for manpower strategy. In the health field this training must be related to

objectives, as I have emphasized several times. Such training, for example, for the development groups I have described, is available through WHO Fellowships. Table I shows the total number of Fellowships awarded by WHO since 1957, and the proportion awarded to Africa. Table 2 shows the average duration, and Table 3 shows the distribution by subject of study. Fellowships are awarded on the requests of governments, and it will be seen that up to 1965 there was a pattern in which clinical medicine figures largely. Then, for one reason or another, the number of Fellowships in the basic medical sciences and education increased at the expense of clinical medicine. It became apparent that it was more important to train medical teachers than clinicians.

Table 1
Fellowships awarded from 1957 until 1966

Year	Total Six Regions	Total AFRO	% AFRO
1957	1,385	117	8.4
1958	1,346	113	8.4
1959	1,271	82	6.5
1960	1,415	183	12.9
1961	1,668	334	20
1962	1,931	463	24
1963	1,829	348	19
1964	2,013	297	19.7
1965	1,846	344	18.6
1966	2,692	475	17.6
Total	17,396	2,856	16.4

	<u>1966</u>	
<u>AFRO</u>	<u>English-speaking</u>	<u>French-speaking</u>
37 countries	17	20
475 Fellowships awarded	191	284
100%	40.2%	59.8%

Table 2

AFRO

Average duration of fellowships

Year	No. Fellowships	Average length in months
1957	117	5.0
1958	113	4.7
1959	82	4.8
1960	183	8.2
1961	334	10.3
1962	463	9.2
1963	348	9.5
1964	397	8.6
1965	344	9.6
1966	475	8.6
Total	2,856	8.7

Table 3

AFRO

Distribution of fellowships by subject of study

1957/1966

Year	PHA	San.	Nurs.	MCH	Other Health Serv.	C.D.	Clin. Med.	Basic Med.Sc. & Educ.	Total
1957	10	9	7	6	33	45	7	-	117
1958	12	12	6	21	13	38	10	1	113
1959	5	6	4	17	8	31	10	1	82
1960	9	5	15	19	10	40	84	1	183
1961	16	11	17	11	16	75	188	-	334
1962	27	5	65	12	17	95	236	6	463
1963	12	17	41	11	13	67	179	8	348
1964	17	25	79	7	26	119	113	11	397
1965	15	9	76	5	26	70	18	125	344
1966	27	40	66	14	32	97	35	164	475
Total	150	139	376	123	194	677	880	317	2,856
%	5.25	5	13.25	4.5	7	23	31	11	100

Abbreviations: PHA = Public Health Administration
 San. = Sanitation
 Nurs. = Nursing
 MCH = Maternal and Child Health
 C.D. = Communicable Diseases
 Clin.Med. = Clinical Medicine
 Basic Med. = Basic Medical Sciences & Education
 Sc. & Educ.

The fellowship programme of a country as part of the strategy of manpower development must be related to defined objectives. The Fellowships are available but should be used properly. In most countries, after the formation and training of the development groups, the next priority is the training of the medical assistants or sergeants. This is within the reach of almost any African country, the best of those persons already serving in hospitals, mobile units or clinics can be taken and trained. Coupled with their training is the need to give them leadership, an honourable position, a sense of responsibility, and a role and identity of which they can be proud. Their influence will spread downwards and improve the service. The support they give and the example they show may also influence their seniors. Such an elite group properly trained can serve as a nucleus for further development throughout the years to come. A point I would make here is the effective utilization of foreign skills in the sphere of manpower development. OECD calculates that the supply of foreign manpower to developing countries seems to amount to around 90,000 via bilateral and multilateral technical assistance, around 11,000 from communist countries, 9,000 from capital aid, around 100,000 from private foreign capital, around 15,000 under voluntary organizations, and perhaps 40,000 through other channels. This makes a total of 260,000, a little more than a quarter of a million. Probably about half of these are middle-level people and about half are high-level. The area distribution of these people (apart from technical assistance experts) is not known, but their proportionate importance relative to local skills is highest in Africa, which absorbs four-fifths of technical assistance personnel. In 1963, seventeen OECD countries supplied under technical assistance about 82,000 people, at a cost of \$850 million; 38,000 of them were teachers at various levels, and a large part of the rest were doing operational work. About 8,000 were advisers, mostly on technical matters but sometimes on questions of general policy. About 4,000 were working in health and sanitation, about 5,500 on agriculture, and 8,800 on industrial matters. Four-fifths are in Africa, where in 1963, 66,000 persons were serving under technical assistance programmes of OECD. Almost half of technical assistance is designed to strengthen education.

I mention these figures since it is apparent that there is assistance available if it is utilized properly.

Albert Waterston, in a speech given to the Tenth National Conference of the United States National Commission for UNESCO, when he examined the practice of planning as it is practised and its successes and failures, came to the conclusion that we needed a new Planning Mix and a new Planning Sequence. Changing the Planning Mix is necessary because planners have almost invariably concentrated on aggregative planning rather than on the proper preparation and execution of projects. He believed that failures in planning were due to failures in project preparation. In manpower planning a series of well-prepared and effectively executed projects is a clear necessity. I therefore commend to you the two growth point projects of the establishment and training of development groups and the selection and training by the Ministries of Health of medical assistants or the medical sergeants.

In his recommendation to change the Planning Sequence, he recommends a change from unsuccessful macro-economic planning to a series of effective micro-economic efforts or projects. Planning from the top down and from the bottom up. In most countries planners start with the first, and never get around to the second. In my modest strategy recommendation both are covered.

The third essential recommendation of Harbinson is that of formal education, which he describes as being to prepare people for training rather than to train people for particular occupations. The preparation of people for training is essentially your job and the better you do it, the better foundation we in the health field will have available to create the manpower needed for health services.

I would like to make a personal reference to the pleasure I have had in participating in this seminar. The concept of training a group of manpower planners is most valuable and I wish you every success in your work. In presenting these four lectures, it was difficult to make them fit into your course, but I have done my best. I also hope that from

the health aspect, I have put some new ideas before you. The concepts and ideas I have presented are my own responsibility and do not necessarily represent the decisions or the stated policy of the World Health Organization.

In conclusion, may I say that, in the health field we are moving into a new era of development with an infinitely greater promise of success than we have had in the past. The Organization which I am proud to serve has had success, very great success, but feels confident that this will still be surpassed. Our hopes that the advance of the world bio-medical science of which WHO is the focal point, the adoption of new management, organization and communication techniques, and the development of new educational and training methods in a planned systems approach will all combine to enable us to assist the Governments of Africa to give the people of Africa a better life.

B.6 Summary of Lectures

by

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AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Lecture 1

Agricultural Education and National Development

Aim and purpose of study

The course as a whole is concerned with the development of human resources in African countries as the most important factor in economic and social development. This section of the course refers specially to the development of agriculture. In order to appreciate the significance of agriculture to African development it may be useful to indicate briefly its nature and position in relation to national development plans. Consideration will then be given to the place of agricultural education and **training** in the whole process of change from the traditional patterns of subsistence land use, which still predominate in most African countries today, towards more productive forms of economic farming, so vital to the whole future development of African nations. Having tried to indicate some of the major problems involved in developing the great agricultural potential of many African countries we shall then consider the institutional structure of agricultural education and training in relation to its responsibilities, as a basic requirement for modern agricultural development.

The place and importance of agriculture in African development

Agriculture occupies a unique position in the life, economy and future development of most African nations. The modern development of local industries and of centres of urban population far from lessening the importance of agricultural development have, in fact, increased its urgency. Townsfolk depend upon the rural areas for their supply of

foodstuffs, particularly the more perishable foods such as dairy and livestock products, vegetables and fruit, in addition to the staple items of diet. Many industrial enterprises use the raw materials of agriculture for processing. In the case of local industries producing manufactured goods for sale -- textiles, tools, bicycles, building materials, etc., the main market for these products is the local market. The expansion of local trade and commerce is thus closely related to the volume of cash in circulation and the purchasing power of the community. Since, in most countries we are considering, the vast majority of the population is rural and their cash earnings come largely from agriculture and related occupations, it can be seen that industrial and urban development are intimately bound up with a steady expansion of agricultural productivity.

Agriculture, too, is the principal earner of foreign exchange for most African countries through the export of crop and livestock products and in the same cases, of forest products. In the table attached as an appendix,^{1/} the annual export trade statistics of 28 African countries are examined. Out of these 28, no less than 16 countries derive more than 80 per cent of their total export earnings from agricultural products. In the case of Chad, Ethiopia, the Gambia, Ivory Coast, Madagascar, Mali, Mauritius, Malawi, Senegal, Somalia, Sudan and Togo the proportion coming from agricultural exports is well over 90 per cent. This situation is likely to continue, the only major exceptions being countries where mineral oil deposits are now being opened up and exploited (countries of North Africa and Nigeria) or where minerals such as copper and bauxite are being mined in significant quantities.

Much of the agricultural research and development effort in Africa has tended to be concentrated upon the crops for sale and export. Without doubt these have made important contributions to economic and social progress. But one of the most important functions of agricultural production is to ensure an adequate, balanced diet, at reasonable cost, to the rapidly expanding populations of African countries. There is increasing evidence that the local production, processing and marketing

^{1/} See end of Lecture 1.

of foodstuffs has failed to keep pace with expanding local needs. Not only are periodic food shortages fairly common and infant malnutrition widespread, but a number of African countries are spending a considerable portion of their foreign exchange earnings upon imported foodstuffs. In many cases a high proportion of these imported foods could be produced locally.

Finally, it is worth considering agriculture as a source of employment. One of the greatest social problems facing African countries today is that of the employment of youth. Owing to the very rapid expansion of population, especially since World War II, a high proportion of the total population consists of young people between the ages of 15 and 25. Due also to the very rapid expansion in educational facilities increasingly large numbers of school leavers are unable to find any permanent paid employment in towns and industries. In Kenya, for example, about 120,000 children complete primary education each year, of these (1/3) only 40,000 can be absorbed into secondary education or paid employment. Each year these numbers of educated young people for whom no employment can be found increase. The rate of growth of industries, trade and commerce is quite insufficient to absorb these school leavers and a very urgent problem is presented. Taken as a whole, the agricultural industry of most African countries offers more employment than any other sector of the economy. Through the processing, marketing, transport, storage and disposal of agricultural products, as well as through the supply of farm machinery and other inputs of agricultural production, a great deal of indirect employment is provided by agriculture. Finally, there is what may be described as the self employment of the vast numbers of cultivators and pastoralists engaged in subsistence agriculture. It would appear likely that self employment in an expanding and changing agricultural economy may offer the principal hope for the useful employment of youth in the immediate future.

Whichever way we may view agriculture, as a factor in the life and progress of African peoples and nations we cannot escape from its position of unique importance. This was characteristically well expressed by

Mwalim Julius Nyerere, President of Tanzania, when he formally laid the foundation stone of Morogoro Agricultural College on November 18, 1965:

"Agricultural progress is the basis of Tanzanian development. This truth is said so often that people forget it. They almost don't listen; the words become part of the atmosphere, and have no impact any more. To talk of the importance of agriculture is like playing a record which has been heard too often.

Yet it remains true. Agricultural progress is indeed the basis of Tanzanian development - and thus of a better standard of living for the people of Tanzania.

What we have to do is to vary the manner of telling this truth. We have to make it understood, and meaningful. There is now only one way we can do that. We have to demonstrate by actions that better agricultural methods are possible, and they mean a better standard of living. We have to start, and not to say; we have to act, not talk.

That is the importance of this college."

Subsistence agriculture: The base from which we start

In spite of the fact that there are flourishing agricultural enterprises of various kinds in Africa - cocoa, coffee, tea, oil palm, sisal, cotton, sugar cane, dairying, the production of meat, wool, hides and skins, etc. - the vast majority of cultivated land and grazing is still occupied by peasants whose livelihood depends upon subsistence agriculture and pastoralism. It is true that various crops which can be sold for cash have been superimposed upon traditional subsistence agriculture but in very few places has there been any significant change in the systems of land tenure or farming. The characteristics of subsistence agriculture are well known. It is typically dependent upon hand labour for all operations from initial breaking of the soil to harvest and storage of the crop. Family holdings are small and frequently consist of scattered fragments of land. Common grazing of arable land after harvest precludes any measures designed to produce animal fodder or improve the fertility of the soil. By any standards, productivity is low whether measured in terms of annual yield per unit area or per unit of human labour. Family cash incomes are exceedingly low and the incentives for improvement make limited appeal. Where there is no security of tenure or where a large

proportion of the annual harvest goes to a landlord (e.g. Ethiopia) there is little inducement to invest many, skill and labour in the improvement of farms by fencing, manuring, water conservation and the planting of pastures. Where cattle are herded on common grazing and when numbers are more important than productive capacity there is little basis for livestock improvement.

Modern farming in a market economy: The goal towards which we move

In many countries of Africa today the patterns of agriculture we see are neither wholly traditional nor modern. Various factors including the growth of population, the introduction of cash crops and plantation industries, the development of livestock production for the market, and other factors have had a profound influence on traditional agriculture based upon the principle of shifting cultivation or nomadic pastoralism. What we now see might be described as a transitional phase between traditional and modern farming. But this transitional phase still, in most instances, carries with it the main characteristics of subsistence agriculture: the use of land on the extensive rather than intensive principle; little, or no capital investment; peak labour periods alternating with under employment; low productivity; low family cash incomes. The exceptions to this are where African farmers, enjoying security of land tenure, have developed mixed farming and dairy enterprises or are able to produce high value cash crops such as tea, coffee, cocoa, tobacco, pyctum, etc. where really high yields of cotton can be achieved this, too, can be a valuable source of cash, but under many conditions of African peasant agriculture yields are low and cash returns poor.

The move towards modern productive systems of agriculture is inevitably slow. It involves many fundamental changes in the traditional concepts of land use, the management of the factors of agricultural production, and techniques. It also involves the development of an efficient infrastructure of the agricultural industry: marketing systems, effective provision of credit, supply of seed, fertilizers, and other farm requisites, co-operative organizations. It involves an organizational structure for the development of research and the provision of

extension and other agricultural services through which the practical results of research and experiment may be incorporated into crop and animal production. From what has been stated it will be obvious that both the system of general education as well as technical education in food and agriculture have an extremely important role to play in this continuing process of agricultural development in a changing rural society.

The human resources of agricultural development

It is not difficult to appreciate the part which science and technology, supported by financial and other measures, have to play in agricultural research and development in African countries. Indeed, much work over many years has been devoted to the technical problems of agricultural development. Thus, under a wide variety of ecological conditions, there is already a great deal of technical knowledge of the measures necessary to increase crop yields, to protect crops and livestock from the ravages of pests and diseases, to introduce mechanisation into agricultural operations and processes, and many other aspects of agricultural production - what has received far less attention in the past, and now seems to be of even more importance, are the economic and social aspects of agricultural change and development. In the final resort, it is the producer - be he cultivator, farmer, or pastoralist - who has to apply these new techniques. He is by nature, and often for very good reasons, conservative. His attitude to change is greatly influenced by the community in which he lives.. He does not usually operate as an isolated individual; he is the head of a farm family, which itself has close ties within the immediate social group or community. Perhaps one of the greatest challenges today is to gain a better understanding of the social and economic factors which inhibit or can accelerate the processes of change and development in rural communities.

To those responsible for the development of systems of general education must fall the task of revising these systems in such a manner that they prepare young people for adult life and occupations

within their own environment and in accordance with changing economic and social conditions. Much education today, based upon the systems of countries which are predominantly urban and industrial, has limited relevance to the needs of developing countries, based largely at present on a rural and agricultural economy. General education provides the foundations for all subsequent technical education and training. It is therefore a matter of great interest and concern to those who have responsibility for agricultural education and training. There is, however, another and perhaps even more important aspect of the system of general education. It is during this part of a child's life that attitudes and habits are developed which are often retained throughout adult life. This is the time when sources of values may be implanted and interests evoked and developed. This the time when the place and importance of agriculture in the life and development of the nation can be taught. Children, through their formal lessons and out-of-school activities, can begin to learn how, through the application of human skills and endeavour, aided by the discoveries of science and technology, the old agriculture of unrelenting toil and poor returns may be transformed into modern farming, offering decent rewards and professional pride.

Technical education in food and agriculture also has a vital contribution to make in contributing to the development of national agricultural productivity. The more conventional role of agricultural education in the training of agricultural scientists for professional and technical duties in research, teaching, administration, extension and specialist services such as animal health, forestry, fisheries, etc. is well known. What is not so often appreciated is that the whole of agricultural change involves educational processes. Farmers, farmer's wives, community leaders and others have to be educated for change. Attitudes to the use of land, labour, and financial resources have to be altered through education and training. The cultivator of crops, in changing to modern farming, has to learn much more about the simple economics of farming as a business. He has to learn how to develop his farm and manage his limited resources to the best advantage. Thus,

agricultural education and training are concerned not only with the professional training of technicians but also in many aspects of adult education, farmer training and other activities involved in agricultural development.

In the context of this contribution from FAO it is appropriate that the major fields in which FAO is involved as a specialized agency of the United Nations family be set out. They are:

- Plant production and protection,
- Animal production and health,
- Land and water (irrigation, soil fertility, agricultural Engineering, Farm management),
- Forestry, Forest products, and wildlife,
- Fisheries,
- Nutrition (including home economics),
- Economic analysis, statistics, commodities,
- Rural institutions including land reform, agricultural education, agricultural extension, co-operatives and marketing, agricultural organization and research.

In the implementation of agricultural development FAO is involved in a great range of projects under the United Nations Development Programme (UN Special Fund, UN Expanded Technical Assistance Programme etc.), the World Bank (IBRD), the Freedom from Hunger Campaign, World Food Programme etc.

Need for concerted and co-ordinated action

The whole concept of economic and educational planning has recently come into prominence because of the urgent necessity to use limited resources to maximum advantage in supporting national development. It is clearly of great importance that the many different aspects of education and technical training be co-ordinated both on a national and regional basis. Priorities have to be established and adhered to. External aid needs to be filled into a properly co-ordinated plan for

educational development. In the United Nations it is equally important that the work of the specialized agencies be similarly co-ordinated on the basis of the complementary contributions each agency brings to the overall pattern of development.

I conclude with four propositions:

1. Agricultural development is the foundation of all economic and social development of most African nations today.
2. In the process of change from subsistence land use to economic farming both general education as well as technical and professional training in food and agriculture have essential contributions to make.
3. The basis of sound and economical development of agricultural education and training is national planning based upon systematic study of manpower requirements within the context of national development plans.
4. If the full impact of education and training is to be achieved economically and efficiently there is a need for much more effective co-ordination of all efforts.

APPENDIX

EXTRACT FROM

FAO Trade Yearbook/Annuaire du Commerce 1966

Value Summary of Agricultural Trade 1965/Sommaire de la valeur du commerce Agricole
1965

Country Pays	Total Trade/ Commerce	%	Food/Aliments	
			Exportation	Importation
----- 100,000 US dollars -----				
Cameroon	1,392	82	770	144
Central African Rep.	264	46	40	29
Chad	272	91	32	29
Congo (Brazza.)	467	55	11	65
Ethiopia	1,037*	99	832	80
Gabon	1,049	42	15	57
Gambia	137	97	20	23
Ghana	3,177	78	2,111	495
Ivory Coast	2,772	94	1,747	335
Kenya	1,457	74	771	269
Liberia	1,428*	16	19+	152+
Libya	7,965	1	6	408
Madagascar	917	92	665	204
Mali	157	96	94	78
Mauritius	658	94	620	222
Morocco	4,302	75	1,650	1,308
Nigeria	7,284	70	1,603	657

* 1964 figures

+ 1963 figures

Country	Total Value of Exports	% of Agricultural Origin	Food Exports	Food Imports
Malawi	322	99	129	43
Zambia	5,324	3	60	220
Senegal	1,285	97	211	569
Sierra Leone	852*	17	39	199
Somalia	361*	96	303	159
Sudan	1,952	98	272	461
Tanzania	1,794	82	536	96
Togo	271	95	125	42
Tunisia	1,199	84	221	337
Uganda	1,791	85	986	52
UAR	6,012	72	837	2,250

AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Lecture 2

Planning the Development of National Systems of Agricultural Education and Training

Introduction

A study of the institutional structure of agricultural education and training and of the manner in which various training institutions have been established, indicates that in a great many cases development has occurred in an ad hoc manner to meet urgent and often specialized needs without reference to any overall long-term plans. Indeed, there are very few countries in which such overall planning, to meet the needs for agricultural development, and in relation to carefully estimated manpower requirements, has been done. Agricultural education and training are costly in terms of capital investment, in the provision of essential facilities, and recurrent costs for staffing, equipment and maintenance. The needs for technical education and training in food and agriculture are so great and the total resources often so limited that systematic planning to meet human needs in the most efficient and economical manner is urgently necessary.

Historical background

The development of agricultural education and training is dependant upon the foundations laid by the system of general education in each country. In many African countries, up to quite recently, almost the whole of the senior professional and technical staffs of departments of agriculture, veterinary services, forestry and fisheries came from the countries in Western Europe where they had received their school and university education. In these circumstances, agricultural education in African countries tended to develop from the lower levels upwards and until recently did not enjoy the leadership and support which universities can offer. The principal function of local institutions of agricultural education was to train agricultural instructors, field assistants, field recorders for work on experiment stations, and others

of somewhat higher rank all of whom would work under the supervision of expatriate officers. Many of these training institutions were rather isolated, often inadequately staffed and had to do the best they could with somewhat inadequate facilities of making what use they could of a nearby experiment station. It may well be that this is the best that could be done during these times and in those circumstances. Nevertheless agricultural education enjoyed little prestige and generally lacked enlightened leadership.

The post-war period, and more particularly the past ten years, has witnessed a very remarkable change in this situation. The coming of independence to many African countries has given an unprecedented impetus to the development of universities and higher institutions of technical education and training. In the development of university faculties of agriculture alone this statement from the FAO state of agriculture for 1965 is illuminating: "In the Africa Region (Excluding South Africa, as well as Libya, Sudan and the United Arab Republic which are included in FAO's Near East Region)" the number of universities with faculties of agriculture offering degree level courses rose from none in 1952 to 4 in 1955 and 17 in 1965. The annual outturn of agricultural graduates in the region rose from 3 in 1955 to 249 in 1964.

It is not altogether surprising that in these circumstances the development of technical education and training in food and agriculture has not always been systematic or co-ordinated at the national level. Often separate ministries or departments have established training institutions to cater for their own specialized needs rather than pooling resources to set up multi-purpose institutions, far better staffed and equipped, to serve wider needs with common basic courses. As national universities develop, their "professional" faculties of agriculture, engineering, veterinary, science, etc. can offer much guidance and keep in the development of technical education and training at the lower levels.

This is one major difference between the situation today and ten years ago. There is a mounting volume of professional expertise available locally. Agricultural education is becoming recognized as a profession. Agricultural faculties and colleges are attracting well qualified and able people to their teaching staffs. Good students are selecting agriculture as their career. Thus, in the field of agricultural education and training in many African countries, there is a growing appreciation of its importance to development and the willingness to grant it necessary support. What is now required is proper and systematic planning to make the best use of this support both from internal as well as external sources.

Assessment of needs for trained manpower for agricultural development

The only logical basis on which to plan national systems of agricultural education and training is the assessment of future requirements for trained manpower, at all levels and in the different sectors of the economy. Such assessment must be within the context of national development plans. It must be closely related to precise definitions of the types of work for which people are required to be trained. It must be realistic in so far as those who complete their training. These factors, combined with uncertainties of the size of national budgets, the extent and nature of external aid, all tend to make treasury officials extremely conservative in their estimates of expansion in the civil service and likewise employers in the private sector of the economy. At the same time, few people appear to realize how long it takes to produce a trained professional man who can handle his responsibilities with skill and competence. In most cases this requires the gaining of experience on the job after formal studies are completed. Thus in the case of a university graduate in agricultural sciences, it may be six or seven years after leaving school before he is sufficiently experienced to handle important responsibilities. Even in the case of persons doing technical jobs requiring less training, it may require a few years between school leaving and efficient performance of a job. Thus

educational planning, even on a short-term basis, is inevitably concerned with needs five to ten years ahead. It is, in large measure, due to the absence of proper planning that many crises in agricultural development projects are precipitated.

Methodology of manpower assessment for agricultural development

Very limited work has been done so far in developing countries in the assessment of the manpower implications of agricultural development. In most African countries the principal employer of trained agricultural manpower is the government. Numerically the most important single category is the agricultural extension worker. Attempts at estimating the manpower requirements for agricultural development have usually been based upon the existing structure of the agricultural services and projected additional needs to meet the targets set by the National Development Plan. If the number of field extension staff can be estimated with reasonable accuracy then it is possible to estimate also the numbers of supervisory and professional staff required for the effective administration of the governments' agricultural services. Separate but related calculations must be made in respect of the veterinary, forestry, and other services involved in the development of the agricultural resources of each country.

What kind of figure do we have in mind as a reasonable and practicable ratio of extension worker to farmers? We all agree that there is a limit to the number of children which can be effectively taught in one class by a single teacher. It is equally true that there is a limit to the number of farmers or farm families with which a single extension worker can cope. In Ethiopia there are approximately 100 field extension workers to serve a rural population of over 20 million. This is an impossible task and as a result the efforts of these 100 extension workers are, to a considerable extent, wasted. In Kenya with a total population of about $9\frac{1}{2}$ million there are already over 2,000 extension workers and it is planned to have 4,000. Nigeria has adopted an overall target of 1 extension worker to 1,000 farm families. In some

parts of Nigeria the ratio is likely to be 1:500 and in others up to 1:2,000. There are targets considered to be within the nation's capacity to afford whilst at the same time giving the opportunity to make some real impact on farming improvement. Thus a figure of 1 extension worker to 1,000 farm families can be considered a reasonable figure at which to aim over, say, a 10-year period. At the higher levels one technical officer will supervise effectively the work of 5 to 10 extension workers. One professional officer (university graduate) will effectively supervise 5 to 10 technical officers. So that the overall pattern of agricultural administration might vary from 1 professional/5 senior technicians/25 junior technicians to 1 professional/10 senior technicians/100 junior technicians.

Not only will there be considerable variation between one country and another in the levels and density of staffing the agricultural services but there will be differences within each country. With the limited resources available and the pressing need for rapid development, it will be essential to concentrate a good proportion of staff and funds upon developing areas of high agricultural potential. These are the areas which are capable of producing the wealth which will keep the economy moving. In order to be fully effective the extension service must have the support of other essential services, marketing, credit, farm supplies, etc. Thus in every development plan there will be areas and projects requiring high concentrations of technical staff whilst other areas must inevitably await their turn for the full staffing needed for accelerated development. As development proceeds, the private sector of the agricultural industry will become more important as an employer of skilled manpower and will increasingly look to the institutions of agricultural education and training to meet its requirements.

To sum up:

1. The base from which we start to estimate future manpower requirements is the present establishment of professional and technical posts in the agricultural services.

2. The first need in many instances is for local people, properly trained, to fill the places in the professional and technical grades vacated or soon to be vacated by expatriates.
3. The next requirement is a steady annual flow of appropriately trained people into all grades of the agricultural services to meet the requirements of national development plans and to make good losses through retirement and other causes.
4. It is necessary to provide for higher numbers to enter training institutions than estimated annual requirements because students drop out or take longer than usual to complete their studies. Not all graduates enter the employment for which they have been trained and some prove unsuitable in the early part of their employment.
5. The assessment of needs for trained manpower must be a continuous process undertaken by those responsible for the planning of agricultural education and training.

National systems of agricultural education and training

Reduced to the simplest term there are 3 main levels of agricultural education and training.

(1) University or professional education and training

Entry to this level of training involves a high level of performance in the final examinations of secondary schooling. In the case of agriculture, forestry and veterinary science, faculty entry requirements include the attainment of certain standards in the basic sciences, especially chemistry, physics and biology. Commonly additional teaching in the basic sciences is necessary before degree courses in these subjects are started. This additional teaching is provided in certain secondary schools (advanced level studies), technical institutions, or university faculties of science. First degree courses in agriculture, forestry or veterinary science are of 3 to 4 years duration.

Many professional appointments require at least one further year's post-graduate training.

University courses in agriculture, forestry, veterinary science, etc. prepare graduates for appointment to professional posts senior administrative posts in the agricultural services (Agricultural, Veterinary, Forestry Officers), specialist posts in agricultural research and advisory services, teaching appointments at university and other levels, and senior managerial positions in agricultural commerce and industry.

(2) Intermediate levels of agricultural education and training

Through intermediate level training are produced the many technicians required for all aspects of agricultural development as well as for managerial and skilled occupations in agriculture itself. Most occupations in this broad category involve the acquisition of technical skills and, in many cases, managerial or other activities. - Technicians are essentially concerned with practical and efficient execution of skilled tasks - the use and care of machinery, the feeding and management of livestock, many aspects of modern crop production and pasture improvement, irrigation techniques, dairy production, etc. It follows from this that the training, whilst based upon the applied sciences, is essentially practical. Not only does this imply teaching of a different character to that of the university but it also implies the provision of a wide range of practical training facilities and the appointment of skilled technicians to the staffs of training institutions who can teach and demonstrate techniques. At present many intermediate schools of agriculture in Africa are woefully deficient in their facilities and practical training with the result that those whom they teach are often only suited to "office" types of work and have little knowledge or experience of the skilled techniques of modern farming.

The common pattern of courses is of 1 to 2 and sometimes 3 years duration leading to the award of a certificate or Diploma. These admit to the technical grades of the government agricultural services.

(3) Vocational and farmer training

This is essentially training in craftsmanship and practical farm management. Training young people to enter farming and related occupations. Training farmers, farmers wives and others to improve their standards of farming, their homes, their care of children, etc. since this is the subject of a future lecture, I will not expand upon it here.

Planning: The need for co-ordination

All levels of agricultural education and training must, to be effective, form a single co-ordinated structure. Likewise, there is the need to bring together, in a proper integrated plan, training in the various specializations of agriculture, animal health, forestry, fisheries, co-operatives, home economics, etc. There is a danger of setting up numerous small, isolated training centres to cater for the needs of small numbers of students in a wide range of specializations. This tendency for the proliferation of training institutions is sometimes encouraged by bilateral aid when the donor country would like to have some identifiable object of its generosity. Most of these specializations have common base courses. For these, and many other reasons, there is a strong case for the development of multi-purpose technical training institutions with good facilities, adequate staffing, proper administration, and students who share residential, recreational and library facilities.

Two measures are suggested to cope with this problem:

- (1) The setting up of national or regional councils for Agricultural Education on which all interests are represented e.g. The East African Council for Agricultural Education, which has done much useful work since 1963, when it was set up.

- (2) Institute within Ministries of Agriculture a Division of Agricultural Education and Training, professionally staffed and responsible for planning, co-ordination and administration of agricultural education and training.

Need for regional co-operation

There are many specializations of agricultural education which are expensive both to set up and maintain. One example is a faculty of veterinary science. The numbers required each year of persons trained in these specializations could not possibly justify the setting up of a full-scale institution or department in each country. It is therefore essential that nations discuss and agree upon sharing these specializations in order that properly staffed and equipped institutions can be developed - Examples of this, in practice, are:

The Middle East Centre for Training Animal Health Assistants

The College of Wildlife, Mweka, Tanzania

The Institute of Dairy Technology at Agerton College, Kenya

The Faculty of Veterinary Science, Kibali, Kenya

The Department of Forestry, Ibadan University, Nigeria.

These institutions serve the professional and technical training needs for persons from many different countries.

Education and Training in Science and Engineering is about 4 times as costly as that in Arts, Law and in Humanities. This makes it especially necessary to organize and plan agricultural education and training to achieve the maximum practical results.

It is also necessary to establish priorities. In many countries to-day the greatest and most urgent need is for the training of skilled technicians. But it is more popular to produce university graduates. Not only must technical training be expanded or improved but the rewards and prestige of agricultural technicians must be raised in relation to their importance to national development. Unless this is done it will be difficult or impossible to attract good students in adequate numbers to technical education and training.

Finally, I wish to draw attention to the most important single factor in the development of agricultural education and training: it is teaching staff. If we can recruit first-class young people for the teaching profession train them well and give them support with relevant textbooks, teaching materials and facilities we shall get a good return for our investment. If we recruit mediocre or indifferent staff for teaching, it does not matter how good are our facilities, the teaching will be dull and uninspiring. We shall fail to make proper use of the great opportunities we have in education. Planning for development is an important technical operation. The implementation of plans ultimately depends upon the human factor.

AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Length of time required for basic education and technical training for professional and technical posts in the agricultural services

Duties	Years in School	Years in University	Total
PROFESSIONAL LEVEL			
Agricultural, Forestry, Veterinary Officer	12-14	3-5	15-19 years
<u>Research and specialist appointments</u>			
Agricultural Economist, Engineer, Chemist, Entomologist, Plant Breeder etc.	12-14	4-7	16-21 years
<u>Senior teaching appointments</u>	12-14	4-5	16-19 years
SENIOR TECHNICAL LEVEL			
Assistant agricultural Officer/Technical Officer/Forester/Livestock Officer	12	2-3	14-15 years
<u>Junior Teaching and Demonstrator appointments</u>	12 - 14	2-4	14-18 years
JUNIOR TECHNICAL LEVEL			
Field Extension Worker/Technical Assistant/Animal Health Assistant Forest Ranger	10-12	2	12-14 years

AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Lecture 3

Vocational and Farmer Training for Rural Development

Introduction

Rural development, of which agricultural progress is so vital an integral factor, involves changes in the rural community, changes in economic activities, and the adoption of new concepts and techniques. In all these complex processes education and training have an exceedingly important part to play. Indeed without education and training it is difficult to see how progress towards modern farming, better houses and rising standards of living is at all possible. It is, of course, important that the education and training offered be attuned to the needs of the community and actual situation. The purpose of this lecture is to consider education and training for farming improvement - since agricultural or farming development is so intimately connected with the betterment of the home and family and with the emergence of new forms of rural society and rural industries I find it necessary to treat this subject upon a rather broad basis. I welcome, of course, the contributions to thinking upon this important theme by my colleagues in UNESCO, ILO and other agencies actively concerned in this work.

In African countries there have been many attempts to recognize the importance of agriculture by incorporating agriculture along with school gardening into the curriculum of primary and secondary schools. There have also been many attempts to train primary school leavers for farming as a career through one- and two-year practical courses offered by Farm Schools and Farm Institutes. There have also been training courses in connexion with various farm settlement schemes. Taken as a whole these many efforts and enterprises have led to disappointing results. Many of those trained, often the majority, have sought occupations other than farming. And yet the fact remains that for a long time to come small-scale farming is going to be the most important occupation in Africa.

It is going to be the only occupation open to many young people. How can education and vocational training serve better the purpose of preparing young people for rural life and rural occupations, of which self employment in farming is likely to be the most important? How can these essential agencies of change and development serve to motivate people to devote their skill, enterprise and industry in creating new and productive systems of agriculture?

Agriculture and the school system. It is, perhaps, unfortunate that attempts to relate the school curriculum more closely to the practical needs of a rural community generally took the form of adding agriculture, as a formal school subject, to the curriculum. In order to teach practical agriculture, school gardens and even school farms were developed. As a general rule those who taught agriculture had never themselves had any professional training in the subject, suitable textbooks hardly existed and very few gardens or farms were ever developed as Teaching Laboratories. Most of the tasks allotted to children were dull, repetitive jobs such as hoeing, weeding or tidying up from which they learned practically nothing, and, in many cases learned to hate agriculture. In these circumstances it is hardly surprising that successive education commissions have recommended the abolition of agriculture as a subject in primary schools and have questioned the educational value of school gardens as they have been organized. It should, in fairness, be added that there have always been occasional schools where through the enlightened and enthusiastic work of a headmaster or teacher a school garden or farm has become an important and interesting part of the life and work of the school in which the pupils have taken a real pride and from which they have learned a great deal. These, however, are exceptional.

What part, then, can the school system play in preparing boys and girls for a useful life in a developing rural and predominantly agricultural society? I can only offer some ideas in a vastly complex subject. In the first place, I am convinced that the school system is not intended to teach technical agriculture and train farmers. It can, however, develop

an intelligent understanding and processes of thought which will lay the foundations of much practical application in adult life and occupations. In modern farming, management skills become increasingly more important than manual techniques. Records have to be kept; some kind of simple accounts maintained; the reading of technical literature, however simple, becomes a necessity; receipts and bills have to be dealt with. For these and many other essential day-to-day jobs which the farmer, his wife and others connected with farming will have to undertake, an intelligently devised school curriculum can lay the essential foundations.

The school can do much more. If it is to serve a useful purpose in preparing children for adult life in a rural environment, then the teachers must develop an intelligent interest in that environment - the physical and biological environment of land and water, topography, soils, climate and vegetation, the plants and animals of economic importance; the social environment and occupations by which people live and trade, transport, markets, etc. These many facts of rural life should be reflected in the teaching of rural science, geography, history, and mathematics. Furthermore, children need to be taught the importance of agriculture and rural occupations in the life and progress of the nation as well as their own individual future. They need to understand how the application of skill and knowledge can transform the poor subsistence agriculture they see around them and replace it with productive modern farming. If, in addition, older children can partake in voluntary out of school activities like young farmers clubs or 4-H Clubs, these will help them enormously in mastering the manual skills involved in growing plants and caring for animals.

Vocational training for agricultural occupations is almost certainly better undertaken in institutions other than schools, properly equipped for the purpose, and working in close touch with the services involved in agricultural production. In any event, children under the age of 17 or 18 are really too young to be trained in a number of the skills

and techniques of farming. But the education they receive at school can be an extremely important factor in preparing them for vocational or technical training later.

Farming improvement through extension services. The traditional method of introducing new ideas and techniques to African peasant agriculturists has been through the field extension service of agricultural and veterinary departments. A small army of extension workers - agricultural assistants, agricultural instructors, veterinary assistants and others - form the direct contact with the farmer or with groups of farmers. It is through such people that the farmer is encouraged to plant new crops, use fertilizers and pesticides, improve his animal husbandry, and other practices. The field extension staff is supervised at various levels of responsibility. In some cases there are special extension staff trained for specific tasks connected with the development and supervision of high value cash crops (like coffee and tea). At the level of contact with the farmer, the most junior and least well educated members of the agricultural services are employed. They often work in relative isolation and they may or may not receive regular technical support in their work. In the past many extension staff were required to perform regulatory functions in addition to their advisory duties and this caused them to be looked upon with suspicion by the farmer. At best, a bicycle enabled them to get around their large and diverse parishes. In practice a considerable amount of their working time was spent in travel, at local markets, and on routine administrative duties. In very few cases can it be claimed that the efforts of the extension service have had a real and lasting impact on the development of new and productive systems of farming. In cases where this has occurred, e.g. in parts of Kenya, not only has there been a far greater concentration of extension effort with more highly trained staff, but attention has been given to other aspects of curcial importance such as land consolidation and the establishment of titles, farm planning services, the supply of credit, development of co-operatives and marketing facilities, and the provision of farm requisites and supplies.

It is therefore unfair to judge the work of agricultural extension services when many other factors militated strongly against agricultural change and improvement. It must also be borne in mind that with the development of education facilities and the improvement of technical education in so many countries, it is now becoming possible to train a far better educated man as an extension worker and also to give him a far better training for the duties he is expected to perform. However, there appears to be a place for the development of a more concentrated attack on farming improvement through the introduction of specific, carefully organized, courses of farmer training. These do not substitute for extension services but they can, in favourable circumstances, become the most powerful asset the extension service has ever enjoyed.

Farmer training centres. In a number of African countries residential centres for the training of farmers rural women, young farmers and others have been established over the past 10 years. Taking Eastern Africa as an example, there are now 30 Farmer Training Centres in Kenya, - District Farm Institutes in Uganda, - F.T.C.'s in Tanzania. Such institutes are also developing on a large scale in Botswana, Lesotho, Swaziland, Malawi and Zambia. There are Farmer Training Centres in the Sudan Gezira and others in West and Central Africa. The development of many more is planned and this new type of training for rural progress and development has attracted the support of many external sources of aid.

These Farmer Training Centres vary considerably in types of construction and facilities, staffing and the courses they offer. In general, they have residential accommodation for 30-60 adults though there are F.T.C.'s capable of taking up to 100 at a time. It has been a general principle that the standards of accommodation, facilities and equipment have been good. If agriculture and its development are really important to national development, then I believe that to provide comfortable sleeping accommodation, good kitchens and pleasantly furnished dining rooms, together with well designed teaching accommodation and equipment is a matter of importance. The Principal, an officer of the senior technical

grade, supported by 4 or 5 instructors, often including a trained Home Economist, form the teaching team. Adjacent land provides the opportunity for demonstrating modern farming, the care and use of simple equipment, the production of food and cash crops, vegetables and fruit and the care of livestock and poultry.

The capital cost of a 30-bed training centre is about £20,000 and a 60-bed centre £35,000 (90-bed centre £45,000). In the case of Kenya the first 16 centres constructed cost £425,000 of which 40 per cent came from non-government sources. Recurrent costs, apart from staff salaries and rations (part of which is covered by fees charged) is about £1,200 per annum. Staff salaries, which vary with the size of the institution, vary from £2,500 to £3,500 a year. Adding together all recurrent costs, the cost per student/day is about 10 shillings (). During the year 1964 in Kenya some 30,000 persons attended residential courses in the government and non-government Farmer Training Centres. Of these 30,000 approximately half were women.

Farmer training of this kind only becomes useful when people are beginning to move rapidly away from subsistence towards farming for cash. It achieves its maximum impact where secure tenure has been assured to the farmer so that he can begin to invest in the capital improvement of his farm by fencing, soil and water conservation measures, the purchase of productive livestock, the planting of valuable perennial crops and the purchase of fertilizers, insecticides and improved tools and equipment. As already stated elsewhere, it is essential to have proper marketing systems for agricultural produce, credit which is genuinely accessible to the small farmer, and farm supplies. Thus this kind of training is very appropriate to certain types of settlement scheme or when new crops or new types of livestock enterprises which involve new skills and a high level of management are being introduced (e.g. small holder tea growing, dairy co-operative enterprises, horticultural enterprises such as producing pineapples, etc. for processing). In these

kind of circumstances the work of a well organized Farmer Training Centre can play a decisive role in educating not only farmers but the whole community for change and progress.

It is, of course, essential that such centres work as an integral part of the whole extension effort. Courses need to be planned many months in advance. They need to have direct relevance to seasonal operations for example, courses in the use of ox-drawn equipment will be given prior to the time of land preparation and planting, courses in the use of spraying equipment for the control of crop pests and diseases will be arranged in relation to the recommended times for control measures. Often very successful courses are arranged for groups of farmers from the same area who may all be members of a local co-operative. Similarly courses for women will be arranged when it is most convenient for them to get away for short periods from their domestic and agricultural duties. They may have to bring their babies and this has to be arranged for in terms of cots and a creche. Not infrequently the local agricultural extension worker accompanies farmers to the course they attend and he is then able to "follow up" the advice given.

Instruction at these centres takes the form of teaching.- not lectures. Group discussion, practical demonstration and visits to progressive farms in the neighbourhood all have important parts to play. Audio visual aids, including films and filmstrips with commentaries in the vernacular, are often novel and interesting to farmers. By far the most impressive demonstration is that provided by successful crop and livestock enterprises which bring in good cash returns. Everything which is taught must be within the farmer's means and capability to put into practice himself. Commercial firms which sell agricultural equipment, tools, fertilizers and chemicals may be invited to set up demonstrations of

their wares with clearly marked prices which the farmer will have to pay. In these ways everything relating to small farming as a successful business enterprise is demonstrated and discussed. For women there will be courses in home improvement, nutrition etc. as well as agriculture. For young farmers or rural youth leaders other appropriate courses will be devised. Farmer Training Centres are also used to a considerable extent for regular in-service training of field extension staff. It is obvious that these people must be kept abreast of all the modern developments taught to farmers.

This new type of development in farmer training offers certain great advantages. By attending a one week's course farmers can be given intensive training by professional staff of high quality under ideal conditions. Selected groups of farmers through their discussions at meal times and on farm visits can do a lot to educate and stimulate each other. The fact that in many cases farmers apply to attend a second or a third course is evidence that well-run centres are popular. At Msinga in Tanzania it is claimed that the first farmers who attended the courses on coffee culture increased their yields by 100 per cent within 2 years. In Sample Surveys to ascertain what proportion of the farmers who attended FTC courses had adopted new practices on return home the figures varied from 40 per cent to 87 per cent. In Uganda a survey of 165 farms indicated that the farmers concerned had in 878 instances adopted improved practices as the result of many years work by the extension service. Within one year of attending a course at the FTC the number of improved practices noted had risen to 1,917 i.e. an increase of 118 per cent. It is, of course, rather easy to conjure with statistics and to credit them with more than is justified. However, there is a mounting volume of evidence that this new tool of adult education sensibly and intelligently developed can play an extremely useful part in farming improvement and rural development amongst peasant communities.

As with so many other things success or failure depend upon certain factors, easy to state but more difficult to put into practice:

1. Forward-looking professional planning and good technical support at ministry and regional headquarters.
2. Full integration with the extension and other services at District level.
3. Forward planning of courses and effective propaganda to recruit students in good time.
4. Well-trained professional staff enjoying remuneration and career prospects in accordance with the responsibilities of the job and the importance of agricultural improvement through farmer training.
5. The development of demonstration farms and plots for teaching purposes rather than as a source of revenue.
6. Regular revision of courses to meet changing needs and, where possible, providing for new needs before they arise.

Conclusion

There are many approaches to education and training for modern farming and rural development. The school system of education has a vital and constructive role to play - not in training farmers, but in a sound education to prepare children to take an effective part in creating a new rural society based upon productive farming and rural industries. The agricultural extension services, through which the results of research and experiment are passed on to the farming community, require to be greatly strengthened with better educated better trained workers. Farmer training of a more formalized type - through short residential courses - has an important role to play once the move from subsistence to cash farming really gets going. All these efforts at the level of the producer are of the highest national importance.

AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Lecture 4

Intermediate Agricultural Education and Training

Definitions

It is extremely important that there be a clear distinction drawn between intermediate or technical agricultural education and university level professional education. There is often, unfortunately, a tendency to confuse the issue and regard the training of agricultural technicians as an inferior or less-sophisticated form of university degree studies in agriculture. This view is sometimes given weight by the practice of young university graduates using their former university lecture notes for the teaching of students at intermediate level agricultural training institutions. The Diploma in Agriculture is sometimes regarded as "a pale shadow of a university degree". This confusion is most unfortunate because the aims and purpose of professional education and training at the university are quite different from those of the technical training institution. In the same manner the work of the technician is different from, but complementary to the professional. Although they may be paid at different rates of remuneration the one is not necessarily better than the other; both are essential to agricultural progress and development.

The professional is educated and trained at the university to undertake work of a professional character requiring broad intellectual education as well as specialist training. Such professional duties include senior administrative posts involving planning and development, agricultural research, agricultural teaching, senior appointments in agricultural commerce and industry.

The technician is trained primarily for executive positions in farm management, as an extension agent, as a technical man in fields such as farm mechanization, animal health, forestry, etc. His job is essentially practical. He is required to be able to manage farms and other agricultural

enterprises. In research it is the technician who looks after the laboratory and is capable of carrying out skilled routine techniques or to keep records on an experiment station, thus enabling the research specialist to concentrate upon the scientific aspects of his work. The technician must be a highly skilled person and through his training must know not only how to do things but why they are done. The technical man in extension must himself be skilled in the methods he advocates to farmers and must also know how to persuade them.

Many examples could be quoted:

The Agricultural Officer is supported by the Technical Officer and Technical Assistant.

The Agricultural Scientist engaged in research is supported by the Research Assistant, Laboratory Technician, Field Recorder.

The Veterinarian is supported by the Laboratory Technician and the Animal Health and Veterinary Assistant.

These important differences in function must be recognized and must be clearly reflected in the courses of training. The importance of the Technician must also be recognized in terms of career prospects and status. If this is not done many young people with technical qualifications will feel dissatisfied and will devote their time and energies trying to gain admission to university courses. In developing countries this can represent a waste of scarce human resources.

The Development of Intermediate Agricultural Education and Training

Up till fairly recently intermediate agricultural education was principally geared to the production of a technical staff, at a fairly low level, for the extension service, veterinary assistants and assistant foresters. In the case of training agricultural extension staff the training was not very specific and was intended to produce a "general purpose" man who could be put onto a wide range of duties. In fact, until recently a good many of these duties were of a regulatory character:

control of burning, soil conservation rules, plant protection measures such as the compulsory burning of cotton plants at the end of the season, inspection of cotton and coffee buying stores, etc. Agricultural improvement consisted principally of encouraging the adoption of better agricultural practices, such as manuring, line planting of crops, etc. and propaganda for increased planting of certain cash crops of cotton in Uganda, groundnuts in North Nigeria. Taken as a whole these intermediate training institutions were not a very popular choice amongst school leavers - who greatly preferred to continue, if possible, their secondary education. They were chronically short of good teaching staff and it is not surprising that much education and training at this level was rather poor.

The past 5 to 10 years has seen a very great change in the situation. Agricultural development is seen to be so dependant upon large numbers of skilled technicians that a new importance and urgency has come to intermediate training. Well-equipped new institutions are being set up and older ones expanded and modernized. In some respects the danger now is that of establishing too many institutions without reference to any co-ordinated plan. Once more we are brought back to the need for systematic planning to meet quantitative and qualitative needs. At present agriculture becomes more sophisticated and as the agricultural industry develops there is a need for much more specific and specialized types of training. Farm accountants, range managers, irrigation technicians, agricultural engineering technicians, mechanics, animal husbandry men and artificial inseminators are needed. Trained people are required to teach all these specializations. Very fine, if any, suitable textbooks, training manuals, or other teaching materials are available. It will be seen therefore that the job of the agricultural education planner is very different from what it was even 5 years ago. He is called upon to cater for a dynamic situation. I think this has two important implications:

- (1) The development of training facilities must cater for rapidly expanding and often unknown future needs. Designs of laboratories, workshops, and other facilities must therefore allow for flexibility and expansion. (How fortunate the Principal who does not inherit a conglomeration of buildings and equipment designed for a succession of different purposes over the years!)
- (2) Far greater attention must be given to the development of effective "in-service and on-the-job" training.

When expansion of facilities is required the first principle is to see what better use can be made of existing facilities rather than the creation of new ones. If it is clear that a new institution is required then it is essential to consider how the fullest and most economical use can be made of it. Technical training is inevitably expensive. It involves laboratories, workshops, machinery and equipment for a wide range of practical training. It requires proper library facilities and space for the projecting of films and other modern teaching aids. It requires a staff:student ratio of about 1 to 20 but much of the practical work has to be done in groups of 5 to 10. For all these reasons technical training institutions of the future must combine as wide a range as possible of teaching. Basic courses can then be given to large classes and the later specialized courses to smaller groups. Institutions of a good size can be pleasant places for staff and students to live. They can induce a sense of pride and prestige. Students can enjoy a varied social life and appropriate recreations. All these are advantages of the large multi-purpose technical training institutions as compared with the small, isolated, inadequately staffed intermediate training institutions which are all too familiar in developing countries.

Number of levels of technical training

In the agricultural services of a number of countries there are, at present, at least 4 to 5 grades. For example, in Kenya they are as follows:

1. Professional. Agricultural Officer/SAP/RAO/etc.
2. Senior Technical. Assistant AO/Senior AAO (Diploma) or Technical Officer/Senior TO.
3. Junior Technical. Agricultural Instructor/Senior AI (Certificate) or Technical Assistant/Senior TA.
4. Field Assistants. Assistant Agricultural Instructor (Little Formal Training).

This proliferation of grades tends towards inefficient field services. There are often too many poorly trained or untrained men in direct contact with the farmer. The farmer, through expansion and improvement of rural education is becoming always more sophisticated and less and less likely to listen to the advice of low level, poorly educated field staff.

It is desirable to reduce the number of levels to the minimum necessary, to improve the educational level and the technical training of the extension worker (the man who is the direct contact with the farmer) and develop regular in-service training courses so that intelligent and capable men at the lower levels can advance in the service. These men who start at the lowest level and can take advantage of further training after they have gained field experience often prove to be some of the most valuable men in the service.

Practical Training. The technician who is himself incapable of performing the skilled jobs of farming is extremely unlikely to make a good extension worker or to persuade the farmer to adopt improved practices. As an extension man he must himself be able to demonstrate practical techniques; as a manager of a project he must be able to ensure that those working under him perform skilled work efficiently. It follows, therefore, that the gaining of practical experience is absolutely essential to intermediate level training. How is this done?

In a number of countries where technical agricultural education has existed for many years, 1 to 2 years' practical experience on a farm is required before young men or women are accepted for their formal training.

This means that the theoretical teaching can be given against a background of practical farming experience which is most valuable. It also means that those who enter training institutions are older and more mature. Under present circumstances it is very difficult to arrange for this kind of pre-training practical experience in African countries. This is due to many factors including the virtual absence of suitable farms and residential facilities where such training could be done. However, in the case of forestry training in some countries one year's practical work in the forest service is, in fact, required and arranged. It is not impossible with the help of government farms and experiment stations, as well as the field services, and FTCs to arrange some form of practical training between leaving school and starting technical training. However, this does require very careful organization and supervision. It has the great advantage of eliminating unsuitable persons before they even enter training institutions.

Nevertheless, it is necessary to organize a great deal of practical instruction at the institutions themselves. This involves proper facilities and specially qualified staff. As a rule much of the practical training in intermediate institutions is quite inadequate. It is often quite good in subjects like agricultural engineering but very weak in farming skills. Much of the practical work is of the wrong kind; it is far too like the dull, repetitive manual toil of subsistence agriculture. It does not call for the exercise of intelligence and skill. Much more attention should be given to the making of accurate observations and the keeping and analysis of records. Much more practical training needs to be devised to develop management skills. Those who are being trained for extension duties need much more practical experience in working with farmers and farmers' organizations. From what I have said it will be clear that a new approach to the practical instruction in farming skills, management techniques and extension methodology is called for. I believe this is a field in which UNESCO, ILO and FAO could provide valuable practical help through the organization of workshops for teachers and the development of textbooks, teaching manuals and teaching materials.

Technical Education and Training for Rural Women

In my opinion far too little attention has been given in the past to the education and technical training of women, as a critical factor in African rural development. In many respects women, educated and trained, can be the prime motivators of change and rural development. They exercise an enormous influence upon their families. Very often they are the main cultivators of food crops and in some countries like Nigeria they are exceedingly important in trade. Of recent years there has been a big expansion in educational opportunities for girls. In secondary schools, science education has not advanced so rapidly as it has in boys secondary schools. This is one reason for the very small numbers of girls entering technical and professional education in medicine, agriculture, veterinary science, etc. The other reason is that there have not been the residential facilities for girls. Now the situation is changing rapidly. Girls are studying for the Diploma in Agriculture in Uganda, 3 girls have entered the Faculty of Agriculture, University of East Africa for the first time this year. Courses are being undertaken in many countries in Home Economics. Professional African women are beginning to take their place alongside man. There is every reason to offer training in agriculture, horticulture, dairying and other subjects at the technical and professional levels on the same conditions as men. There are very strong grounds for training women Home Economists in Agriculture and women agriculturists in Home Economics. They can play a most significant part in rural development.

Staff and Staff Training. It is far easier to attract good teachers to university education than to intermediate technical training in agriculture. The university enjoys prestige, often has excellent library facilities and offers good opportunities for research. The intermediate level usually involves more hours of teaching per week and often many other extension duties have to be undertaken. It is therefore essential to do everything possible to improve the attractiveness of intermediate level teaching in order to recruit and retain the services of first-class people in this grade. May I suggest ways in which this may be done?

- (1) Through the development at the university of pedagogic training for agricultural teachers.
- (2) Through the provision of far better libraries at intermediate level institutions.
- (3) By the enactment of suitable university regulations so that teachers at intermediate level institutions may study and undertake research, at their own institutions, to qualify for higher degrees of the university.
- (4) Through the association of applied research projects and the work of experiment stations with the intermediate level agricultural colleges.

I have said before that the agricultural technician, in large numbers, is vital to agricultural progress and development in African countries. His capability, enthusiasm and devotion to duty will to a large extent depend upon those who teach and inspire him at college.

In conclusion I would say that there is more room for improvement, more scope for fresh thinking, more chance to learn from advantages in training in industry at the intermediate level than at any other. In your planning I ask you to give special attention and special priority to intermediate technical training. It will prove to be a very good investment.

AGRICULTURAL EDUCATION AND TRAINING IN AFRICA

Lecture 5

Higher Agricultural Education: Functions, Organization, and Relationships in National Development

Introduction

Since agriculture is the basic industry of most African countries it is appropriate that the agricultural sciences and professional training be strongly represented at the highest educational level, that is the university. Quite apart from the prestige which this should bring to agriculture it is not always appreciated how much a good faculty, distinguished in its teaching and research, can bring to the life and work of a university. A university faculty of agriculture or Veterinary Science or Forestry can also play a decisive role in the strengthening of teaching in these subjects at all levels, for the teachers are university graduates who will undoubtedly look to their mother institution for inspiration and support. In many African countries today the national university occupies a special position of respect and prestige. Its senior members serve on important government bodies. It responds to the requests of government for special courses of training. Its library and archives may become the most important in the country. The university with its diverse faculties, its academic and social life of staff and students, offers much more than a technical training. It offers the basis for a broad education at the same time as professional training to future leaders of the nation in all walks of life. It is important that the leaders of agricultural progress - in research, in planning and administration, in agricultural teaching and in the agricultural services such as extension should be university men and women. Hence the importance of siting faculties of agriculture within the university - in close association with the faculties of science, social sciences, engineering, etc. rather than in isolation.

Faculties of Agriculture: Structure, Staffing, Costs

The agricultural sciences inevitably cover a wide range of very different disciplines - as is also the case in such professional subjects as medicine and veterinary science. There are first of all the basic sciences - physical and biological, which underlie the teaching of so many agricultural subjects. Then there are the applied agricultural sciences - agricultural chemistry, soil science and nutrition; agricultural zoology and entomology; agricultural botany, plant breeding, plant pathology; agricultural economics; agricultural engineering. Some courses then go on to the fusion of these applied sciences into various aspects of the processes of crop and animal production and the economics of farm management. I have perhaps said sufficient to indicate how wide is the spectrum of agricultural studies at the university level. Many universities believe in the soundness of a broad first degree in agriculture laying the foundations for subsequent more specialized fields of study. Others form some amount of specialization in the first degree. Often, but not always, the basic sciences are taught not in the faculty of agriculture but in the faculty of science.

Whatever the organization of faculties, and departments within faculties, it is obvious that the teaching of agriculture at university level involves many separate and specialized disciplines. The teacher in agricultural economics cannot teach animal physiology nor the agronomy teacher the chemistry of nutrition. Furthermore, at least one-third of all the teaching takes the form of laboratory practicals, field classes and group seminars. Thus it is impossible to have efficient teaching of agriculture at university level with a staff: student ratio wider than 1:10 or 1:12. It is also impossible to operate a viable university department with less than 3 to 4 university teachers. Even a modest sized faculty of agriculture requires at least six departments. So we are forced to the conclusion that a viable university faculty of agriculture needs to have a professional staff of at least 20 to 30 to function properly. I must mention in passing that research is as important

as teaching in a university and this is a further factor implying adequate staffing. In order to justify a teaching staff of 20 to 30 a faculty of agriculture needs to have a total enrolment of 200 to 350 students. If 50 students are engaged in post-graduate study and the remainder spread over a 4-year course then the annual intake must be some 60 or so students per year. In very broad figures the cost of such a faculty is likely to be:

Facilities, equipment, library, farm	£500,000 - £1,000,000
Annual recurrent costs	£100,000 - £120,000.

The implications of this are simple. Countries which are at present unable to afford a faculty of agriculture would do well to use the facilities of other nearby countries. In other words, there is a strong case for regional co-operation. Secondly, since a good faculty of agriculture is expensive, the greatest possible use should be made of it, both in research and training. Finally, within the university itself there needs to be the maximum degree of co-operation between different faculties and departments. For example a common course in statistics can serve the needs of students in agriculture, medicine, economics, veterinary science, etc.

The Relevance of University Studies in Agriculture

It is well known that most African universities have initially been modelled on the academic patterns of the countries which sponsored their development. Thus today we see clearly recognizable patterns of French, Belgian, British and American University education. As they grow and mature African universities are naturally establishing their own identities and their own standards. Traditions, however, tend to be strongly entrenched and it will only be when a significant number of university teachers and administrators are Africans that the evolutionary process of adapting university studies and research to the local environment and the needs of a changing society will gain momentum. Professor K. Twum-Barima of Ghana had this to say about the adaptation of courses in Agriculture to African conditions:

"Any system of agricultural education, to be effective, must be inspired by its own environment and not dictated by an outside institution, whatever its intentions. A close study and appreciation of the local problem, the political, educational, social and economic system into which the agricultural education system must fit and the physical, climatic and other factors affecting agriculture must all have their influence on the final pattern. Most important is the state of agricultural practice and development at the material time and place. Inspiration can still be drawn from one or other of the established institutions today that should matter to us. They present a climax of development in their particular environment - a state of equilibrium in which all the important factors remain poised. Transfer them to another set of conditions and confusion and inefficiency result, and their products may be quite unsuited for the work they will have to do.

"The best alternative open to the countries of Africa, therefore, is to avoid the wholesale adoption of any existing system, however successful it may be in its own setting. Instead, to proceed, step by step, firstly, to make a proper and accurate assessment of our local conditions; secondly, to choose, bearing everything in mind, a system which has relevance to our own requirements; thirdly, to appreciate the full history of the development of that system which coincides roughly with the present stage of our own agricultural development, to guide us in the future development of our own.

"The system which we create must suit the rural and agricultural needs of our locality. The level of its research and teaching programmes must be pitched at a point where its efforts will directly benefit the agriculture of the community which the institution serves. It must be dynamic and capable of growth and development so that as the problems of our agriculture get more and more complicated, the system can change and adapt itself to meet the new demands made on it by the ever-changing circumstances of a developing agricultural industry.

"It would thus appear evident that those of us who are entrusted with the responsibility of designing and building suitable agricultural education structures for the countries of Africa must not only be thoroughly conversant with the system which gave us our training and education. We cannot help being biased in favour of what we know; and what we have experience of may not be suited to the conditions which we serve. It is incumbent upon us, therefore, to be good students of the development of several systems in different agricultural conditions and climates, so that we may more easily bring to bear thorough knowledge and understanding of our subject on the problems of syllabus and course construction. It is only when this is done against the background of a thorough

knowledge and full appreciation of the local problem that a successful pattern of agricultural education can be produced which will exert the right impact and have the most direct and beneficial influence on the agricultural development of the locality."

Practical Training. It is important that agricultural graduates be practical men. By this I do not mean that their main purpose is to gain proficiency as farm labourers. I mean that the results of research and experiment ultimately have to be incorporated in more efficient farm management and agricultural production. The aim of applied research is practical improvement. All agriculture students should have some training in the practical skills of farming. It is virtually impossible to include farm work in the available time during university terms. Therefore this kind of experience should be gained between leaving school and commencing university studies or during university vacations. This is one reason why it is so important for faculties of agriculture to maintain close working relationships with the agricultural services, agricultural enterprises, local research stations, etc. It is through these agencies that vacation employment of a useful and educative kind can be arranged.

The other kind of practical experience which it is so essential for agricultural students to acquire lies in the systematic study of the agriculture within their own environment. Some people might consider the present systems of land use hardly worthy of study. In fact an understanding of these, their physical, biological, social and economic background, their problems and constraints, forms the essential basis on which to improve. So many efforts to improve present agriculture have failed because they were based upon ignorance of the people and of their agricultural system. Students have to learn that the study of their own environment and the study of the local agriculture are scientific disciplines just as important as those of the Chemistry of Biology laboratory. In this connexion the learning of how to collect data, analyse it objectively and present the finding in a clear and logical fashion is an extremely important part of the training of university graduates in Agriculture.

University Teaching in Agriculture and Research

An active programme of research is a basic need of any good university faculty of agriculture. It is only through undertaking research of their own as well as keeping in close contact with the research of others in their particular field that university teaching of high quality is done. Most developing countries are in urgent need of more agricultural research especially of the more applied or practical kinds. Through the formation of some national research body to plan and co-ordinate agricultural research faculties of agriculture can and should participate in the national research effort. In some cases such as that of Northern Nigeria, the university has been made wholly responsible for agricultural research. Thus the Faculty of Agriculture and the Agricultural Research Institute at Samam are completely integrated. In other cases, formal relationships are being established between university bodies and local research stations or institutes. This close working relationship between university faculties of agriculture and local agricultural research organizations can have enormous advantages. Research specialists can give short courses of lectures in their particular field of work, post-graduates working for higher degrees can be placed at research stations under the supervision of research scientists. The planning of research can be undertaken on a broader basis than before and a better degree of integration reached.

University Faculties of Agriculture and the Extension Services

It is obvious that the teachers of applied subjects such as crop and animal husbandry, agricultural economics and farm management, etc. need to relate their teaching closely with local conditions and local problems. It is therefore essential that they keep in close touch with the work of the local agricultural services and, in particular, with the extension service. Indeed, if a fair proportion of graduates will eventually be concerned with extension they will need some practical field experience with the extension service during their courses. As therefore, in the case of research it is essential that faculties of agriculture develop close and good relationships with the government

agricultural extension service. In the USA the extension service comes under the university. In other countries it is entirely separate. Each African country will need to evolve the system which best suits its needs.

Extra Mural Activities

African universities have an extremely important function to perform in the whole process of economic and social development. The old concept of the university as an "ivory tower" remote from the world and undisturbed by the every day problems of a changing society has long since disappeared in modern universities which are more and more involved in serving the whole community. Thus senior university staff serve on many government boards and committees. Extra mural classes, both residential and non-residential, bring the teaching of the university to all who wish and are able to avail themselves of it. University faculties provide the facilities for public meetings and scientific symposia. The university farm is a place where farmers come to discuss their problems and see experimental work and new techniques. Government frequently invites the university to co-operate with it in certain types of research which are best undertaken by a non-government organization. In these and other ways the university of today identifies itself with national aspirations and the problems of development.

In the field of agriculture which is so intimately bound up with national development there are a great many ways in which, in addition to its more formal work, faculties of agriculture can serve the nation. They can give special support and help in the fields of teaching and research. They can interest themselves in teachers at all levels, not only of agricultural institutions but also in the school system. University staff, with their research interests and their excellent library facilities, can prepare suitable textbooks and teaching materials based upon local conditions and local research. Faculties of agriculture can also offer residential and library facilities for teachers of agricultural subjects at the intermediate level to prepare textbooks and teaching manuals appropriate to the needs of this level of teaching. Periodic

short courses, during vacations, can be organized for technical staff of many kinds engaged in rural development. No blue-print or plan, suitable to all conditions and circumstances, is possible. What is required are enlightened people willing and able to bring the resources of the university to serve, in practical ways, the public interest. This is the proper use of the academic freedom of the universities coupled with social responsibility.

B.7 Summary of Lectures given by
Prof. A. Voisin, FAO Adviser on Agricultural
Education and Training

THE TRAINING OF FARMERS AND THE RURALIZATION OF EDUCATION IN
FRENCH-SPEAKING COUNTRIES IN WEST AFRICA

A Seminar on the organization and the development of the training of farmers in French-speaking countries in Central Africa was held in Yaoundé from 16-25 January 1967. Eight French-speaking countries participated in the meeting. In the discussions, it became obvious that there are two main methods for training both young and adult farmers. The first method consists in assembling at a centre - no matter its description - those farmers who come to seek the guidance they need through courses of short duration for adults and courses of long duration for the youth. The second aims at inculcating technical knowledge in the peasants, either at the village level or at the farm level itself. In short, these two methods can be combined by training in some centres, educators (voluntary animators, supervisory staff) who in their turn would train the peasants either at the village level, or at the farm level.

The discussions were focussed principally on the two main subjects mentioned below:

- (a) Methods for training of farmers in French-speaking countries in Central Africa.
- (b) Expediency of the two methods of training:
 - Training of farmers.
 - Training of supervisory staff.

Various recommendations were approved and it was particularly suggested that the organization of training courses in teaching and human sciences intended for agricultural teachers and extension workers should be planned in order to make it possible for them to perform better their work of training supervisory staff and farmers, with the full understanding that

animation activities must be based on simple formula and technical procedures adapted to suit the realities of the farmer. Not only the youngsters who constitute an active element in development must be directly involved but also adults who exercise influence within the rural community.

Groupings like co-operative movements should also be assisted and encouraged and further, the African woman should also get herself associated with this training process.

All these activities should be reflected in the improvement of yields, working conditions, and well-being of the farmer at the village level.

To educate the farmer so that his production be bankable is the principle which should predominate training activities in the rural environments. Without this prerequisite training which is expected to provide him with a better knowledge of the entire problems relating to his holding and to help him improve his income, his activities will not answer his expectations. Further, he will do his work out of sheer habit or without interest; indeed these factors have glued him to an unambitious subsistence agriculture, with the only preoccupation of providing for his primary immediate needs.

As the result of this rather sad state of affairs, the life of the farmers in the villages has not moved with the tempo of development of the towns and that explains further why some of the rural youngsters eager to flee this stagnant life, desert the countrysides and emigrate to the urban centres only to swell the numbers of semi-idlers if not the unemployed.

This disturbing situation has led the authorities of the various French-speaking Republics in West Africa to focus their attention on the problem of guiding young farmers towards a better adaptation to the rural environments in order to enable them realize the maximum profit from their holdings and to settle them in these environments, thus preventing them from emigrating to the big centres. However, this does not imply that the training of adults has been neglected in any way.

Finally, the question is to involve the participation of farmers in rural development by selecting and training rural animators who will in turn facilitate the association and participation of farmers as a whole in this task of development.

It was for this reason that thought was given first to the establishment of agricultural vocational training centres intended for farmers whose calling and qualities have been determined by the agricultural extension and rural animation services and whose age would enable them to exercise predominant influence in the traditional environments. Admittedly, it is impossible to mention here all the activities carried out by both the extension or animation services as well as intervention agencies in matters relating to farmers in all the French-speaking countries.

They are varied and if they have not all succeeded in bringing about, quick solutions to the problems facing them, they are credited with having raised and given a new impetus to agriculture which would have been left in hopeless stagnation.

I shall therefore, restrict myself to summarizing work done in Niger, Upper Volta, Mali, Senegal, and a few French-speaking countries in West Africa; but I am of the opinion that it would not be out of place to present also the activities of the animation centres in Cameroon such as was outlined to the Yaoundé conference by Cameroon's development officials.

Training Centres for Rural Animators or
Animation Centres in Cameroon

It is now admitted in almost all the African countries that the success of any activity in matters relating to rural development depends as much on the activity of the farmer himself as on the activity which can be exercised on the soil. This has therefore induced rural promotion officials to gear their efforts towards transforming the mentality of the peasants, his mode of work and his way of living.

But it was observed that this change of habits could not be successfully carried out by extension technicians alone who are too much concerned with obtaining immediate results in production; for these pre-occupations lead them to request the peasant to implement definite programmes without considering how to help him develop.

This task of transforming the moral and social environment called "animation" which consists in determining the problems of the rural environment and having them solved by those concerned themselves must be assigned to animators who are to prepare the minds of the people to embrace the idea of modernization and of social development.

It is for this reason that in Cameroon, as far back as 1963, provision was made in the Economic and Social Development Plan for the establishment of training centres for rural animators in each district.

These centres are established on farms in which are concentrated all the rural activities likely to be found in a given region in terms of the nature of the soil, climate, rainfall, habits of the people and the foreseeable development of the people towards the desired development.

The buildings are put up with local materials, at little cost through the participation of the inhabitants concerned.

Each centre is earmarked to admit 20 to 25 peasant trainees - for a period of 15 days so that the trainee is not diverted from his village activities.

For the first two or three years the State runs the centre until it can finance itself through the sale of animals, plants and seeds. Meanwhile, all profits go into a special account controlled by the State until they amount to twice the annual cost of running the centre.

From this time onwards, the centre passes from the trusteeship of the State and is assigned to a body such as the SAP (Société Agricole de Prévoyance) of which the centre becomes a part.

In addition to the techniques of agricultural extension, the foremost role of the centre would be focussed on animation in its true sense - that is to say:

- transforming the mentality of the peasant to accept the urgent demands for progress and increased well-being;
- combating habits deemed incompatible with the vital requirements of progress;
- introduction of new practices, food hygiene, home hygiene, child hygiene and developing a taste for comfort;
- rationalization of work-productivity.

By developing in the peasant a taste for comfort and well-being, he will be encouraged to work harder so as to live better; he will be geared towards an assiduous, constant and uninterrupted work, and through the extension of techniques of production, consumption and nutrition, he will be led to embrace "development" with all its demands. Selection of rural animators is made in the villages at the rate of 3 to 10 farmers per village; this is to enable them to form a team at the village level upon immediate completion of their courses at the centre.

Rural animators are selected from those who exercise a certain degree of influence on the village inhabitants. The head of the animation centre is not considered a civil servant in the true sense of the word. He may be a business man entrusted with the management of the centre, an educator of the peasants, a model of development charged with broadcasting the activities of the centre throughout the length and breadth of the sub-district under his jurisdiction. As the administrator of the centre, he organizes courses for animators, deals with material problems, supervises practical work and he himself conducts the animation conferences.

He reports the activities and the financial situation of the centre to the district head and to the rural action committee of which he is a member. He is to suggest activities likely to awaken the population to self-development. Admittedly this activity should be included in the comprehensive National Development Plan.

Rural Animation in Niger

The National Committee for Human Development presided by the President of the Republic, and the General Commission for Human Development were established in February 1964.

The National Committee for Human Development makes suggestions to the Government as regards general policy to be followed for ensuring human development in all fields with a view to getting all the strata of the population involved in the National Development work and obtain their active and voluntary participation in governmental activities.

The rural animation service attached to the General Commission for Development was established in 1960 with the participation of the IRAM. Its aim is to promote the involvement of the population in the development of the country.

It organizes 15-day initiation courses grouping about forty animator trainees recruited from the most dynamic youngsters at the rate of about one per cent of the rural population.

These courses aim at making these animators alive to their responsibilities. At the end of the course, the animators go back to their respective areas and apply what they have learnt with the aim of improving living conditions at the family and the village levels.

The essential objective of the 10-year projects consists in stimulating all farmers by systematic extension of rural animation and moving towards co-operative development - drilling of wells, erection of water points and creation of community work. In consideration of firm guarantees given by the co-operatives, the Niger Credit and Co-operative Union provides credit at a selected rate of interest.

At the moment, about 400,000 people have been affected by rural animation activities. There is generally at the district level a head of Animation Centre who has an adult and a youth assistant. The head of the centre is an overseer or an instructor in agriculture, water and

forestry or a product of general education trained by the IRAM. A director and 4 regional agents are among officers mentioned in the organization chart of the service. The animators do not receive salaries.

The animation of adults and youngsters are currently organized at separate centres. This may be carried out at the same centres later on.

In 1966, there were 10 centres for adults which trained on the whole 2,370 animators and 250,000 peasants.

For 1968, it is planned to have 23 centres to train 7,500 animators and to involve 940,000 adults on the whole.

For the youth, there were 6 centres which trained 800 animators. In 1968, there will be 11 centres expected to train 3,450 animators and involve 450,000 young people.

My recent visit to this Republic was in March 1967 and this animation programme was being carried out very satisfactorily.

Rural Schools in Upper Volta

In the Republic of Upper Volta, the Directorate of Rural Education, under the Ministry of Education, has embarked upon establishing rural schools or centres for rural education; at the moment they number about 470 including 20 for women. The first centres were established in 1962.

The aim of these rural schools is to involve children who have not been able to benefit from actual primary education. Children aged 13 or 14 are enrolled for a 3-year course. They are taught how to read and write and are educated up to the intermediate level, two years below the level of the primary school certificate (CEP). They attend general education classes in the morning and the afternoon is devoted to practical work. Each school has its own farm. The trainees learn the rudiments of the French language, the 4 basic rudiments. They also attend civic and agricultural education courses. They are prepared to return to their family set-ups to serve as animators of a nucleus of modernization. No diploma is awarded on completion and no wages are paid.

Batches range from 40 to 50 trainees per school. The first batch passed out in February 1965. The immediate objective is to train on the average 8,000 students who would promote agricultural techniques within their families.

Recent studies have shown that 70 per cent of these promoters go back to their family set-ups. This is noteworthy and should encourage the development of these schools.

UNICEF has made provision for essential equipment for 360 rural schools and 30 home economics schools for 1966-67. Most of this equipment is in the country.

These promoters or overseers are supervised by staff from the Department of Agriculture (instructors, technical agents and leaders) - unfortunately the latter are few in number and have few facilities at their disposal.

Each rural school is headed by a Rural Education Master.

Training Centre for Rural Education Masters - Kambouinse

This centre was established in 1967. A batch of 120 trainees attend a 10-month course lasting from 1 May to 1 March of the following year. These periods coincide with the school year and with the activity of the Rural Education Centres.

Enrolment: Primary school certificate level. General and practical education competitive exams.

- 34 hours of teaching per week;
- 10 hours for agricultural work;
- 6 hours for workshop activities;
- 6 hours for agricultural education;
- 12 hours for general education.

No diplomas are awarded on completing the course.

On the completion of their studies, they are sent back to their respective areas of origin and as much as possible close to their ethnic groups.

They become rural education masters and are paid 12,000 CFA francs per mensem. They number about 500. They are not regarded as civil servants and can be removed when the need arises.

They are systematically assigned to areas where the SATEC, the BDPA or the CFDT operate. The Kambouinse training centre is financed by FAO.

It is planned to establish another centre at Farakoba near Bobo Dioulasso.

The Rural Education Masters are supervised by rural Education Advisers (at the moment 9 in number). They are instructors selected through competitive examinations; they have also attended the training course at Kambouinse.

Thus Upper Volta, without adopting an entire system to ruralize education, has found it expedient to add to youth literary activities, training and orientation activities in the rural areas.

Matourkou Training Centre

Beside the training of technical agents for the agricultural service, the centre trains animators.

The trainees are illiterates or semi-illiterates who attend a 9-month course at the centre, cultivating two hectares of land. No theoretical courses are given; at the end of the course, they receive crops. They work 4 days in their own farm and 2 days in the centre's. In this way, are trained annually 40 animators whose ages range between 20 and 25; at times, they are accompanied by their families. The enrolment is made with the approval of the SATEC or the CFDT. The trainees return to their own people either as rural animators or are taken by companies which assist them to settle down.

Ruralization of Education in Mali

The Basic Education school of 9-year course was established by the law of 17 September 1962. It grouped the elementary and intermediate-level education (formerly known as primary and first phase of the second degree).

The first phase lasts 5 years, the second 4 years. On completion successful candidates obtain a Basic Education Diploma, an equivalent of the Junior Secondary School Commercial Certificate (BEPC).

This education is expected to be adapted to suit the natural and human environment and exclude all that contributes nothing to the general and vocational training of the Malian youth, but which was of interest only to the former colonial power. In short, it was felt that the youth should be so oriented as to adjust themselves better to the rural environments at the end of the first level, at least for those who could not benefit from second phase education (restricted to 2 per cent of the Basic Education). It is for this reason that it was considered necessary to establish centres for practical guidance and to request assistance from the Special Fund in this regard.

The primary objective of this reform is to orientate young people after the first level of the basic education so that they might adapt themselves better to the rural environments, thus enabling them to make the best out of their future careers and to avoid the rush of the rural population towards the towns.

The law stresses that in all the basic education schools in the regions where agriculture is predominant, agricultural education must be compulsorily taught. To the school are to be annexed a classroom for domestic science, a workshop, and depending upon the circumstances, a farm or a fishing-ground.

The activities are to be carried out within the framework of initiation and are to have essentially an educational character.

It implies a clearly expressed desire for an agricultural and rural orientation to be given to basic education. The existence of this guidance establishes a strong foundation for the principle of equal value to be attached to studies traditionally termed "general" and those termed vocational, both integrated here in one and the same education.

But the Malian Government wishes at the same time to provide the entire youth in the fifth year of the first phase with basic education. This objective could only be achieved through the establishment of centres for practical guidance (COP) which would cover both the urban and rural areas. However, priority would be given to the rural areas.

The centres for practical guidance (COP) must be adapted to suit the region, be related to the environment, be integrated in the community and family structures and always be animated by a desire for development.

The course is for a two-year period. Training lasts from early May to end of January and is bound up with the cultivating seasons. The youngsters are not cut away from the traditional environments; provision is made for them to spend some time both at the centres and at their original communities. This enables an immediate introduction of techniques taught at the school and makes it possible to increase the number every two school years without impairing the training which, spread over two years, is adequate enough to meet the present development needs.

The training programme is arranged as follows:

Agricultural training 60 per cent;

Homecraft and family training 20 per cent;

Complementary general training;

Girls receive in addition training in rural home economics.

Each centre will have on the whole 120 young people with 4 hectares of cultivable land, a small stock farming, if possible, with drawn cultivation, suitable farm implements, classrooms, iron and wood work shops, and audio-visual equipment. The system is based on the character training of the producer, self-management, domestic consumption, and co-operative training.

The centres for practical guidance are expected to be catered for by the community which should also patronize them. Recruitment will be made at the end of the fifth year with the assistance of the council of elders, as well as the political, administrative and traditional authorities.

Training of Teachers

Their training must be at the secondary level. Recruitment is made from holders of the Diploma of the Basic Education for three years in analogy with masters passing out from teacher training colleges.

A teacher in agriculture

A teacher for activities related to cottage industry

A female teacher in rural home economics

A teacher responsible for the activities of the COP, for the supervision of the trainees during and after leaving the COP.

These teachers will be trained at Katibougou centre which can accommodate 600 trainees, largely adequate to admit future trainees.

In 1970-1971, 28,000 trainees are expected to be trained in 125 centres by 500 teachers. The Ministry of Education is responsible for this training. The opening of the centres for practical guidance is conditioned by the training of teachers, the latter beginning in May 1968. The opening of the COP will be in May 1971. The project estimated at almost 6 million dollars will be spread over 6 years. UNESCO has been assigned as the executing agent of the project.

Centres for Functional Literacy

UNESCO with the approval of the Malian Government is studying the establishment of literacy centres which will affect 100,000 cotton and rice producers in the Segou region and about 10,000 employees from the State industrial enterprises. These centres will be erected in simple premises with local materials. The courses will be made to agree with the tempo of the work timetable. Trainees aged between 15 to 35 years will be expected within two years to attain the level of functional literacy at the rate of 30 trainees per centre. The heads of the literacy sector will be agricultural instructors or specialists instructors. Audio-visual equipment will be used to a great extent.

Rural Vocational Training in Senegal

The Senegalese Government within the framework of its first four-year plan implemented a project for vocational training intended to ensure the development of the rural population, for instance, through animation. The activity carried out consisted in providing further training to rural farmers and craftsmen and creating a corps of female instructors, who will be responsible for the training of women living in rural communities.

At the moment, there are two pilot agricultural training centres at Guerina and Ogo, a training centre for rural craftsmen in Kaffrine and a national training centre for female instructors in rural home economics at Thies. Each of the six natural regions of the country is to be provided with an agricultural centre and a centre for craftsmen.

At the Guerina, Kaffrine and Thies centres, training of farmers, craftsmen, and instructors is being increased as the result of the training of more agricultural, homecraft, and rural home economics instructors.

Training of Peasants

Two types of training:

- (a) a long course, lasting between 8 to 9 months, covers the entire cultural level and trains skilled farmers who, after a stay at the centres, are expected to become models in their respective villages;
- (b) a short course of 2 to 3 weeks covers cultivating techniques for meeting the immediate requirements of the region: cattle rearing, use of fertilizers, selected seeds, and plant protection.

The various training activities envisaged in the plan (Special Fund, ILO, FAO) are carried out according to the provisions made in the plan of operation. These training centres are called upon to wield great influence in the rural environment.

Other numerous and varied activities as regards the training of farmers in the French-speaking States in West Africa, are conducted, especially by intervention agencies like the BDPA, SATEC, CIDR. All of them cannot be mentioned here. Their overall objective is to ensure the development of the rural masses by providing them, for instance, with supervisory staff, and by selecting and training a rural elite.

Finally in the French-speaking countries, the need has been felt for orientating primary education in order to adapt it to the needs of a developing rural or home-craft life.

For a long time, teaching methods adapted to economically developed countries have been applied in the French-speaking countries in Africa. This has resulted in making the rural youth spurn manual work and generating in them the ambition to quit the village and live in the towns and if possible to become civil servants.

It is for this reason that the rural areas lose the men required for their development and that the African Republics are gearing their efforts rather towards weak industrialization just to occupy those who might become politically dangerous, whereas in fact what is needed is a solidly based agriculture which is primarily profit making.

There is need, therefore, to teach the young peasant from his early years concrete realities of the land, the village and the manual exercise involved in his work. Some countries thought that the problem would be solved by adding to the normal programme of general education, subjects pertaining to agricultural activities and the improvement of agriculture. I doubt very much whether the problem can be solved in this way. At the primary school going age, a so-called technical education for children is not only ineffective but is a sheer waste of time and efforts. Agricultural oriented education is effective where a child has attained a training level above the first five or six years of primary education and when he has already acquired a sound background for understanding technical and human data apt to lead to the improvements of his living conditions. Rural orientation of primary education

must penetrate all subjects taught at the primary level and must not merely represent a supplement to such educational procedures as the maintenance of the school garden and the use of implements for which the child lacks the necessary mental or physical development to cope with.

At the same time, it is becoming necessary to consider the establishment of Rural Training Colleges for the training of supervisory staff determined to collaborate actively with supervisory agents and animators at the village level itself.

Pari passu, it will be desirable to improve the conditions of this rural education through better conditions of well-being and reward. Unfortunately this work is done at present by young and inexperienced instructors who are captivated only by the urban environments after this unavoidable training in the rural environments.

But it is the best elements, the most qualified, who should be drafted into these environments to train and influence the village populations.

The training of rural teachers is becoming a foremost necessity. That alone will make it possible to effectively integrate the educated youth into the African rural society.

B.8 Summary of Lectures

by

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Lecture 1

Some Considerations for Manpower Planning

If manpower planning is to have a significant influence in a national economy, it must come to grips with a variety of immediate problems which will have to be dealt with effectively if longer range planning is to have any opportunity at all to succeed.

One of these problems is the growing level of unemployment that plagues many of the developing nations. Manpower plans rarely convey a sense of urgency about this problem. Manpower planners are quite aware of the problem and at meetings such as this they will inevitably raise questions relating to it. One does not usually find in the national manpower documents, however, an equally intense expression of concern.

I believe the character of the unemployment problem can be specified briefly. If we assume a national rate of population growth of 2.5 per cent per annum, - and in many nations the rate of growth will be higher, - we are likely to find that urban labour force is growing at a rate of about 4 per cent because of population movement to the cities. According to estimates that have been made, the output-employment ratio may be in the order of three to one, that is, a three per cent increase in output will be associated with approximately a one per cent increase in employment. Absorption of a 4 per cent increase in urban labour force size, thus, will require a 12 per cent increase in urban output which is, in most nations, quite clearly an unrealistic target.

Why the increase in the supply of people who seek more employment in the cities? Following the analysis of Sir Arthur Lewis, three major reasons may be identified:

- (1) The wide gap between urban wages and rural earnings.
- (2) Accelerated schooling which has encouraged a drift to the cities.
- (3) The relative attractiveness of the cities due to, among other things, the disproportionate expenditure of welfare and development expenditures in the cities as against the rural areas.

Apart from these population movements, growing unemployment may be attributed to the fact that many forms of industrialization do not create a significant number of employment opportunities. When investments take the form of large-scale mechanized industries the increment in labour demand is usually small. A study of the Central Asian Republic of the Soviet Union made by the secretariat of the United Nations Economic Commission for Europe, for example, found that the labour force in manufacturing decreased during a 20-year period despite a strong industrialization effort. Many other nations can cite similar examples from their own experiences. It appears that, in many cases, a significant increase in industrial employment occurs only after a nation's industrial base has reached substantial proportions.

This has serious implications for manpower planners. From the perspective of planning for industrialization three specific areas of **attack** can be identified. These are (1) industrial location, (2) wage structures and (3) capital/labour ratios or stated somewhat differently, the question of labour intense as against capital intense structures in the industrial organization. I would like to comment briefly on each of these.

Although it is not likely that the flow of labour from traditional to urban sector can be reversed or even arrested, it should be possible to influence the rate of flow. Appropriate strategies in this respect might involve industrial location in rural areas, establishment of new poles of development, and bringing some of the amenities of urban life to the countryside. There are problems and pitfalls associated with

such strategies, of course. Historically, production plants located in agricultural sectors have been of the type utilizing low skilled labour and extremely low wages. I don't think that a replication of that experience will contribute very much particularly since one of the important causes of the urban drift is the wage differential.

The main point here is that manpower planners will have to expand the scope of their attentions to deal with the sticky problems of industrial relocation. They will have to undertake intense dialogues with industrial planners, regional specialists and, above all, with industry and plant officials to determine the possibility of spreading industrialization and also to be more persuasive than they have been concerning the importance of the subject.

Much the same point can be made regarding wage structures. Although exceptions can be found, one does not usually find in a national manpower plan, any sophisticated analysis of wage structures and their implications for development planning. Wage structures in the industrial establishments of the developing nations are frequently quite complicated, more so in many cases than in the more highly industrialized States. The effect of this structure which is a compound of a basic rate, customary social payments of one type or another, and legislatively imposed wage costs, is that the gross wage loses its economic significance and cannot serve well either as an incentive for increasing output or as an allocative device among alternative labour uses.

Unravelling and modifying traditional wage structures, which may and probably do characterize plants with modern technology, will be a slow and difficult process. This is all the more reason for manpower planners to preoccupy themselves at once with this problem.

A popular recommendation for improving the employment picture is through labour intensive means of production. It is important that manpower planners be realistic in this area. It is not likely, for example, that obsolete technology will be available in many of the modern industries and even if it is, it is not likely to be tolerated when export considerations are involved.

What the manpower planner can do is to look at the industrial range of activities as a whole and to determine where possibilities of labour intensivity exist. A labour intensive technology in a particular industry or a particular plant is not inconsistent with maximization of total national output and it would appear to be an appropriate part of the manpower planner's area of responsibility to work out possibilities of this type.

The first broad problem that I have been discussing is unemployment. The second that I would like to deal with is the definition of industry that one finds implied in many of the manpower plans. All too often we find the word "industry" used as a synonym of manufacturing or secondary sector activities. Manufacturing in the developing States, however, will typically provide employment for less than 5 per cent of the active labour force. As a source of employment it is dwarfed by the agricultural sector and the public sector. The relative importance of these sectors as employment sources can be suggested by Prof. Fred Harbison's estimate that only one out of 15 graduates of primary school can hope for employment in the modern sector.

Recent development thought has redirected attention to the agricultural sector and students such as Gunnar Myrdal now regard agriculture as the capstone of development. Without a sufficient agricultural development, in other words, little overall progress can be expected.

The problem for manpower planning is that we know little about occupational requirements in these sectors. Precisely, what skills are needed for the modernization of agriculture and precisely how these skills are to be imparted to traditional farmers is something we know very little about.

One area that requires immediate attention is the type of education that is to be offered in rural schools. Our experience is that a general effect of establishing schools in the countryside is to make students dissatisfied with their lives and they respond to this feeling by migrating to the urban areas. This may be a more serious manifestation of the brain drain than the more popularized international movement of skilled persons. Capital cities, in other words, strip the rural areas of some of their most able and best educated manpower. Studies in South America, show that the level of education of those who move from farm to city is substantially higher than the average level of those who do not move.

The question then is what can be done to reorient rural-based education so as to impart agricultural skills and a set of values that will dignify rural life and increase the probability that educated rural youths will make a contribution toward elevating agricultural output.

To summarize then, manpower planning which has had a long-run orientation will, if it is to be effective, have to preoccupy itself with a number of pressing short-run concerns. Those that have been described above are unemployment, occupational requirements for agricultural and public sector employment, and rural education.

Lecture 2

Some Critical Links in the Manpower Planning Process

Manning of industrial projects in the developing countries is subject to constraints and complications that are either absent or present in a much modified form in the more highly developed nations. A constraint may result from a development plan or policy that imposes something more than efficiency targets upon the project. Examples in this respect, other than employment maximization, would be vocational training functions, and welfare functions such as the provision of medical care for employees or the maintenance of schools for children of employees. Social constraints flow from characteristics of the local culture or from local institutions

which may severely limit management discretion in determinations of working hours, occupational wage relationships, technological changes, and hiring and discharge policies among other things. The fact that telephone linemen refuse to use climbing irons may be brushed aside as inconsequential or "transitional" by a central planning authority, but it is an industrial fact of life of no small importance to the director of a communication project. Numerous operational complications are created by such constraints and sometimes, it should be noted, by the failure of hoped for constraints to materialize. One may conceive of situations, for example, where a project manager fails to follow a planning authority recommendation to adjust capital-labour ratio so as to maximize labour utilization. Contrariwise, there may be times when planning authorities, unfamiliar with the technical details of a project, insist upon unrealistic employment objectives.

In the first case, achievement of basic policy targets may be frustrated by a lack of co-operation between levels of authority. In the second, success of projects may be inhibited by the naivete of general economic planners. Additional degrees of complexity result when more than one government ministry or agency is involved in a particular project, when there are frequent changes in the orientation of a general development programme, or when selection of key project personnel is subject to political limitations.

Manpower programming plans for the industrial project, in short, must give adequate deference to the realities of the local setting. Certain of these "realities" are among the variables that must be dealt with sooner or later if development efforts are to succeed. It is important, however, that project administrators have a sense of how far and how fast they can go in slipping out from under the complex of constraints described above.

Inter-relationship between project occupational structures and national employment objectives

The weakness of the link between "macro-economic" policy and the actions of technicians in charge of carrying out individual projects -

a condition noted as early as 1958 in a United Nations Bulletin - continues to be important among the barriers that inhibit serious attacks against the unemployment problem.

Such "administrative disorder" has, of course, been of great concern to those involved in development programmes. However, an important aspect of the subject that relates to questions of occupational structure has yet to be adequately explored. A situation frequently encountered in the developing nations can be best characterized, perhaps, as "reverse bureaucracy". In the usual bureaucratic setting, the power locus is at the top and lower levels in the administrative hierarchy are bound by general rules which define degrees of authority by level; the ability of lower authority levels to frustrate basic policy is limited by the circumscribed character of their authorities. When authority by level is loosely defined or, if defined, not enforced, the possibility of frustrating top level policy is enhanced.

In the developing economy the problem is not only that operating agencies may act independently but also that certain commitments of resources by the agencies may be irreversible. In this circumstance, authority tends to flow from the bottom to the top of the administrative hierarchy since irreversibility imposes limits upon the degree of freedom that remains with those who are, supposedly, the basic policy architects.

Applying this analysis to matters of occupational structure, what we find in many cases is that project technicians have selected a particular technology, thus defining the character of the occupational structure of the work force. At the point of time in the progress of a project when physical resources have been committed, a condition of irreversibility sets in and the options relative to the types of labour to be employed are severely constricted. There are further ramifications. The occupational structure of an industrial project may be used as an indicator in estimates of future labour requirements. Most discussions of manpower assessment methodology, in fact, imply that it will be. The structure,

thus, may be fed to the educational system in the form of a datum which describes the future manpower needs of the nation. The ramifications need not be traced beyond this point other than to note that the capacitation of persons with particular sets of skills is also the creation of a type of pressure to insure that the skills are employed. This may further limit the discretion of those who are attempting to elaborate a national employment policy.

Viewed from the perspective of the industrial project the manpower problem is, of course, quite different from what is seen at the national planning level. Preoccupied with the success of their project and often times unfamiliar with the economics of the labour market, project personnel tend to emphasize engineering or "technical" considerations in their approaches to manpower questions. When occupational coefficients are not rigidly determined by technology a labour economist would prescribe a skill combination to minimize the supply price of the project's total labour force (unless of course special considerations are imposed upon his analysis).

In the initial stages of project operation, however, problems of

plant co-ordination tend to dwarf those of minimizing costs through fine adjustments in labour skill combinations. What the project authorities are likely to be looking for is some general rule for determining the minimum number of skilled persons in different occupational grades necessary to insure the physical success of the project. Even when the project is more "economic minded" than in the case suggested above, highly imperfect labour markets and institutionally determined wages may discourage first efforts to rely upon market place signals as guides to occupational structure.

The "engineering" orientation of project managers substantiates the argument for closer co-operation between the project and national planners. Without such co-operation, the operational significance of the efforts of the manpower planner will be minimal.

The Manpower - Education link

A basic assumption underlying a manpower planning effort is that deviations between projected skill requirements and supplies can be dealt with effectively through systematic efforts to achieve a desired balance. One method of eliminating the deviation is to adapt the national education system to the needs of the development effort.

Specification of educational targets requires that data on occupations be converted into educational requirements. This conversion is difficult to make since the relationship between education and occupation is vague for the large majority of occupational callings. Furthermore, educational structures vary among countries and levels of education expressed in numbers of years of school represent different degrees of education or vocational preparation from one country to another.

Other important educational planning problems are those of coordinating the time span of an economic plan with the timing of educational programmes and shortages in the stock of qualified teachers. Unless there is adequate appreciation of these problems, educational programmes court the dangers of being misdirected, improperly timed and low in quality.

Considerable contact between those who train and those who employ labour will be necessary if significant progress is to be made by way of unravelling the educational planning problems discussed above and a host of others. Manpower forecasts in developing countries tend to be estimates of what should happen if certain goals are to be met. Generally, these forecasts fall short as operational guides because of insufficient disaggregation. Some parts of under-developed countries, for example, may be far advanced over others. The significance of such variation is that the types of training necessary to relieve skill shortages may be quite different from region to region. Thus, a vocational school modelled after those in the developed economies may be effective for training tractor mechanics in an industrialized capital city but totally ineffective in the rural hinterland.

Resolution of the educational problem discussed above as well as many others will require that effective communication links be established between manpower planners, educational planners, and employing enterprises.

Non-technical considerations in skill utilization and training

Social factors constitute an order of constraints and complications that are relevant to manpower planning and should not be ignored. Although our knowledge of the effects of various background characteristics is quite primitive, we do know that the prescriptive norms that govern worker relations in the industrial work force contrast sharply with many accepted modes of behaviour in non-industrial societies.

This has implications for manpower planning since the effects of the non-industrial environment upon occupational staffing patterns and industrial relations define the social complex which manpower planning attempts to modify in the direction of the norms of an industrial society.

There are also important implications for educators since specific vocations require not only specific vocational skills but also certain social capacities such as the abilities to give and to receive orders and to fit easily into complex production units.

This argues, then, for a broadening of the sights of manpower planning and for a start at a systematic accumulation of sociological data that will show how prevailing modes of behaviour in non-industrial environments clash with the requisites of industrialism. Such data would do little more than describe a point of departure for manpower planning just as a statistical analysis of skill requirements and supplies does. Without the requisite sociological data, however, the manpower problem is only partially defined and the planning effort, consequently, labours under severe handicaps.

Lecture 3

Skill requirements for the new project

If the contemplated project is a new plant or facility, it is quite likely that a sequence of work forces will have to be employed. Ordinarily, skill requirements will be quite distinct in the preparatory, construction, and operating phases of a project. In the first phase noted, the skills needed, (e.g. surveyors, architects, draftsmen) will be technologically determined, for the most part, and the problem for the project will be, essentially, one of recruitment. Skills needed in the construction phase will depend largely upon prior decisions made relative to the use of capital intensive as against labour intensive techniques.

The problem becomes more complex at the operational phase. If we assume that the character of the technology and the output targets are given by an economic plan or otherwise, the occupational coefficients may be defined to an extent but they are not likely, in the usual case, to be rigidly fixed. When the possibility of using different skill combinations exists, relative supply prices become an important consideration. The optimal result, of course, is achieved when skills are so combined that the supply price of the project's total labour force is minimized.

Stated in slightly different terms, when a given output can be produced with different combinations of occupational skills (assuming capital constant) the optimal combination will minimize the use of the scarce labour resources and maximize the use of the abundant ones.

What is involved here is the familiar principle of marginal costing which, because of data problems, is more likely to be serviceable as a broad guide rather than a precise instrument in occupational structure determination. In the initial stages of project operation, furthermore, problems of plant co-ordination will tend to dwarf those of minimizing costs; authority is likely to be looking for some general rule of thumb for determining the minimum number of skilled persons in different occupational grades necessary to insure the physical success of the project.

A number of approaches for this type of determination can be noted. None is foolproof. All, in fact, have serious conceptual and methodological shortcomings. They can, however, be helpful if used with appropriate caution. Inter-country comparisons of ratios of high and middle-level manpower to total employment can be used as rough benchmarks in the derivation of a project's requirements for these skills. For the industrial project, the relevant ratios would be those found in comparable industrial sectors in other nations. Preferably, there should be separate ratios for management and technical personnel. It would be desirable, in fact, to have data showing what percentage of total technical and management personnel is accounted for by management personnel alone.

It is always dangerous to base development decisions upon international analogy and the present case is no exception. Ratios of the type referred to above vary considerably from nation to nation and the range is not narrowed significantly when comparison is limited to nations at similar stages of development.

The labour supply price, of course, may be institutionally rather than market determined in which case there is no necessary relationship between minimizing project labour cost and economizing in the use of the nation's scarce labour resource. The usual suggestion for correcting for the distorting effect of international prices is the use of shadow prices. It is not apparent, however, that there is any effective way of putting shadow wages into practice.

The old problem of data incomparability accounts for some of the variation but, apart from this, skill utilization practices among nations are affected by relative scarcities of particular skills, relative wages of skilled and unskilled manpower, scale of enterprises, the number of research personnel employed within establishment and other factors. Nevertheless while these limitations of inter-country comparisons affect the value of the data, they do not render them completely useless. In the problem under consideration, they can be regarded as tests to determine

whether skilled-unskilled ratios proposed for the project are grossly inconsistent with international experience. When gross deviations are revealed and no special justification for the deviations can be offered, proposed ratios should be reconsidered.

Inter-country comparisons of skill input-output quantity relationships might also prove to be serviceable. Data from other nations, for example, on the number of engineers per ton of steel output or per 1,000 telephones in use can be used as check references. The limitations of such comparisons are of the same order as those noted for occupational ratios.

Where establishments similar to the contemplated project are present within the country, the experience of the most efficient of these can be drawn upon. Here too adequate allowance must be made for special conditions that may be relevant only to the particular enterprise.

The various types of international and intra-national experience that project authorities may refer to can provide direction but they cannot be completely determinative. In the last analysis, each project must justify its own staffing pattern which is likely to be different from those found elsewhere because of production, supply, transportation, marketing or other problems that will be unique to the project. Skilled manpower profiles that are perfect replicas of those found elsewhere should be as suspect as those that shows unusually large deviations from prevailing patterns.

Labour supply considerations

Labour market information of particular interest to the industrial project would include data about the general state of supply for particular skills and about any special recruitment problems that may be present. The geographically isolated project, for instance, may find that incentives of one sort or another will be necessary to attract a sufficient supply of a skill grade from the urban centres.

Ordinarily, labour market information of the type described will not be readily available. Here, as in other cases, the absence of high quality data will not have the same significance for the industrial project as it does for a national planning board or a national manpower assessment unit. What the project authorities want to know is whether there is any point in searching for particular skills within the country and, if so, where to search. Data that are low quality from the standpoint of macro-economic analysis may be quite useful for this type of problem. Professional associations, trade associations, labour unions, the universities, the national employment service, and particular ministries may be able to provide information that the project will find helpful.

Such a probing about for data is highly inefficient, of course, and in many of the developing countries, the compilation of a register of highly skilled persons could be defended as high priority undertaking. In the absence of a central source of data, however, there would seem to be no alternative to a resort to informal information sources.

Skill shortage problems in the short-term period

Much has been written about skill shortages in the developing countries. In many cases, however, what is called a skill shortage could be better described as a skill wastage. Once again it is necessary to qualify by noting that conditions differ greatly among countries, but in a number of the developing States it is possible, with only cursory investigation, to uncover an incredible waste of talent. It is not necessary to belabour a point that has been amply documented in numerous studies. From the perspective of the industrial project - and that is all that we are concerned with here - the presence of a large amount of underutilized skill means that there is a supply source that can be fruitfully tapped.

If the major barriers that have limited the rate of economic development with the past decade were to be ranked, it is not likely that skill scarcities would be near the top of the list. This situation

may change in the future and some nations currently suffer from marked shortages; on the whole, though, there has not been a vast gap between the need for and the supply of industrial skills.

One reason for this is the existence of the pool of underutilized skills described above. Another explanation can be found in the imperfect occupational specialization that is frequently encountered in the under-developed areas. Division of labour is limited by the extent of the market and when the market is small, persons will usually work at a number of tasks rather than in a single occupation. There are, thus, many persons with experience in a variety of occupations and when the development process has been underway for some time there will usually be a supply of persons who have worked in an industrial or infrastructure project but who are now employed in other jobs. An occupational census, incidentally, will not reveal much about this labour supply since persons generally report their main rather than their subsidiary occupations.

Difficulties may be encountered in locating the "hidden" supply but some assistance for this type of recruiting problem may be available from a national employment service.

Another important method of bridging the gap between skill supply and demand has been through the international movement of professional and technical personnel. A large part of the flow has been in the form of technical assistance missions but there also appears to be a rather active market for some of the more specialized industrial skills. It is the impression of the writer that the imported specialist is most likely to perform effectively when his assignment is narrow and technologically oriented. Thus, a specialist called in to supervise the installation of some complicated machinery is more likely to succeed in his assignment than a specialist concerned with overall plant productivity, and a plant productivity specialist is more likely to succeed than an advisor on national industrial development. If the hypothesis is valid, importation of specialists should be a relatively effective way of coping with short-term skill shortages in the industrial project.

To summarize then, possible sources of skilled employees for the industrial project are (1) qualified persons employed in jobs that do not fully utilize their skills, (2) persons with "hidden" skills, and (3) foreign specialists.

The management factor

Management is a special factor of production that must be considered separately from the other skills required by an industrial project. It is difficult for one thing, to make a meaningful assessment of the demand and supply of managers. The manpower assessment methodology, it will be recalled, begins with an enumeration of the current supply of a particular skill and, next, projects future supplies and requirements. Recommendations are then derived in terms of the numbers to be trained. At all steps in the analytical sequence, particularly difficult problems of concept or method are encountered when the methodology is applied to the management factor. It is not clear, for example, as to how one would go about enumerating a present supply of management talent and the problems associated with an estimate of future requirements of technical personnel, difficult as they are, appear minor in nature in comparison to those of estimating future management needs. Fortunately - from the standpoint of manpower analysis - precise quantification of the need for managers may not be as essential as it is in the case of some other skills. While an erroneous forecast of the requirement for other occupations might eventuate in an oversupply there is little chance of this occurring in the case of managers. Management talent, particularly of the type required for the organization and administration of large industrial projects, is in short supply and the condition is likely to prevail for a considerable time.

The subject of management training also raises a different family of problems from those associated with the preparation of persons for other professional or technical skills. One can be reasonably confident that a person who completes the prescribed course for agronomists in a creditable training institution will be able to function successfully

as an agronomist. It is dangerous, however, to infer that graduates of a business school with a specialization in management will necessarily be good managers.

The question of what type of educational preparation is best suited for potential managers is far from resolved. In the United States, for example, where managers and the management function have been intensively researched, there is little agreement on this matter. Within business colleges in the United States, there has been continuing experimentation with curricula and in recent years far reaching changes in educational programmes have been instituted.

At the present time, the most popular approach concentrates upon the decision-making functions of the executive. Case study teaching methods, simulation games, and quantitative tools are emphasized more and vocationally oriented courses such as accounting, personnel practices and marketing have been de-emphasized. It remains to be seen, however, as to how much of the new approach will survive in the light of experience.

The importance of this for the developing economy is that there is little certainty in the case of management training that a given input of students will produce a desired number of capable managers. Add to this the uncertainty as to how managers are best trained and the dimensions of a serious problem become apparent. The need for managerial talent is severe but there is no clearly marked route for relieving the shortage.

A number of fairly obvious points have been belaboured here because of the relationship between capable management and the success of industrial projects. Shortages of other skills can frequently be dealt with through one expedient or another but there is no way to substitute for management talent.

If management is an exacting occupation in the developed economies, it is infinitely more so in the developing ones. Before examining this point it is necessary to note that we are concerned here with industrial

project management rather than the broader function of entrepreneurial activity. If we follow the usual definition of the entrepreneur as the person who performs the economic functions of (1) the bearing of risk and uncertainty, (2) innovating, and (3) organizing and managing a business enterprise, then our focus is on the third of the entrepreneurial functions listed.

The extraordinary part of the challenge to management in the developing economy comes from the fact that the project manager is the key figure at the operating level of the effort to make industrialism compatible with the prevailing political, social, and economic characteristics of what is largely a non-industrial society. In addition to the full range of the organizational and administrative problems that face the manager of an enterprise in the more highly developed economy, the manager in the under-developed setting must mediate between the requisites of an industrial order and the pull of tradition. There is a school of thought that argues that the pressures for uniformity will prevail over those for diversity in the industrializing States and that industrialism will sweep before it the behavioural patterns of prior times. Perhaps this is so but the proposition has nothing to do with the experience of a specific project where, all too often, a contrary proposition may be a more accurate description of the state of affairs. Technical competence, thus, may be a necessary condition but quite often it will not be a sufficient condition for managerial success. In many cases, the manager will have to be at home both in the new world of modern industry and in the older tradition-ridden society. The extent to which this is so will vary, of course, from nation to nation and within nations from region to region.

Maximizing work force productivity, at least at the outset of a project, may depend upon management's success in finding just the right combination of industrial discipline and deference to tradition. In relating to the political environment, the manager may have to cope with such factors as a capricious tax system, an overly ambitious social security code, and continuing shifts in the political power structure.

At the same time he must be alert to opportunities for slipping away from the restraints imposed by traditional behaviour patterns.

This is a tall order for the industrial project manager, of course, and it underscores the main point of this section of the paper: in formulating requirements of skilled personnel for the project, the usual concern over quantity of skill, should turn, in the case of management, to a concern over quality.

Some loose generalizations in terms of management quantity can be made. Generally speaking, a large and complex enterprise will require higher ratios of management to non-management personnel than small and simple ones. In particular industries, certain ratios of work supervisors to production personnel seem to produce better results than others. The contention, here, however, is that these are secondary considerations. The first concern within the industrial project should be over the quality of top-level management.

Though the challenges to management in the developing economy are substantial, the opportunities for constructive action are abundant. Often times, relatively, slight changes in such matters as work flow, material handling methods, and work motion, can produce large increases in output. And traditional behaviour patterns are not in all cases incompatible with industrialism. As often as not, however, it takes managerial ingenuity to discover and take advantages of the compatibilities.

B.9 Summary of Lectures

by

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Education and Manpower Planning

Two decades ago, we did not know enough about how to apply our vast resources for effective social and economic development. We have run through a series of innovations - projects more often non-related to and isolated from the basic problem of a nation bent on development.

At least one thing we have learned, however, is that the social and economic conditions existing in developing countries result mainly from the under-development of the people; thus due to more widespread recognition given to the significance of human resources in economic development and the emphasis on manpower development planning, astounding statistics are beginning to pile up which emphasize the tremendous task ahead.

According to labour force projections as assessed in 1963 by the United Nations Annual Report about two-thirds of the world's manpower resources are in the developing countries. Also, it is estimated that about nine-tenths of the world increase in the working population during the remainder of the century will be in those countries.

It is only recently that development planners have begun to realize that progress in economic development can be more rapidly accelerated through the improvement of the knowledge, skills and capacities of human beings. Even though major emphasis still are placed on capital investment, considerable attention is being focused on the development and utilization of human resources as a means for increasing the capacity for development.

Manpower Development Strategy

Although recognition of the significance of increasing a capacity for development is only a partial answer to the overall manpower problem, nevertheless it serves to pinpoint the more complex problem of developing a strategy for implementing a programme for manpower development.

A rather well-organized scientific method has been developed for use in determining manpower needs as based on economic development projections. However, there is not yet an agreement upon systematic method for use in developing a strategy for identifying the most appropriate systems and methods for training the work force and implementation of programmes for producing the levels of skills required.

One of the major factors contributing to this problem is that a capability for developing an appropriate strategy requires a different set of skills and knowledge than those normally had by manpower planners.

Economists and developers sometimes are concerned mainly that shortage of technical skills do not become a bottleneck to growth. But solution of the manpower problem is equally related to the quality of education and training, both formal and informal, and proper attitudes toward work, and the efficient allocation of labour. The value of investment in manpower depends both on the nature of the input and its efficient employment in the nation's development. A programme for manpower utilization must give first attention, then, to relevance, content and quality in education and training and to the means whereby trained personnel will be properly distributed and utilized in suitable employment.

Manpower Planning as Related to Education Planning

Education planning and manpower planning have been conceived separately and too narrowly in the past. Education planners are required to consider the division of resources among the competing claims at the several layers of formal education, and between formal schooling, training programmes and the more informal processes of education. Planning models as adjuncts of budgets must take account

of quality, extensions of coverage, and orientation of content as well as costs. Methodology in education planning is partly demographic (projections of school populations), partly actuarial (taking account of growth rates, dropout rates and the like), and partly qualitative (pupil-teacher ratios, etc.).

Manpower assessments have been typically concerned with estimates of the quantities and occupational characteristics of the existing and needed supply of skilled persons in relation to specified rates of growth and patterns of development over the planning periods.

Both approaches have flaws: education plans are likely to be more or less abstract and self-contained within a schematic approach to educational institution building as such. Manpower planning has been chiefly dependent upon rather general census data and on employer surveys which provide a factual floor for projections, but often become unrealistic in their views of the future. They have also used analogies between developed and undeveloped countries, and have employed fixed-coefficient formulas which overlook qualitative factors of technology, productivity, managerial skill and the intensity of labour, and hence, may become progressively unrealistic when economic environments are seriously under-developed.

The two approaches need to be linked together conceptually and operationally, first taking account of the qualitative relevance of education and training to existing occupational needs and requirements, and considering carefully the institutional arrangements and prospects for efficient distribution and utilization as well as the more or less hazardous projection of quantities. Education and training and manpower planning should be linked administratively both in the operations of governments and in the organization of international technical assistance programmes. This linkage is beginning to appear, notably in several Latin American countries where the disciplines of education specialists and economists are brought together in guiding the programmes for human resources.

Manpower Development and Utilization

The problems of manpower development and utilization cover a broad area; in fact, they are dimensions of all aspects of the entire development process. In considering this field even short-term observations must range widely, and consequently some views and reactions are more firmly based than others. The main steps that would need to be taken to establish a firmly committed programme for human resource development and utilization must be clearly identified and adhered to.

The programme formulated should take full account of the skill-generating value of work experience and work-related training, both formal and informal, in combination with formal schooling pertinent to the essential sectors of development. It will recognize that investment in education and training needs to find primary justification in the attainment of suitable and productive employment of members of a trained work force. Technical assistance programmes should be devised to help people learn the skills and develop the institutions to use more effectively their own resources. This is the objective of teaching and learning in the development setting; when it fails of realization the cultural and civic values of education and training may be negated and lost.

Investment in Human Resource Development

Investments in human resources and in real or financial assets are inter-dependent variables. They should not be regarded as competing investments. The value of outlay in one may fall towards zero if investment is not made in the other. Investment in the ingredients for better agriculture, such as irrigation projects, fertilizer production, better seeds and machinery, for example - may be lost if parallel investment is not made in agricultural expertise and the human means of demonstration and communication to farmers. The problem is thus one of judicious selection and proportioning rather than choice of institutions or alternatives.

In practice the investments in education are determined by a combination of institutional, political and economic factors. Since the productivity of these investments cannot be calculated very usefully in arithmetical terms at this stage, the course to follow is to match the investments which can be afforded with commensurate care in directing expenditures to assure a high level of utilization and to minimize waste.

Related Institutions

This objective requires broadening the concept of the educational establishment beyond the formal structure into employment-oriented areas such as on-the-job training and apprenticeship, skill-generating work experience, and participation in various job-related activities of institutions which are occupationally-focused, such as professional and scientific associations, business and management groups, trade and labour organizations. These kinds of institutions have great potentialities when they can be developed and utilized. These various mutually reinforcing processes of human resource development utilize and interrelate the several stages of education, including adult and continuing education, stimulate an understanding of occupations and occupational opportunities, and can support and provide guidance to education and training institutions.

Education Aims

In the broadest sense the processes of education serve two large aims - social and cultural development, and the preparation of manpower required for economic progress. These objectives are not in conflict; they supplement each other. But the latter purpose must be served if the former is to be realized. Uneducated, unemployed, under-employed and misfits do not contribute constructively to society.

Since education nor training alone do not create jobs outside of the institution, and by themselves neither can insure capable, imaginative participation in the labour force, over-education or over-training can be a serious form of waste and it is important to avoid overinvestment in particular segments of education or training.

The Development Concept

Much educational effort can be wasteful when curricula and teaching are not specifically directed into meaningful contribution to the major objectives of development. This relevance of education to development goals can begin at primary levels, and should be accented at each stage in the upward progression through the educational pyramid if in turn it is to penetrate downward through improved teaching and curricula.

To introduce a dominating concept of relevance to development goals in the educational system usually requires a revolutionary effort, but the effort should be made. This functional approach often collides with the rooted traditions of rote learning, and attacks the concepts of education as title to status, privilege, and a means of escape from the lot of less privileged and uneducated.

A development approach to education must be animated from the top - from the University and teacher training levels - where the development leaders, planners, teachers of teachers, and trainers of trainers, are produced. This approach must have the active support of the government beyond the verbalization of national goals and the schematic programme of the successive Five-Year Plans, and it must have the backing of each Ministry and agency which employs, utilizes, and directs manpower in development activities. This calls for a sharp break from the prevailing academic pattern in many countries with its image of formal educational attainment as a claim to status and would emphasize the instrumental value of education as a gateway to further learning and development through creative participation in the national life.

Attitude Change

Economic development demands a change in people and thus a change in society and its institutions.

Institutions tend to continue what they were established to do, keeping themselves relatively stable and resisting attempts at restructuring. An attempt to change an institution in any society is

confronted with problems, but it is more serious and challenging in developing countries. The main reason being that usually tradition is more revered, vested interests are more deeply imbedded and quite often the leaders do not have the professional competency or motivation to plan and implement an adequate strategy for restructuring the institutional system.

The quality and scope of development hinges on the capacity to produce a sufficient number of educated and trained citizens sufficiently motivated to adequately support effective planning and achievement of the social and economic objectives and targets for the development process.

If educational and training systems are to provide a country with active and productive citizens, their structures, type of programmes, duration of training, curriculum content, articulation between different types and levels of education must be flexible, well co-ordinated and efficient and produce high quality manpower oriented towards meeting critical development needs with a minimum of wastage or misdirection of resources.

Summary

I have spent some time talking about manpower and education planning, and development in general. Suppose we take a few minutes now to review briefly some of the statements I have made and perhaps use them as a step-stone to the next phase of our specific problem of organizing for administration and co-ordination of training activities.

- (1) A rather well-organized method has been designed for determining manpower requirements as based on National Economic Development Projections. However, we must be mindful that as the developmental process unfolds there will be many reasons to alter and revise the long-range requirements.
- (2) The skills for assessing the capabilities and role of institutions involved in the development process are of such a nature that specialized training may be required.

- (3) That education planning and manpower planning should be well integrated.
- (4) That investments in human resources and real financial assets should be related and inter-dependent and not be regarded as competing investments.
- (5) That investment in education and training needs to find primary justification in the attainment of suitable and productive employment.
- (6) That while general education should have goals other than those for occupational preparation they supplement each other and are inter-dependent.
- (7) That popular support for education and training be encouraged through the development and participation of professional, business and scientific associations, foundations and other forms of pluralistic democratic institutions.
- (8) That the relevance of education at all levels to the promotion and maintenance of the developmental process is essential.
- (9) A clear and active policy for full employment is an essential element of a comprehensive manpower programme.
- (10) Since the basic requirement for economic progress is the output of more and higher quality of goods and services concerted attention should be given to improving the capabilities of institutions concerned.
- (11) Education and training services require an appreciable investment in human and material resources. Over-training, mis-directed training, duplication of effort and facilities and less than optimum effective training based on need, can result in a waste of resources, retardation of the developmental process and become a source of discontent and criticism among students, employers and the general public.

- (12) The elements of manpower planning, development and utilization are all parts of a rather complex and flexible system. The elements must be well identified, integrated and interdependent, yet for all practical purposes must be so organized as to permit the development and utilization of a wide variety of purposeful institutions.

C. TECHNIQUES OF TRAINING CO-ORDINATION AND PROGRAMMING

C.1 Summary of Lectures

by

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Lecture 1

Manpower Data Collection and National Register

For the work this morning, although specific in character, the method of approach is general and will give you good background, I hope, for developing a survey in any subject-matter field. The one I will be dealing with is perhaps the most difficult in survey work although at first glance it seems simple - manpower or labour force.

Most books on the subject are "cook books" in approach. They throw in the ingredients with no understanding of the inter-relationships and thus there is not sufficient background for making desirable or necessary modifications in approach. This morning - together we will develop a survey questionnaire - facing the problems of concepts and wording. A properly designed questionnaire is the heart of all data collection which is a pre-requisite for planning.

First a few words about:

1. The organization: No matter how large or small the organization there are three primary functions. First there is management or the policy-making body which is responsible for the survey design and specifications, the analysis, tabulations, questionnaire wording, and decisions regarding timing and budget. Then there is the field operation which is responsible for administration, recruitment, control, etc. of the field force and the collection procedures and such matters as training enumerators. Third, we have the tabulation requirement which is the process of recasting the questionnaire entries into meaningful statistical summaries by use of computers, card punch and sorting equipment, or through the use of "hand counts" by a clerical staff.

2. The first step in the design of a questionnaire is to prepare and design your tabulation outline. This is necessary to clarify your thinking in regard to the data you wish to collect.

The labour force by age and sex					
Age and sex	Total persons	Labour force		Unemployed	Not in labour force
		Employed			
		At work	With a job but not at work		
Males					
14 - 19					
20 - 25					
Females					
etc.					

As you can note this tabulation outline spells out your conceptual requirements - age, sex, employed, unemployed, etc.

3. Let us suppose a labour ministry recognizes and is concerned with unemployment and wishes to quantify the problem. Is it simply a matter of mounting a sample household survey and inquiring if anyone is "unemployed"? Clearly it is not. For in common parlance "unemployed" means "not working". But we have many persons not working for a variety of reasons that we do not wish to count, such as "disabled", "children", and "housewives" under certain circumstances, etc. So what first of all we must do is to define clearly in our own minds precisely what we wish "unemployed" to mean and then attempt to convert that definition into simple understood language.

We may consider "willing and able" to work as a suitable definition but if we examine that notion closely we note a strong subjective element in "willing", i.e. willing but only under certain conditions. Thus an objective definition is required. A person taking active steps to look

for work is a reasonably objective test. Thus "are you looking for work?" is a suitable question to determine unemployment. However, are all persons looking for work, "unemployed"? No, for some persons may be looking for work although they are already employed. Thus we see complications arise, for if we wish to count unemployed we must also count the employed (a valuable statistics in its own right, anyway). Here again we face the same set of conceptual problems and approach them in the same manner. Can we legitimately inquire if a person is employed? Perhaps so, but experience has taught us that many persons especially self-employed do not consider themselves employed in the sense of being a wage-earner. Thus we look for wording that conveys the same thoughts to everyone, and through trial and error and primarily field testing because evidence in this work, as in law is of prime importance; we arrive at the questionnaire wording "Did you do any work last week?"

Amore simple concept but useful is one that follows up all the persons responding "yes" to the "any work last week" question regarding their hours of work. The format of the question, whether in check boxes for easier tabulation or a write-in for space-saving purposes is a minor concern. As is the distinction between "usual" hours of work contrasted to a request for the specific number actually worked (accounting for overtime, sickness, etc.).

We will recall that we converted our employed concept into "work" terms, but since we are interested in a count of employed persons are they conceptually equivalent? No, there is a component missing. This part concerns those persons who are employed but did not work during the reference period for reasons of illness, weather conditions, or vacation. Which results in another item to cover such cases. Appropriate wording to cover this concept may take the form "Even though you did not work do you have a job or business?".

In the design of the questionnaire you do not want any awkward interview situations to take place. That is, you do not wish to antagonize your respondent by asking her if her 5-year-old child works, or if a

clearly disabled person works. This calls for further schedule complications involving "skip-out" questions along the lines of age and disability I have suggested.

There are a number of other concerns such as collection, coding, and tabulation of occupation data, and the priority order of recoding since it is clear that a person can properly be both working and looking for work. I think this morning through our question and answer method we have learned an approach; a way of dealing with these problems that I hope will stand you in good stead.

National Register

A National Register is a detailed inventory of a nation's manpower resources. Such an inventory is a placement tool primarily for the nation's use in allocating scarce human resources. As such it relates to high-level manpower - technicians, scientists, engineers and those engaged in managerial activities. From its purpose one can see that the type of information needed, unlike statistical summaries, would require detailed personal information, maintained currently in directory form; such as name, address, wage and salaries and especially detailed occupational information.

In the developing countries, since the greatest proportion of such personnel are engaged by the government, it is not too difficult a matter to collect and keep the data current. In addition to government sources, large establishments, universities, and professional associations can be solicited for help in mounting a survey and supplying information.

In addition to the placement facility this provides and a realistic appraisal of manpower resources for implementing new projects, a host of analytical studies can be based upon the National Register data. For example, studies can be conducted on trend analysis in terms of wages, educational and occupational cross-matrix analysis, important work in occupational mobility studies, and other cohort analysis work.

As may be recognized, the key to the programme is an accurate and precise classification of occupations. Since the work functions in the technical and scientific fields are highly specialized, generalizations into broad categories will not serve the purpose. Also, because the functions are so highly specialized and detailed, no single person can master the classification system. This means that one must resort to consultations with the specialists in the field (usually members of the professional organizations or university faculty members) to get a detailed listing of the specialists involved in the general occupational categories. To facilitate the respondent's accurate recording of his work it is necessary to submit such listings in the form of a check-box sheet - along with defined instructions. It is best if such listings can be separated under broad headings and identify a respondent in terms of such a general heading so he is not burdened with too much paper review.

Lecture 2

Employment Service Mechanism

Manpower planning is basically - if one word were to describe it - matching. Matching supply and demand for skills. It refers to the future (five-year plans, ten-year plans, etc.) given a set of policy goals in terms of schools, hospitals, factories or other economic, plant, equipment and facility goals; it is a determination of the manpower requirements to fulfil that goal; that is, a set of future occupational requirements. Thus an occupational distribution for the future is determined and then a plan of training or development for meeting the occupational requirements, or creating the supply to meet the anticipated or planned demand. The realities of the situation, of course, often times require modification of future facility and production goals in recognition of the anticipated supply, i.e. the supply or anticipated realistic supply modifies the future goals. Thus accurate

matching is the key to success. This is at best an art. First because the future is so uncertain. Second because as has been emphasized earlier, in this age changes are so fast and dramatic that today's way of doing things is often outdated in a few years - new combination of production, new materials and machines - computers, atomic energy, plastics, etc. It is clear that in training youngsters flexibility should be a keynote. Imagination, innovation, modification, should be your watchwords.

But this is tangential to today's topics, which I feel is a more practical problem. The same in a sense, but rather than attempting to cope with the uncertain future it deals with the present. Matching is required not only for tomorrow but also for today and perhaps more importantly since people live in the short run. Plants need workers today. People need jobs today. How to systematically go about matching this supply and demand is today's topic. Are there workable mechanisms for accomplishing this? Can government institutions guide and help in this work? Are there other devices for facilitating this work?

Of course there are and I have no revelations but perhaps a brief outline will be helpful:

- the public employment placement service;
- appointment boards in universities and colleges;
- appointment services of profit-making private agencies;
- informal measures (advertisement - personal recommendations).

Since experience is a good teacher, a little history may prove useful. At about the turn of the century, the western countries introduced employment services in the larger towns and cities, basically for the unemployed for the relief of distress due to unemployment; in a sense an information service which gears surplus labour to the centres of worker demand; its purpose, to collect and distribute information about employment and unemployment.

In the United States of America, in the years of heavy immigration, the Immigration Service developed an employment information programme to encourage alien immigrants to settle in centres of employment opportunity.

A nation-wide system of employment services was established in the USA in 1933 designed to exchange labour market information and to provide an orderly movement of workers between areas.

In most countries not only placement services for unemployed but also unemployment insurance were introduced.

Unemployment insurance and placement services were co-ordinated into the same service because claimants for unemployment benefits have to be registered and found suitable employment.

This development was a controlling factor in the types of persons served. A large proportion were unskilled, casual, domestic and service workers, and the result was that public employment services were looked upon as dealing with less qualified applicants and unattractive jobs.

During the Depression, service was mainly concerned with unemployment insurance.

Nevertheless, work was proceeding on effective placement. For example, in the USA, an occupational research programme initiated in 1934 resulted in the Dictionary of Occupational Titles which enabled the employment offices to classify vacancies and applicants uniformly. Thus again, the important gearing principle. After the 'unemployment offices' of the depression period, a new type of employment service developed, the 'employment office', exclusively concerned with placement and clearance.

In the early days, the main tasks of the placement service were to provide information to workers and employers on the availability of jobs and job seekers. For placement to be effective more needed to be done. In Britain, special training schemes were devised after the first war. In Belgium also re-training was part of the programme.

In the United States the services now provided by employment offices cover such diverse activities as:

1. Development and application of aptitude and performance designed for maximizing skills usage.

2. Occupational and job analysis in order to specify the requirements for particular jobs.
3. Inter-area recruitment of workers if demand and supply conditions develop differentially (regional exchange of information).
4. Research and forecast on actual and developing labour market conditions and disseminating information to authorities and employers.
5. Stimulating the development of new employment opportunities where these are desirable according to the availability of labour resources (by encouraging plants, private or public, to locate in surplus manpower areas).
6. Providing training or re-training facilities for workers whose skills have become obsolete or for handicapped or elderly workers.

The public employment services provide services for all groups. To the worker - counselling, training, special financial and technical assistance, inter-exchange and exchange of information and placement. To the employer, defining and redefining his needs (staffing patterns) specifying job requirements, organizing and staffing his plant, identifying job relationships (for transfer or promotion) in recruiting and selecting suitable workers.

At the national level the public employment service can be the main instrument for implementation of manpower policies - best illustrated perhaps by the Swedish labour market organization. This comprehensive system carries out a wide variety of functions such as data collection on labour market conditions, promoting geographical, and occupational mobility of labour, maximizing the available supply of manpower, smoothing out seasonal and cyclical changes in employment, stimulating the location or relocation of industry in labour surplus areas, co-ordinating other central and local government agencies, planning of public works, supervising unemployment insurance and controlling entry of foreign workers.

A few words of caution - the major problem in running a successful employment service is the employer's and job seeker's confidence. The referral of poorly matched candidates for a job will soon discourage both workers and employers from using the service. Successful matching of job and candidate is best facilitated with a dictionary of job activities so that the service, the employer and the job seeker can talk "the same language".

The physical location of offices is also an important ingredient of success and fairly obviously they should be located centrally in an easily reached location and of course in a labour market area.

A major policy consideration concerns competing services - governmental and non-governmental. Basically the concern regards the emphasis. If job placement is the primary concern then the more outlets, the better. However, if emphasis is upon the policy-making function of smoothing out cycles, data collection, etc. then a single governmental body will be more efficient.

C.2 Summary of Lectures
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Lecture 1

The Role of the Ministry of Labour in Skills Training

One of the ways by which a Labour Ministry can most effectively contribute to the accomplishment of its country's economic and social progress is through development of the labour force.

In all developing countries the pursuit of learning as a means of preparing for jobs and careers is a goal of the vast majority of the population. The social and political pressures for education and training are powered by economic motivations.

The Ministry of Labour because of its peculiar responsibilities is in a key position to identify manpower problems and to contribute to their solution by providing training or by stimulating and co-ordinating the activities of responsible agencies to meet demands for an effective manpower training programme.

The success of such an activity is dependent on certain principles which may be used as guidelines. The most basic principle is that the agency must develop its training policy concerning: goals and objectives, level of staff capability and means of maintaining the required capability, relationship to other agencies concerned with the problem and duties and responsibilities for administering the programme.

Basic Concepts for Training Activity

The following concepts are considered appropriate as a basis for developing a policy statement and guidelines for an effective programme:

1. Training programmes should be related to the country's economic and social needs and ability to support them.
2. Optimum utilization is made of local human and physical resources.
3. Institutional building through the selection and training of such key personnel as training directors, co-ordinators, supervisors, instructors, teaching materials and counselling and placement specialists, is essential.

4. A good fundamental education is a basic factor in developing vocational literacy and raising the level of skills and effectiveness of the work force.
5. Formation of the work force is achieved by a judicious combination of training systems, methods and techniques.
6. Legislation and administrative "machinery" are essential in establishing priorities based on needs, ability to support and to prevent duplication and waste of human and financial resources.
7. The participation of management and labour in the planning, organization and operation of training programmes is essential.
8. Training is not always the most effective and economical tool for use in obtaining higher levels of quality production. Quite often desirable results can be obtained by introducing new equipment or process or by increasing employee's pay and opportunities or even by instituting better methods of selecting employees.
9. In many instances manpower problems result not from the lack of training but from the inadequacy of the training being provided.
10. As society, industry and business processes become more complex there is an increasing need to upgrade the competency of the training technology.

Occupational Training Requirements

The process of developing the skills, knowledge, abilities and attitudes of the work force is a never ending one. There are at least four forces generating need for occupational training: replacement requirements due to death, injury, retirement and emigration; expansion requirements flowing from growth of existing establishments and creation of new ones; productivity requirements arising from the need to introduce better technology on the farm, and in the factory or office; and job mobility requirements.

Teaching and Learning the Basic Process in Training

The basic purpose of training is to shape or reshape the behaviour pattern of an individual. The desired behaviour or condition is brought about through learning. Consequently, the basic function of a teacher is to provide experiences in which learning can take place. The management of learning is concerned with the technology, processes, skills, methods, techniques and equipment used in the development of desirable behaviour patterns.

Many innovations or systems have been developed for the purpose of providing occupational training.

Some of these innovations are: apprenticeship; on-the-job or in-service; vocational schools; manpower training institutes; vestibule schools; correspondence study; part-time co-operative; vocational literacy programmes; educational TV, etc.

There is one process common to all of these innovations - teaching and learning. What makes them different is that they have different goals and objectives and are designed to meet specific conditions of the trainees, working conditions, training requirements, levels of funding, etc. There is no single method or system that can be used effectively to meet all the skill needs for a qualified work force. It requires an understanding of the various systems, methods and techniques and a judicious use of them based on needs as related to available resources.

Labour Ministry Training Services

Naturally Labour Ministries' capabilities, responsibilities and even an understanding of how they can fit into the overall governmental structure and contribute to the development of the work force vary considerable. A listing of services performed by some ministries may be helpful in stimulating interest in developing a greater capability for service.

Labour Ministries do perform in varying degrees the following services as related to the development of the work force. The services may be of a stimulating or co-ordinating nature but in some instances are provided directly.

1. Training counsellors, employment interviewers, safety inspectors and supervisors and instructors, apprenticeship supervisors and co-ordinators, job analysts and manpower planners.
2. Assist in the development and training of apprenticeship joint labour-management committees.
3. Assist in the development of local and national vocational education and training advisory committees.
4. Provide technical services to industry and business for the purpose of determining training needs and development of suitable programmes - apprenticeship, on-job, foreman training, safety, etc.
5. Assist in developing training clauses in Labour-Management Contracts.
6. Development of legislation providing for protection and incentives for on-job trainees, apprentices and part-time co-operative students.
7. Developing the concept of the dignity of manual work.
8. Promoting training clauses in government contracts and loans.
9. Development of associations or societies for training, industrial relations, personnel management, employment security and safety personnel, etc.
10. Encouraging the development of a wide variety of evening schools, correspondence courses, seminars, conferences and training programmes available for skill improvement of workers.

COMPARATIVE ANALYSIS OF SOME BASIC SYSTEMS FOR OCCUPATIONAL TRAINING

Apprentice Training

Apprenticeship in the skilled occupations, is a system of training which involves a mutual agreement between the employer and apprentice who as a paid worker, performs a pre-determined series of on-the-job work operations which cover the all-round skills of a recognized trade under the guidance of a skilled worker and who studies off the job certain prescribed technical subjects related to his work assignment and receives a certificate of completion when the training is completed satisfactorily.

For years employers and education authorities have searched for ways to speed up the acquisition of skill by the unskilled. Many innovations have been the subject of experimentation. The pendulum has swung to and fro several times from one extreme of unstructured work exercise to the other of trade schools. Neither extreme has met the needs for an adequately skilled work force.

A structured apprenticeship system conducted jointly by employers and workers through the assistance and co-operation of government has proved to be the most effective and economical means for the development of skilled craftsmen from the standpoint of cost of training, ratio of level of skill reached to length of training period and ability to satisfactorily apply the acquired skills to a variety of work situations including the levels of technicians, foremen and supervisors.

In most developing countries the lack of a traditional system of apprentice training is one of the basic causes of the low level of skilled manpower and the absence of a capability to develop a small business industry.

Because of the lack of a tradition of apprenticeship in developing countries it is difficult to implement the system. However, it has been done successfully in a few countries and as more is learned about how to adapt the system to different cultures it will become an effective part of the overall manpower development activity.

Ministries of Labour have the prime responsibility for development of the appropriate legislation and guidelines for a national apprenticeship system. Not only is it a "Core" programme for the development of skilled craftsmen, it is also an effective vehicle by which employer, labour and government can construct a joint working relationship leading to economic and social progress.

On-Job-Training

Most people engaged in productive work have learned on-the-job the majority of the skills they are presently using. For example the basic principle of apprenticeship is on-the-job training in a productive work situation.

Because it requires no special space and equipment, on-the-job training will probably continue to be the most common method for training workers particularly in developing countries. The chief reason for this approach is doubtless its practicality. The employee produces and earns while he learns. Many employers not cognizant of the disadvantages of the method when used inappropriately often find that their training costs are much higher than if they had used a more suitable combination of methods. There are of course certain skills that can be learnt only on the job while there are others which can be taught more effectively and less expensively off the job. Ministries of Labour have found they can provide a most welcome service to employers for the purpose of helping them plan, organize and conduct effective on-job training programmes. Also to assist in the development of off-job training programmes for skill improvement of present workers and pre-employment training for new workers.

One of the chief arguments against on-job training is that the job has for its primary function production of goods or services, not training. However, it is possible to reach a compromise when it can be shown that the training is an investment that pays equitable dividends.

Some basic guidelines for a successful on-job training are as follows:

1. Appropriate selection of trainees as to age, physical and mental abilities.
2. The labour-employer bargaining agreement should contain a clause stipulating training conditions and requirements.
3. Workers responsible for transmitting their skills to the trainees should be designated on the basis that they are capable of providing the prescribed training.
4. The ratio of trainees to the number of employees should be consistent with the needs for additional workers in the establishment where training takes place.
5. Off-job or supplementary training should be provided when adequate skills are not available at the on-job site or when such training is more appropriate.
6. Consideration should be given to the economy of providing pre-employment training to develop an appropriate level of vocational literacy.
7. Each establishment conducting a system of on-job training should have a simple training plan concerning training policy, procedure for selecting trainees and a training timetable for meeting employment requirements (a ten-hour training within industry course has been used by many Ministries of Labour to develop a TWI capability) within an employing institution.

Vocational Education and Training

Vocational Education as contrasted with on-the-job training and other forms of training specifically directed towards job preparation and job advancement has a much broader concept of responsibility.

The goals of a comprehensive vocational education system includes not only preparation for work in an occupation but the development of

understandings, attitudes and work habits which are essential to successful employment and living as a contributing member of the community.

An inherent feature of a developing industrial economy is that it requires an increasing higher level of work skills and a corresponding higher level of education and technical knowledge in a work force which is continually being faced with the need to adapt to changing skill requirements.

Organized training for the construction trades industry and service occupations in most developing countries has been carried on by "technical" schools. The ineffectiveness of the schools has resulted from the lack of close articulation with the needs of the employing institutions.

Few of the schools have adequate equipment, tools, curricula or teachers familiar with the machines and processes used in industry and business.

Furthermore, such schools are limited in the scope of training which is confined to a few occupations which can be carried on in a classroom or school shop environment and then only in communities sufficiently large enough to justify them.

The more developed countries have consistently broadened the scope of their vocational education systems in order to meet the needs for a more diversified, knowledgeable and skilled work force. Greater emphasis has been placed on education and training at the secondary level for the skilled trades, distribution, office and service occupations. This has been accomplished through better articulation with labour organizations, employing institutions and the manpower technical services of the Labour Departments. A wide variety of different forms of training have been provided such as, part-time co-operative, related instruction and supplementing courses for apprentices, skill improvement evening courses for employed workers and more effective vocational

literacy programmes in pre-employment training courses. An important function of the Labour Ministry is to provide leadership in making the existing vocational education system a more effective and functional part of the national educational establishment.

Manpower Training Institutions

Developing countries particularly those planning a rapid industrialization programme have been faced with the need for a skilled work force adequate to support these programmes. Many of them felt that the rigidity and inflexibility of the existing vocational education system coupled with the difficulty of obtaining tax funds to develop an adequately functioning system made it necessary to organize a new and different system. The chief differences between the two systems are that under the new system funding is provided through a payroll tax on the employing institutions who by law are required to maintain a ratio of trainees to the number of employees, and employers have more control over the operations of the training programmes, many of which are conducted within the employing establishments.

There are wide variations in individual countries' legislation, administration, policy and operational procedures. Common features of the system are the methods and techniques used in teaching and learning. Several countries have recognized the danger of competition between the two systems and are taking steps to prevent duplication and waste of financial, physical and human resources. This is being accomplished by establishing joint instructor training and teaching materials preparation centres and the joint use of physical facilities and particular emphasis is being placed on the policy that the two systems are supplementary to each other and not competitive. Ministries of Labour, since they have no vested interest in either system, are recognizing that they can take a leadership role in making both systems more functional and effective as integrated parts of the overall manpower development programme.

Technical Assistance in Developing a Training Institution

In developing countries where little or no organized training has been in existence, there is generally a feeling that any kind of training is an improvement. This attitude quite often leads to establishing ill-advised non-related projects with a resulting waste of resources which at the particular time can be least afforded. Furthermore, it has been found that when traditional education systems with deeply embedded interests are not in existence, effective and modern training technological methods can be instituted much more rapidly, thus "leapfrogging" over the customary evolutionary approach which more modern societies experienced.

The development and maintenance of a strategy for the implementation of an effective system for the development of the work force skills is a complex process. It requires an intimate knowledge about: how people learn, the various methods of education and training, and articulation of those methods based on available resources, level of skills required by the employing institutions and the capabilities of the potential work force.

Of primary importance and the most effective method is to develop a manageable point of view concerning the task to be attacked. To do this, well-articulated, feasible, short-and long-range goals and objectives and operational procedures must be developed using as a guide the outline of concepts and principles stated above.

Within the overall manpower development programme there are basically two distinct types of institutions. One type has the responsibility for (a) establishing the goals and objectives based on the country programme for social, economic and political development (b) gathering and analyzing the statistics about the labour force and matching skills with needs and (c) developing a strategy for implementing a programme to develop the required skills.

Another type of institution is operational in nature and concerns the development of the people required to administer, supervise and operate institutions in general. Within the latter type of institution there are some systems concerned principally with the training of the labour or work force.

Labour Ministries are important focal points of leadership in the advancement and optimum use of manpower resources in the development process. They have major responsibilities for programmes designed to bring about tangible and steady improvement in the living and working conditions of workers and their families.

Employers as well as workers benefit from these improvements. Appropriate labour measures supporting skills training, properly applied, bring about greater efficiency and productivity in the work place and provide a larger market for the products of agriculture and industry. To perform their functions effectively, labour ministries should actively participate in the formulation and implementation of education and training programmes for the work force. They should also encourage management and worker participation and take the leadership in developing a "climate" for mutual participation and co-operation at the local, regional and national level.

Lecture 2

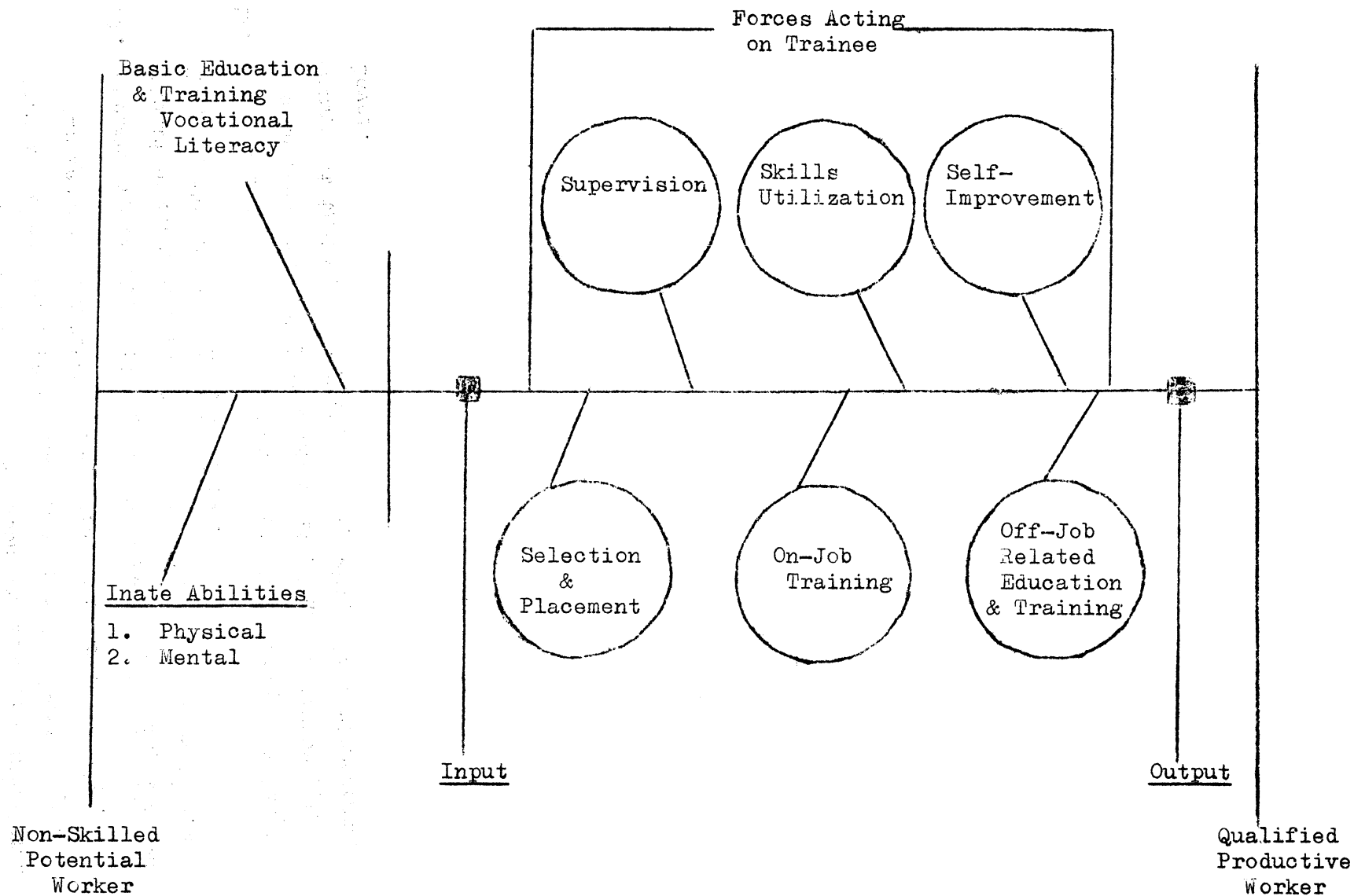
Conditions under which on-job training is feasible

(Presentation Outline)

1. Workers with whom the trainee is associated have an acceptable level of skills and work attitudes.
2. The nature of the work is such that task assignments can be organized in an increasing order of difficulty, thus providing a series of learning experiences leading to job competency.
3. The trainee is aware that there is at least one individual he can look to for sympathetic guidance, and assistance in meeting personal problems of adjustment.
4. There is in existence a written or implied agreement between the supervisor and the trainee concerning requirements for his performance and the employee's responsibility.
5. The work is of such a difficulty that it will challenge the trainee's ability and motivate him to improve his skills.
6. Trainees assigned to work have an appropriate level of innate capacity - mental and physical, to meet job requirements.
7. Trainees have an appropriate level of basic education or vocational literacy to meet job requirements.
8. Working conditions are of such a nature with respect to noise and other distractions, safety hazards and undue risks of damage to equipment and work performed that the level of learning will not be affected adversely.
9. Technical and other related information required for overall job competency not available on the job is provided for off the job.

10. The number of trainees and the amount of worktime of regular workers devoted to instructing them does not unduly affect their required performance standards and earning levels.
11. Workers engaged in work for which trainees are being trained should be in agreement with the activity and not feel that it is a threat to their job status.
12. Workers who are expected to transmit their skills to trainees should understand their responsibility and be motivated to carry out their responsibility at an acceptable performance level.

FLOW CHART FOR IN-SERVICE TRAINING



Lecture 3

Identification and Assessment of Manpower Training Requirements

Manpower assessments have been typically concerned with estimates of the quantities and occupational characteristics of the existing and needed supply of skilled persons in relation to specified rates of growth and patterns of development over the planning periods.

Economists and developers usually are concerned mainly that shortages of technical skills do not become a bottleneck to growth. However, today there is growing concern about a policy for full employment. Naturally this concept adds new dimensions of responsibility for economic and manpower planners, and thus creating a need for new and dynamic approaches for assessing manpower requirements.

A Full Employment Policy

A country committed to full employment needs to create sufficient productive jobs to: (i) reduce the unemployment rate to a fractional level; (ii) eliminate involuntary under-employment; (iii) employ the added workers who would enter the job market in response to strong employment opportunities; (iv) employ any normal annual increase in the labour force; and (v) absorb the workers displaced by rising productivity on the farm and in the office and plant.

How to create productive employment is perhaps the greatest problem developing countries now face. It is a problem, furthermore, which in terms of political dynamics and social implications promises to be more immediately explosive than the better dramatized race between food supply and population. Members of the labour force through the next two decades have already been born. Their numbers cannot be diminished by any population limitation measures other than the ancient scourges of famine, pestilence and war. Yet the distressing fact remains that present and currently projected economic growth rates based upon past patterns and policies will for many countries fall far short of providing employment for the predictable expansion of the economically active segment of the population.

Without a clear commitment to full employment as a national goal; without authoritative agencies at the highest level of planning and administration to influence and to co-ordinate national planning for maximum employment; and finally, without full utilization of comprehensive human resources developmental institutions to develop skills, match men with jobs and productivity with welfare, the developing countries are unlikely to find productive employment for their rapidly growing labour force.

Education - a Foundation for Manpower Development

When assessing manpower requirements in the light of current and future skill needs, manpower planning agencies analyze the programme and institutional requirements of education and training for two reasons: (i) to determine the skilled manpower requirements to support the institutions; and (ii) to encourage the adaptation of existing establishments to serve real needs rather than those based on the traditions of a pastoral-agrarian economy already in process of changing. Formal education is clearly an important foundation for developing the specialized middle- and high-level skills called for by a growing differentiation of occupations in a modernizing economy. Education also has goals which are broader than occupational preparation. Manpower planning, an essential element in human resources planning, must avoid the tendency to narrow these goals but rather to assist educationists in developing curricula which, by emphasizing general science, vocational literacy and study cast in terms of indigenous culture and development needs, thus narrowing the gap between the more prevalent tradition-bound academic education and level of preparation for productive employment.

The Focal Point for Generation of Manpower Requirements

Economic progress in developing countries demands a rapidly increasing level of output in products and services thus generating a relative input level of demand on the work force. This demand can be met by the judicious use of two methods; introduction of more modern technology

in the work place and improvement or expansion of the work force. Both methods may generate a need for three types of training: retraining for new skills, skill improvement of the present work force and training of new workers, and of course both methods dictate a requirement for the attention of manpower planners since new or changed manpower requirements are being established. This is particularly true when it is realized that the introduction of more modern technology may result in diminishing the number of jobs while at the same time generate a need for higher levels of skill for those who will be working. It is at this point that consideration must be given to the affect on total employment and other related characteristics of the development programme and the policy on full employment.

Since the production of goods and services is the basis for economic development it is logical to assume that the work place is the focal point for generation of manpower requirements. It is logical also to assume that this is the place where one would expect to have the greatest effect on the economy by the appropriate matching of human skills and jobs.

One of the crucial factors in manpower planning is the accuracy of the determined requirements in terms of quantity and kinds and levels of skills. The accuracy is dependent not only on the identification of the kinds and levels of skills required, but the degree of effectiveness in use of human skills to get the job done accurately and economically. Thus, manpower utilization - matching jobs and men becomes a crucial factor in the projections of manpower needs.

A programme for optimum manpower utilization must give attention to relevance, content and quality in education and training and to the means whereby trained personnel will be properly distributed and utilized in suitable employment.

Educational Planning and Manpower Planning

Education planning and manpower planning have been conceived separately and too narrowly in the past. Education planners are required to consider the division of resources among the competing claims at the several layers of formal education, and between formal schooling, training programmes and the more informal processes of education. Planning models as adjuncts of budgets must take account of quality, extensions of coverage, and orientation of content as well as costs. Methodology in education planning is partly demographic (projects of school populations), partly actuarial (taking account of growth rates, dropouts rates and the like), and partly qualitative (pupil-teacher ratios, etc.).

Education plans are likely to be more or less abstract and self-contained within a schematic approach to educational institution building as such. Manpower planning has been chiefly dependent upon rather general census data and on employer surveys which provide a factual floor for projections, but often become unrealistic in their views of the future. They have also used analogies between developed and undeveloped countries, and have employed fixed-coefficient formulas which overlook qualitative factors of technology, productivity, managerial skill and the intensity of labour, and hence may become progressively unrealistic when economic environments are seriously under-developed.

The two approaches need to be linked together conceptually and operationally, first taking account of the qualitative relevance of education and training to actual occupational needs and requirements, and considering carefully the institutional arrangements and prospects for efficient distribution and utilization as well as the more or less hazardous projection of quantities. Education and training and manpower planning should be linked administratively both in the operations of governments and in the organization of international technical assistance programmes. The programmes formulated should take full account of the skill-generating value of work experience and work-related training, both formal and informal, in combination with formal schooling pertinent to the essential sectors of development.

Investment in Education and Training

It should be recognized that investment in education and training needs to find primary justification in the attainment of suitable and productive employment of members of the work force. Programmes should be devised to help people learn the skills and develop the institutions to use more effectively their own resources. This is the objective of teaching and learning in the development setting; when it fails of realization the cultural and civic values of education and training may be negated and lost.

In the broadest sense the processes of education serve two large aims - social and cultural development, and the preparation of manpower required for economic progress. These objectives are not in conflict; they supplement each other. But the latter purpose must be served if the former is to be realized. Educated unemployed, under-employed and misfits do not contribute to progress.

Summary

1. A rather well-organized method has been designed for determining manpower requirements as based on National Economic Development Projections. However, we must be mindful that as the developmental process unfolds there will be many reasons to alter and revise the long-range requirements.
2. The skills for assessing the capabilities and role of institutions involved in the development process are of such a nature that specialized training may be required.
3. That education planning and manpower planning should be well integrated.
4. That investments in human resources and real financial assets should be related and inter-dependent and not be regarded as competing investments.

5. That investments in education and training need to find primary justification in the attainment of suitable and productive employment.
6. That while general education should have goals other than those for occupational preparation they supplement each other and are inter-dependent.
7. That popular support for education and training be encouraged through the development and participation of professional, business and scientific associations, foundations and other forms of pluralistic democratic institutions.
8. That a commitment to a full employment policy adds to the complexity and dimensions of the manpower planning activity.

Lecture 4

Training Systems, Methods and Techniques

(Presentation Outline)

1. The focal point for the generation of skill requirements is the work place where the production of goods and services takes place.
2. Training has for its purpose the development of skills that are required to accomplish a task or series of tasks.
3. Education and training are different processes from the standpoint of objectives but are similar in that teaching and learning takes place in both.
4. Education is concerned with acquiring knowledge and the capability for the use of skills.

5. Training is concerned with getting or acquiring skills.
6. The evaluation of training is the measurement of learning.
7. The evaluation of learning is the measurement of change in the individual's behaviour.
8. The management of learning is concerned with the processes, equipment, systems, methods and techniques utilized in providing learning situations for individuals.
9. Education and training systems are designed to accomplish certain objectives based on certain existing conditions.
10. The development and operation of a training system requires knowledge and skills concerning the learning process, education and training methods and techniques, and a capability to make judicious decisions relative to their appropriate utilization.

Lecture 5

Skills Training Development and Co-ordination

Organizing for the administration and co-ordination of national training systems is one of the most crucial and difficult aspects of the development process. When one considers the waste of human and physical resources and the retarding effect on development resulting from the lack of a concerted approach for development of the work force, it seems unbelievable that greater emphasis is not directed to an adequate solution of the problem. This problem is prevalent not only in newly developing countries, but in many of the more developed countries. Study of the problem indicates that the following are some of the most pertinent reasons that more progress is not made in organizing for administration and co-ordination of training systems.

1. The lack of understanding of the functional role of the following institutions in manpower development:
 - a. Private industry, business and labour.
 - b. National, State and local governments including Ministries of Education, Labour and Development.
 - c. International agencies.
 - d. The military and other public safety agencies.
2. The lack of constructive consideration for the following problems:
 - a. Funding sources and procedures.
 - b. Legislation and policy determination.
 - c. Development and utilization of training professionals.
 - d. Design, selection and adaptation of appropriate training systems.
 - e. Relationships between the existing multiplicity of on-going education and training systems.
 - f. Political aspects.

Some Indications of Need for Co-ordination of Training Activities

Many different administrative arrangements for planning, funding and conducting training systems have been used depending on such factors as governmental structure, political aspirations, personalities of the individuals concerned, available funding and technical assistance donor prejudices. Inadequate facilities, professional personnel, teaching materials and aids and finances are all competing for a bigger share of national and international human and financial resources.

Most developing countries today are emphasizing to some degree manpower planning, and as a result the machinery for the development of the required human skills to support economic and social development is being fabricated. Unfortunately, the emphasis in this area is on a proliferation of training institutions with too little consideration for effective and economical administration and co-ordination. All too often the net result is a waste of human and financial resources, and retardation of the development process. Some of the results of lack of appropriate organization for administration and co-ordination are as follows:

1. Duplication of effort by individuals in different schools and training agencies such as:
 - a. Translation of instructional materials.
 - b. Development of courses and teaching aids.
2. Duplication of facilities for pre-employment courses and skill improvement courses, teachers, equipment, buildings, etc.
3. Use of scarce skilled manpower to teach related subjects, etc.
4. Lack of articulation of levels of education and training.
5. Over-training in numbers and skills.
6. Training on-job when group institutional training is more economical and more feasible.

7. Training in institutions when in-service training is more economical and feasible.
8. Training for jobs that do not exist.
9. Purchase and use of too heavy or complex equipment.
10. Developing duplicate training facilities near job site when they exist in areas where potential workres are recruited.
11. Poor selection of trainees.
12. Inadequately trained teachers.
13. Teaching methods and techniques not appropriate to the needs of the trainees and the job.
14. Classes too small - too large.
15. Excessive trainee dropouts.
16. Lack of articulation of training content with job needs.
17. Lack of an effective trainee work placement service.
18. Existing training facilities not being fully utilized.

Duties and Responsibilities of a Central Training Authority

In order to prevent the occurence of such undesirable situations as enumerated above a central training development agency should be established which will have the following duties and responsibilities.

1. Assessing the capabilities of training institutions.
2. Determining if, when, and where there is a need to establish a new training facility or training programme.
3. Evaluating the effectiveness of training institutions.
4. Organizing when appropriate, industrial boards for the purpose of promoting training expansion, implementation, etc.
5. Evaluating the effectiveness of international agencies' training activities.

6. Reviewing proposed programmes for participant training outside of the country.
7. Follow-up on effectiveness of participant training and maintain a register.
8. Promoting co-ordination of the development and use of instructional materials.
9. Reviewing budgets and expenditures and recommending appropriate action for improvement and/or reducing duplication and waste of resources.
10. Reviewing legislation as related to implementation of manpower development projects and recommending changes, improvement, etc.
11. Promoting research and when appropriate co-ordinating research.
12. Promoting training programmes in the appropriate agencies for training professionals.
13. Determining priorities for training programmes based on skill requirements, possible funding and recommending action to be taken.
14. Developing an operational budget for the agency based on staff requirements and in some cases funding for special training or research projects.
15. Determining sources for funding of certain activities through assessing segments of business or industry and using those funds accordingly.
16. Establishing standards for levels of manpower development and promoting ways and means for measuring levels of accomplishment.

Central Training Authority Staff Capability

In order to effectively perform the duties as enumerated above the centralized training development agency must possess the following knowledge and abilities:

- a. Ability to identify and assess the capability of existing education and training institutions as related to a functional role in manpower development.
- b. A knowledge of the various education and training systems, methods and techniques that can be used to upgrade the skills of the work force.
- c. The ability to make judicious choices of institutions, systems and methods for use in manpower development.
- d. Ability to establish feasible goals and objectives for the production of manpower skills, quantitatively and qualitatively, based on existing and potential training facilities.
- e. Ability to develop an organizational plan for a viable programme based on available human and financial resources.

In order to properly carry on its functions a centralized national training development agency must have an established training policy on which it can base its decisions. Just to establish an agency even under legislation without spelling out of a definite training policy is hazardous to the success of such an agency.

Normally, the national manpower planning agency has the responsibility for planning the strategy for manpower development which should include a provision for the centralized training development agency, training policy and the methods for funding training systems. Some countries have elected to enact legislation which appropriately includes training policy, funding procedures and authorizing authority for the participating agency.

Policy Determination and Funding Methods

One of the most basic principles affecting policy determination concerns the method established for funding training systems.

Many innovations have been tried and yet there is not enough concrete information available to determine which is the most effective and economical method. For that reason some of the methods will be

reviewed. However, more basic than the funding principle per se are two directly related elements that are quite crucial to the success of a skills development programme. One concerns the policy for establishment of responsibility for training and the other involves the selection and application of incentives.

Decision in this area sometimes is a very complex activity. Some of the factors that contribute to the complexity are: political implications; existing attitude towards education and training on the part of government, management, labour and those who will be receiving training; current level of skills as related to projected needs and desired rate for acceleration of economic and social development; and capability and willingness of work skills production institutions for accepting and exercising responsibility for training.

Some developing countries after assessing the "climate" for implementation of a skills development programme have determined that it is more convenient and appropriate to gear their programmes to rather rigid compulsory systems supported by national legislation. Some countries who have taken this approach are Brazil, Colombia and Venezuela. These countries through the enactment of legislation, compel employing establishments to contribute through a payroll tax to regional and national training systems.

Venezuela which has a payroll tax system implemented through its National Apprenticeship Law requires employing establishments to maintain as a minimum 5 per cent of their employees in training status. However, establishments conducting approved training programmes may be reimbursed for the cost up to the amount of their payroll tax contribution. Brazil which operated its National Training System from a payroll tax of 1 per cent amended its law to allow for a reduction to 0.2 per cent when an establishment conducts an approved comprehensive training programme.

Some countries allow an employer to deduct employee training expenses from annual tax payments. Bolivia operates under a 5 per cent tax on employers' net profits. Australia has an arrangement whereby employers are paid to train apprentices in certain specified skill trades.

Most countries provide some degree of free vocational training, usually pre-employment, through government sponsored institutions such as those conducted by Ministries of Education, Agriculture, Civil Service Commissions and Military establishments.

Training policy varies from one extreme as in Venezuela which has dual systems, one of which is the Ministry of Education Vocational Education pre-vocational training programme which is paralleled with the rigidly enforced payroll tax supported programme to the other extreme such as the voluntary programme in the United States.

As might be expected one of the controlling factors in developing a policy is recognition that the success of a compulsory system is contingent on the use of effective enforcement machinery while the voluntary system calls for the use of appropriate incentives. However, there is no reason that an effective policy cannot be developed that blends the two systems into a flexible programme which takes into consideration both problems and objectives.

Training Legislation

There are at least two approaches to the administration and co-ordination of training: the compulsory method which is supported by the appropriate legislation; and the voluntary method which may or may not be supported by legislation.

The development of the work force is so essential to a nation's economic development that appropriate legislation should be enacted. Some countries have hurriedly passed laws that are too rigid and difficult to enforce and as a result, the programme for manpower development may be affected adversely. Legislation that has an element

of flexibility and permits judicious decisions by the administrative authority seem to be much more workable.

However, for obvious reasons it is suggested that before any legislation is enacted a thorough study should be made concerning the following items:

- (a) The role of private industry and business.
- (b) The role of national, State and local governments including Ministries of Education, Labour and Development.
- (c) The role of international and other agencies providing technical assistance.
- (d) The role of the Military.
- (e) The problem of funding.
- (f) The problem of legislation.
- (g) The problem of development and utilization of training professionals.
- (h) The problem of facilities - buildings and equipment
- (i) The problem concerning relationships with the existing multiplicity of on-going training institutions.

Guidelines for Co-ordination of Training Activities

Some factors for consideration as guidelines for use when organizing for administration and co-ordination of training systems are as follows:

1. The framework of the plan for administration and co-ordination is flexible and provides for constant review and revision as the programme is being implemented.
2. The design of appropriate training systems and the judicious selection of appropriate training methods and techniques is basic to effective and economical manpower development.

3. The policy of the co-ordinating agency is:

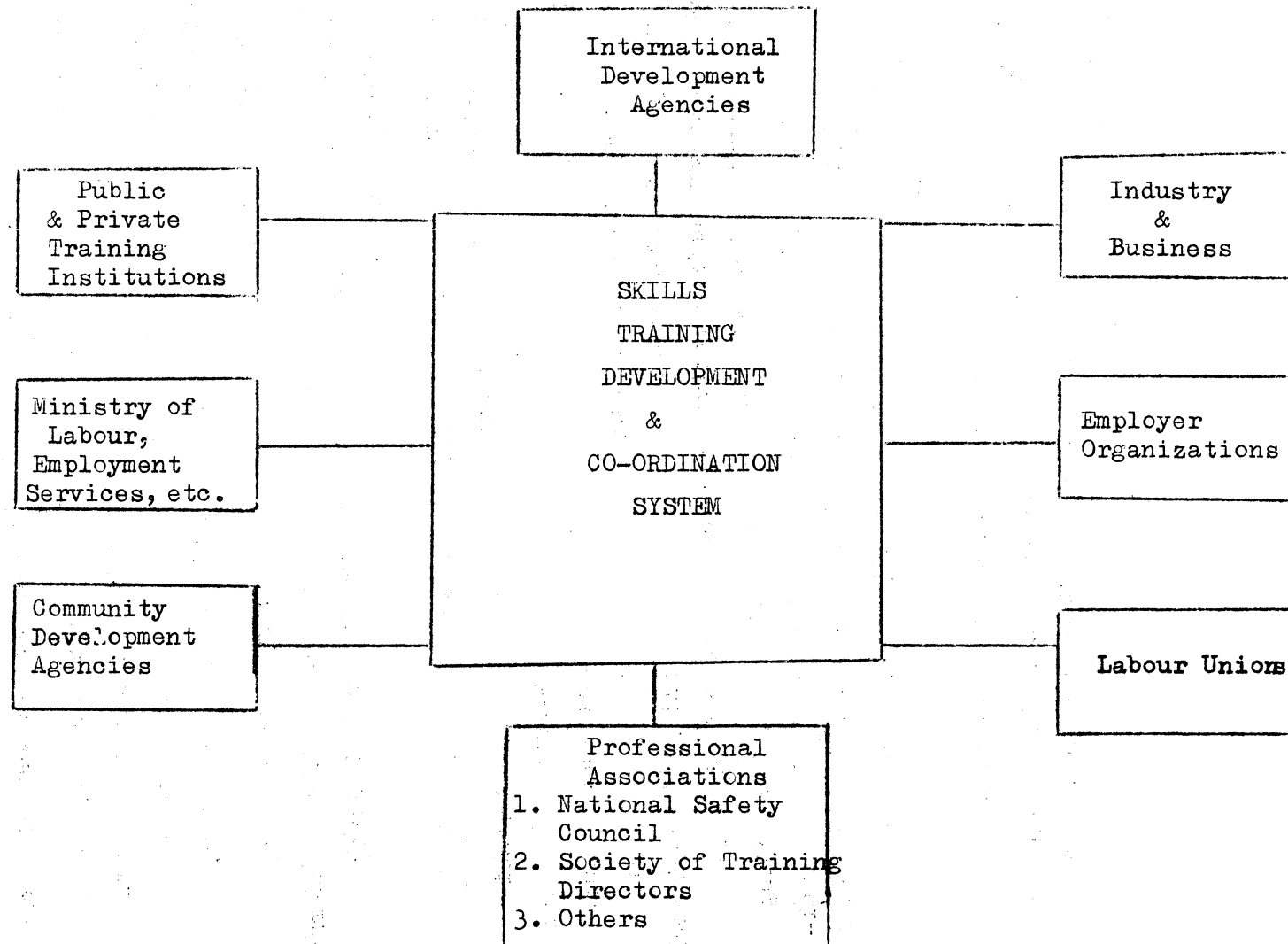
- (a) to build and strengthen the most appropriate training institutions and insure their capability to carry on effective training programmes;
- (b) to utilize its establishment to the fullest extent for in-service training for training professionals on rotation from education and training institutions;
- (c) to conduct training courses for only its own staff except when there is no potential facility available;
- (d) to make use of the principle of distributing available funds for training appropriate training institutions as an incentive measure thus strengthening them;
- (e) to place emphasis on modernization: in the management of training programmes, selection and training of teachers, development of curricula and preparation of instructional materials;
- (f) encourages and provides for management, labour, government and community responsibility and participation in the maintenance of effective skills training systems;
- (g) promotes the development of professionalism in development and operation of skills training systems;
- (h) endeavours to make training systems realistically related to the country's economic and social needs and ability to support them;
- (i) provides for optimum utilization of human and physical resources;
- (j) provides for the integration of technical assistance provided by international agencies and other private or government agencies as supplementary and not competitive activities;

(k) dedicated to the development of fundamental education as a basic factor in skills development of the work force.

4. An agency responsible for the development and co-ordination of training systems cannot logically be placed in a governmental agency that normally has responsibility for and a vested interest in educating and training the work force.
5. The administration of education and training systems should be the responsibility of the agencies and institutions concerned and not be attempted by the centralized national training development agency.
6. The Centralized National Training Development Agency will be most effective when it is made up of two levels of responsibility. One level should consist of representatives from such agencies as the Ministries of Development, Education, Labour, Defense, Agriculture, Industry and Business and the general public. This group should have the responsibility for decisions on policy and administrative practices as prescribed by law or proclamation but will have no responsibility for directing the administration of the day-to-day activities of the centralized agency. The second level will of a necessity be comprised of education and training professional personnel who will do the work of the organization.

The following chart gives a graphic picture of the organization for administration and co-ordination of national training systems. It is, of course, logical to assume that regional sub-systems could be organized in the same relationship.

AGENCIES AND INSTITUTIONS THAT REQUIRE CO-ORDINATION OF TRAINING ACTIVITIES



Lecture 6

Free Trade Unions in Economic and Social Progress

Today, 4 September, is the day that the United States celebrates as Labour Day. I think it is appropriate and I hope it meets with your approval that we deviate from the prescribed schedule and talk about free trade unions.

It seems advisable at this point to give a definition of free trade unions so there will be no misunderstanding about the kind of organization I am talking about.

A free trade union is an organization of workers whose main purpose is to obtain benefits for its members through collective activities and whose goals and leadership are selected through democratic processes.

"Brief comments about the following"

1. Development of the US labour movement as related to a craft or horizontal type of organization as contrasted with the industry-wide or vertical types of organizations.
2. Development of the US labour movement as related to political affiliations - the labour political party type as contrasted with the US concept of no strict alignment with any particular political party.
3. US labour union support and active participation in the development and operation of education and training systems at local, State and national levels.

Trade unions can assist in mobilizing the trained and specialized work force essential for an expanding economy. This can be done through both on-the-job and off-the-job training programmes. An example is found in the training programmes conducted by the African-American Labour Centre in Nigeria for heavy equipment maintenance, and in Kenya for sewing and garment manufacturing. In Latin America another labour

institution, the American Institute for Free Labour Development, is conducting skills training for construction workers in Guyana. Unions can be an important factor in determining the economic climate, increasing productivity, fostering sound labour-management relations, and influencing other factors affecting economic growth. As industrialization accelerates in developing countries, trade unions, properly oriented, will play an increasingly active part in grappling with social welfare, equitable income distribution, civic responsibility, and related problems.

As promoters of social progress, trade unions serve a two-fold function - (a) they enable workers to share more equitably in the economic rewards for their labours and thus provide an incentive to increased productivity; and (b) the resultant improvement in living standards stimulates further development. Trade union efforts to correct social injustices help to create a favourable climate for broadly based participation in community and national affairs and contribute to political stability. In developing countries as in any society, trade unions are concerned with problems involving the worker and his family, wages, working conditions, education, housing, youth, community development, and other environmental factors affecting human welfare.

Institution Building Role

Characteristic of developing countries is the pervasive shortage of, and the means for, building economic and social institutions that are representative of the general public. Since institutions can promote, or deter economic growth and social progress, it is essential to create those that increase popular participation and are directed to objectives for the common good. A multiplicity of representative institutions, which by their nature include worker organizations, is ordinarily needed to create the pluralistic society wherein the desired national development can best be attained. However, consideration must be given to the fact that institution building is not an end in itself and multiplicity must avoid the divisiveness of fractionalization.

One good example of the detrimental effect of fractionalization is what I observed in some Latin American countries. Some labour organizations split themselves into national political party segments to such an extent that they weakened their ability to present a collective front when bargaining with employers and carrying on other important activities that demand a unified effort.

Trade unions have a strong institution-building potentiality and because of their diversity in membership and interests can rise above parochial considerations and make decisions on a national-interest basis. As instruments for motivation and attitudinal change, trade unions are uniquely equipped to influence the acceptance of the hard decisions that the development effort requires. These decisions include the impact of union wage policies on a developing country's economic policies, the diversion of earnings from consumptive imports to capital formation through savings and social insurance investments, and recognition by rural workers of the importance of increasing agricultural production rather than migrating to urban centres.

Political Role

Labour leaders, officially and individually, often become key people in community and national affairs. In seeking a solution to their problems, sometimes unions tend to be more political than economic in their orientation and activities. Their tendency to rely on political solutions to labour problems in some instances may be motivated by factors which inhibit collective bargaining. Free trade unions with able and responsible leadership can overcome this tendency and be most useful in establishing sound and equitable labour-management relations and become a potent force for furthering economic development.

National Policy on Development of Free Trade Unions

It should be national policy to help create a suitable environment for sound industrial relations and progress. Industrial relations depend upon a variety of factors: government policy, the effective administration

of labour and business programmes, and the caliber of trade union and management leadership. The national policy should make provision for technical assistance in the development of a constructive government labour policy toward collective bargaining and other forms of industrial democracy.

It should be national policy to promote labour participation in a country's overall planning process and in specific sector programmes that strengthen and broaden the national consensus supporting development objectives and which help to minimize any possible conflict between immediate and longer-term interests. Reconciling the needs and objectives of trade unions and other requirements for economic development is a proper responsibility of national, State, and local government.

Programmes should be designed to assist in obtaining the productive commitment of trade unions to the requirements of economic development and modernization within the context of acceptable social and economic goals. Responsible unions' leaders can help shape the economic and social content of a country's development plan. Moreover, since they frequently articulate proposals affecting other segments of society, union leaders can help secure the desired social compact between labour, management, and government.

Labour Ministries and the Development of Free Trade Unions

A labour ministry is the policy making and administrative arm of the government responsible for finding solutions to labour questions and for administering the necessary corrective measures and controls; for creating an atmosphere conducive to harmonious relations between labour and management.

Labour ministries have an important role in formulating labour policy, in administering legislation affecting the labour force, in developing and implementing many manpower and employment programmes, promoting harmonious labour-management relations, and helping to assure labour and management's effective participation in national development.

An active manpower and employment policy is an essential requisite for sustained economic and social growth.

Active manpower programmes that strengthen free trade unions, develop the administrative competency of labour ministries, assist in the formulation and implementation of active manpower and employment policies and other activities affecting members of the labour force, their families, and related institutions are requisites for economic and social progress in any country.

Lecture 7

Concepts and Guidelines for Developing Training Activities

(Presentation Outline)

1. Changing attitude of people and institutions responsible for training.
2. The most appropriate agencies should be encouraged to organize training programmes.
3. Training of the production worker is not always the answer to improved production.
4. The multiplier effect should be considered as the basic principle for starting training.
5. Developing the climate for training is the most difficult but essential activity.
6. Policy, principles and guidelines are essential for effective co-ordination.

Different administrative arrangements for planning and conducting training programmes have been used, depending quite often on the political and governmental structure of the country concerned. As a consequence the relationship of the training functions to the structure and objectives of the economic and social institutions may vary, thus influencing the cost and effectiveness of manpower development systems.

Developing a "climate" for the development and utilization of worker skills

One of the basic requirements for economic progress is the output of more and higher quality of goods and services at the most economical cost. This being true, it is logical that primary attention be given to the institutions responsible for this activity. Some of the reasons are as follows:

- (a) The most immediate impact on production can be made through those directly responsible for this activity.
- (b) The infusion of semi-trained new workers into an already inadequate production system creates confusion and compounds the problem.
- (c) An attempt to base uniform training standards on data obtained from a disinterested or a non-capable management can result in a demand for over-training of new workers in non-work performance, related education and training institutions.
- (d) The production supervisor because of his control over the production workers and work processes is a key target for the development of basic concepts and skills for on-job training and methods for improvement of work processes.
- (e) The ultimate evaluation of training effectiveness is a measurement of the workers' utilization of his acquired skills.

- (f) Management motivation and ability to determine authentic skill requirements and to effectively use the workers' skills plays a large part in improvement of production.

In summarizing, what has been outlined above is applicable to various areas of production regardless of whether it concerns the production of learning in schools, retail selling, manufacturing, or the service and construction industries.

As a key principle in developing a strategy it has been recognized that the most effective method for use in producing an adequate work force from the standpoint of economy of time and funding and utilization of human resources is to develop in the institution responsible for production of goods and services, a capability to determine manpower skill requirements; to carry on effective on-job training and/or apprenticeship training for workers; and to utilize the workers skills for optimum production.

The infusion of newly semi-trained workers should not be attempted until management and the workers responsible for transmitting their skills through on-job training are capable of absorbing them effectively into the on-going system.

Linkage of Formal Education and On-Job Training

A programme that provides for articulation of the skill-generating value of work experience with formal schooling is the optimum method for the development of an effective work force. Such a programme is based on the recognition that investment in education and training needs to find primary justification in the attainment of suitable and productive employment of members of a trained work force.

A carefully planned co-operative education and training programme in which students spend part time working and training on-the-job and part time in a formal but related educational programme has the following advantages:

- (a) It is deeply involved in on-job work-productive skills training.
- (b) It provides a method by which effective articulation and integration of formal schooling and work-oriented skills training can be developed and promotes the development of acceptable work attitudes.
- (c) It provides a system through which employers, educators and labour-manpower personnel can have an active part agency-wise and community-wise.
- (d) It provides a vehicle by which stimulation of attitude change can be accomplished in sectors directly affecting social and economic development.
- (e) It provides a system for manpower development that will have an immediate impact on the middle and upper manpower levels in manufacturing, service, business and distributive occupations.
- (f) It is an acceptable and effective alternative for trade schools which consume considerable amounts of a country's financial and skilled human resources.
- (g) It provides holding power for potential school dropouts and insures effective placement for each trainee.
- (h) It is the kind of project that will provide an effective demonstration and skills that can be exported to other localities.
- (i) It eliminates the need for the construction of additional school facilities and highly skilled technical teachers.

Institutional Choice

For years employers, educators and authorities concerned with development of the work force have searched for ways to speed up the acquisition of skill by the unskilled. Many innovations have been the

subject of experimentation. The pendulum has swung to and fro several times from one extreme of unstructured work exercise to the other of formal instruction in trade schools. Neither extreme as should be expected has met the needs for an adequately skilled work force.

In-Service Training System

Most people engaged in productive work have learned on-the-job the majority of the skills they are presently using. Because it requires no special space and equipment, on-the-job training will probably continue to be the most common method for training workers particularly in developing countries. The chief reason for this approach is doubtless its practicality. The employee produces and earns while he learns. Many employers not cognizant of the disadvantages of the method when used inappropriately often find that their training costs are much higher than if they had used a more suitable combination of methods. There are of course certain skills that can be learned only on the job while there are others which can be taught more effectively and less expensively off the job.

One of the chief arguments against on-job training has been that the job has for its primary function the production of goods or services, not training. However it is possible to reach a compromise when it can be shown that training as a related function is an investment that pays equitable dividends. But it should be recognized that on-job training in itself is only one method for use in an institutionalized in-service system for worker development. Some other elements of the system are concerned with appropriate employee selection, placement, supervision and off-job supplementary training. The paramount delusion that unstructured on-job training will take care of itself and is an economical substitute for other methods of training is most unfortunate. All training costs money. The costs for the unstructured on-job method of training are buried in miscalculation, accidents, spoilage of products, wastage of materials, loss of sales, job misfits and a host of other items. The cost for structured training is more obvious and dividends from the investment should be made obvious to the decision makers.

The Apprenticeship System

Apprenticeship in the skilled occupations, is a system of training which involves a mutual agreement between the employer and apprentice who as a paid worker, performs a pre-determined series of on-the-job work operations which cover the all round skills of a recognized trade or occupation under the guidance of a skilled worker and who studies off the job certain prescribed technical subjects related to his work assignment and receives a certificate of completion when the training is completed satisfactorily.

A structured apprenticeship system conducted jointly by employers and labour through the assistance and co-operation of government has proved to be the most effective and economical means for the development of skilled craftsmen from the standpoint of cost of training, ratio of level of skill reached to length of training period and ability to satisfactorily apply the acquired skills to a variety of work situations including the levels of technicians, foremen and supervisors.

The system for skills development is flexible and easily geared to current and potential manpower needs. And it provides an excellent opportunity for labour, management and educators to work co-operatively in meeting skilled manpower needs.

The apprentice training system uses the on-job method for generating work skills; apprentices are trained on the machines and processes with which they will continue to work after completion thus the training is just as modern as the industry in which they are trained. This is only occasionally true in situations where the manipulative training is done in an off-job institution. Apprentices are trained in production environment and by skilled personnel who are acquainted with the processes and procedures. When trained away from the work environment there is always the adjustment the learner must make as well as that which must be made by the workers with whom he will work.

The skilled craftsman - mechanic has been, is and will continue in the future to be the critical human element in supporting the production of quality goods and services required for economic development.

Vocational Education and Training

Vocational Education as contrasted with on-the-job training and other forms of training specifically directed towards job preparation and job advancement has a much broader concept of responsibility.

The goals of a comprehensive vocational education system includes not only preparation for work in an occupation but the development of understandings, attitudes and work habits which are essential to successful employment and living as a contributing member of the community.

An inherent feature of a developing industrial economy is that it requires an increasing higher level of work skills and a corresponding higher level of education and technical knowledge in a work force which is continually being faced with the need to adapt to changing skill requirements.

The more developed countries have consistently broadened the scope of their vocational education systems in order to meet the needs for a more diversified, knowledgeable and skilled work force. Greater emphasis has been placed on education and training at the secondary level for the skilled trades, distribution, office and service occupations. This has been accomplished through better articulation with labour organizations, employing institutions and the manpower technical services of the Labour Department. A wide variety of different forms of training have been provided such as, part-time co-operative, related instruction and supplementing courses for apprentices, skill improvement evening courses for employed workers and more effective vocational literacy programmes in pre-employment training courses.

Summary and Recommendations

The following principles are considered appropriate as a basis for developing the strategy for an effective programme:

1. Training programmes should be related to the country's economic and social needs and ability to support them.
2. Optimum utilization should be made of local human and physical resources.
3. Institutional building through the selection and training of such key personnel as training directors, co-ordinators, supervisors, instructors; teaching materials, counselling and placement specialists is essential.
4. A good fundamental education is a basic factor in developing vocational literacy and raising the level of skills and effectiveness of the work force.
5. Formation of the work force can be more economically achieved by a judicious combination of training systems, methods and techniques.
6. Legislation and administrative "machinery" are essential in establishing priorities based on needs, ability to support and to prevent duplication and waste of human and financial resources.
7. The participation of management and labour in the planning, organization and operation of training programmes is essential.
8. Training is not always the most effective and economical tool for use in obtaining higher levels of quality production. Quite often desirable results can be obtained by introducing new equipment or process or by increasing employees pay and opportunities or even by instituting better methods of selecting employees.

9. In many instances manpower problems result not from the lack of training but from the inadequacy of the training being provided.
10. Encouraging research and adoption of modern training technology when appropriate for use in the planning, organizing and operation of training programmes is basic to an effective skills training system.
11. The development of an appropriate level of competency in training technology which is concerned with the management of the process, skills, methods, techniques and equipment used in the production of learning, is an essential factor in economic development.
12. Each training project should be related to the overall manpower development objectives and subject to the same general criteria.
13. Training should be considered as an investment in development of the work force. Cognizance should be had that as in other investments the output should be weighed against the input of financial, physical and human resources. Thus, systems should be designed that will use the most appropriate training technology which will provide desirable results at a minimum of cost.
14. As society, industry and business processes become more complex there is an increasing need to upgrade the competency of the training technology.
15. Training systems should perform co-operatively and not be in competition for scarce physical and human resources.
16. The activities of international agencies providing technical assistance should be an integrated part of the national training system.

17. The development of feasible work targets and performance guidelines is an essential element of an effective strategy.
18. Administration of National Training Systems should be the responsibility of the training institutions.
19. Co-ordination of National Training Systems cannot be adequately carried out without appropriate support of the government.
20. While education and training may have different objectives they have one process in common; teaching and learning. The two activities are so inter-related as basic elements in manpower development that one cannot successfully establish jurisdictional claims on the basis that they are separate processes.
21. The basic purpose of training is to obtain change and shape or reshape the behaviour of an individual. Behavioural change comes about through learning. Consequently, the basic function of teachers or trainers is to provide optimum learning experiences that will bring about a permanent predetermined behavioural pattern on the part of the trainee.

Lecture 9

Organizing for the Administration of Training

One of the retarding factors in the development process is the lack of ability to develop a concerted approach because of wide variations in understanding and agreement on terminology. This is particularly true when attempting to organize for the administration and co-ordination of training systems. For example, some of the most heated arguments have taken place over the difference of opinion as to the definitions of education and training technology. It is most unfortunate from the standpoint of economy of time and effort that vested interest is quite often the basis for difference of opinion.

For the purpose of this paper and as a means of obtaining a manageable point of view in the development of a workable strategy for the administration of training, it is necessary to attempt to tie down certain definitions even though some may be considered too narrow for an overall approach to human resources development.

These definitions I am giving you today reflect my point of view. However, they are the product of not only several years of personal experience in manpower training, but also a personal assimilation of much that has been offered by professional writers for the past several years.

The Educational Establishment comprises all those learning activities to which the population is exposed, whether structured or unstructured, formal or informal. Dr. Theodore Schultz in his book, "The Economic Value of Education", says logically, it comprises such institutions as the family, church, military service, schools - public and private, such communication media as radio, TV, newspapers, magazines, books, and the programmes carried on by a multitude of institutions that make up the social and economic infrastructure.

Education versus Training - Education has been and is yet one of the most controversial terms on which to reach an agreement. One of the reasons is that we do not yet know enough about the learning process to design a definition that will stand up to scientific scrutiny.

For the purpose of this paper what seems to be a workable definition will be offered but with the realization that all persons will not be satisfied from a professional point of view. In order to attempt to clarify the subject, it seems necessary at this point to bring into play several inter-related terms such as "schooling", learning process, skills getting and skills using.

Dr. Donald Parker, a psychologist and professional educator explains in his book, "Schooling for Individual Excellence", that training deals with skill getting and education is concerned with knowledge - using

of skills to generate and apply knowledge. He further proposes that "schooling" is an activity involving teaching and learning, formal or informal, regardless of the physical facility where the learning process takes place.

Dr. Frederick Harbison, an eminent economist, in his book, "The Strategy of Human Resources Development in Modernizing Economies", points out that it is important to understand that education and training are quite different processes and that manpower planners should draw sharp distinction between them. He goes further to say that education involves the acquisition of knowledge and the development of basic mentality while training involves the development of specific skills needed to perform a task or series of tasks.

It seems appropriate to draw the conclusion which is important to manpower development planners that while the activities for education and training may be different they have a common process - teaching and learning. Furthermore, that the efficiency of a worker is directly related to the adequacy of both his education and training as required for the task assigned. For want of a better term this level of capability may be referred to as the level of vocational literacy.

Since we have established the point of view that a competent worker must have a relative capability in both education and training, we no longer can use the terms as a scientific basis for establishing jurisdictional claims for educational programmes and training programmes per se. However, as long as we understand that provision for education and training is made on appropriate levels for each programme, it matters little what we select as the substantive title of the programme.

Learning

Learning is generally understood to be the change that takes place in an individual's attitudes, ways of thinking, feeling and acting, all of which influences his behaviour.

Learning Process

The act of learning is generally considered to be a personalized process or activity taking place wholly within the total individual as he interacts with his environment. This process is concerned with understanding, rejecting, agreeing with, making judgements and decisions, deciding on action to take, evaluating the results of the action which if considered satisfactory may be repeated, if unfavourable, making new judgements, etc.

This process of learning is to a great extent under the control of the individual and is influenced by his fears, incentives, readiness to understand and ability to cope with the environmental elements with which he is confronted.

The individual's capacity to learn and rate of learning are considered to be innate abilities and not under his control. Thus it may be said that the level of learning experienced by an individual in a given situation is influenced by the efficiency of his learning process and his innate abilities.

The learning experienced by the individual as discussed above, takes place within the individual and the results may be determined by measuring the change in his behaviour.

Learning Experience

The definition for a learning experience which is commonly used is the external or interaction activity which involves both the individual and his environment. In education and training activities two separate and distinct processes are considered to be interacting - the learning process and the teaching process.

The learning process is triggered by the learner's interaction with some element of his environment. In the same relation the learner has to the environmental element may be considered as representing the teaching process. From that point of view it may be said that learning does not take place in the absence of teaching.

The learning experience may be an automobile accident, observation of the behaviour of an individual, watching a TV programme, being arrested for an infraction of a traffic regulation, participating in a classroom discussion, studying a correspondence course, reading a book or magazine, operating an automobile, talking with a friend or drilling a hole in a piece of metal. In organized education and training programmes the learning experience is a structured experience which has for its purpose the production of learning by an individual.

Human Resources

There does not, at this moment, seem to be a generally accepted definition of the term "Human Resources". As with any other concept, its connotation depends upon the purpose for which the concept may be used. With that point in view the following definition is offered. Human Resources, as distinct from material resources, comprise the skills, knowledge and capacities of all the human beings actually or potentially available for social and economic development in a community. They, of course, are not limited to the resources of the working population but include also the actual, potential and prospective contribution to economic and social development of other persons.

Human Resources include:

- (a) The labour force which comprises the working or employed population who are engaged in the production of goods and services regardless of whether the work is performed for pay or not and those who are unemployed but seeking or wanting employment.
- (b) Potential Manpower made up of persons who are economically inactive and are not seeking work, due to lack of opportunities, to family responsibilities, to social discrimination or temporary medical handicaps, etc.

(c) Prospective Manpower consisting of:

- (1) Pre-school population.
- (2) Children of school age.
- (3) Persons above school age undergoing education and training for later work.
- (4) Those engaged in non-economic activities including actual or potential contribution to economic or social development, domestic work, unpaid voluntary work and community activities.

Manpower Resources

- (a) The labour force which comprises the working or employed population who are engaged in the production of goods and services regardless of whether the work is performed for pay or not and those who are unemployed but seeking or wanting employment.
- (b) Potential Manpower which comprises those persons who are economically inactive and are not seeking work, due to lack of opportunities, to family responsibilities, to social discrimination or temporary medical handicaps, etc.

Under-employment

The International Labour Office of the US Department of Labour has distinguished three forms of under-employment:

1. Visible under-employment, characterized by the unavailability of full-time and full-year work for those who want it.
2. Disguised under-employment, characterized by the use of workers at tasks below their highest level of skill or grossly under-paid in relation to abilities.
3. Potential under-employment, where labour contributes less than its potential because of inefficient techniques or organization for production.

Unemployed

In the US current population survey persons 14 years of age or older were counted as unemployed if (1) they were waiting to be called back to a job from which they had been laid off; or (2) were waiting to report to a new job within 30 days and were not in school during the survey week; those who were looking for work or were temporarily ill and would look for work.

Systems Approach to Training

In the search for ways and means to improve training programmes, many training professionals have experimented with systems methods long in use by industry and the defense agencies. They have found that these methods and techniques used to plan, organize, staff and manage the resources involved in industry production or a defense system are consistent with the needs of training programmes. In a training system the end product takes the form of new or modified behaviour patterns. In the systems approach the desirable behaviour pattern is identified and a system designed to produce that product through the appropriate selection, integration and efficient management of the various elements that can contribute to producing a quality product at a minimum of cost.

Vocational Education

Vocational Education as contrasted with on-job training and other forms of training including institutional training specifically directed towards job preparation and job advancement has a much broader concept of responsibility. As generally defined a comprehensive vocational education system includes not only preparation for work in an occupation but the development of concepts, understandings, attitudes and work habits which are essential to successful employment and living as a contributing member of the Community. Vocational Education and Vocational Training are generic terms. Vocational Education programmes have varying amounts of education and training depending on goals and objectives. For the sake of convenience perhaps we can say that Vocational Training is concerned

with all forms of training whether on-the-job or in an institution that has for its objective job preparation and job advancement.

Manpower Training Institutions

Manpower Training Institutes as referred to in this paper are those institutions in Latin America such as the National Institute for Co-operative Education (NICE) in Venezuela which are operated jointly by employers and government and supported by an industry payroll tax.

These institutes as differentiated from the regular Vocational Education System are responsible for providing "skills" training for employed workers; apprentices and middle management. Institutional Training courses are also provided for out-of-school youth seeking employment.

Institutional Training

For the purpose of this paper and for want of a better terminology of training conducted away from the job and in which training is the main activity and not production, we resort to the terminology "Institutional Training". Such training is usually carried on for groups of trainees in shops, laboratories or classrooms depending on the nature of the training. Sponsorship, management of the training or whether the trainees are being paid while they are engaged in the training process does not alter the classification.

Skills Training

This is a terminology that has grown out of usage and at one time denoted the training provided for skilled craftsmen in the industrial engineering trades (machinist, electrician, foundryman, etc.) and the construction trades. In today's usage it refers to a much broader area of levels of skills in industrial production, maintenance, construction work and such service occupations as auto-mechanics, radio, TV and refrigeration equipment repair. The terminology excludes retail, business office and farming occupations and it is also limited to those semi-skilled and skilled occupations below professional levels.

Skills training programmes include the following training activities:

- a. Up-grading the skills of employed workers.
- b. Retraining employed workers for jobs requiring different skills.
- c. Training unemployed workers for new jobs or for increased levels of skill in same job.
- d. Pre-apprenticeship and apprenticeship.
- e. Preparation of the staff to plan, organize and conduct a comprehensive skills training system.

The terminology, Skills Training, in no way relates to such specific skills as perception, visual, reading, etc., but merely denotes for convenience sake a classification of tasks or jobs which a worker performs.

On-Job-Training

Training on-the-job because of its practicality is the most commonly used method for the development of work capability. However, it is important that one differentiates between training on-the-job and informal learning on-the-job.

Training on-the-job presupposes a plan or agreement either written or implied that certain work assignments will be provided the worker for the purpose of learning work skills that are deemed necessary for increased levels of capability. Naturally the effectiveness of the learning process will be directly related to the efficiency of the training system and methods utilized.

Training

For the purpose of this paper a definition of training is used that denotes present day usage which may not be defended professionally. It is really not a functional terminology. Most professionals in Latin America refuse to use the terminology when applied to human beings. They much prefer to such terminology as "capacitacion" - programme to develop capacity - or "adiestramento" - programme for advancement of ability.

In the context of current usage, training is a process by which certain "structured" learning experiences are provided so that a trainee may learn to perform a task or series of tasks successfully. However, as pointed out previously in the discussion of education and training, a successful training programme must provide certain educational experiences.

Vocational Literacy

The terminology has been contrived by this writer as a conceptional approach for encompassing the knowledge and skills required by an individual for successful entry into an occupation and adaptation to living and working in a new environment. Naturally the level of vocational literacy will vary depending on the complexity of the work he will undertake and the environment. Also, the kind and degree of education and training an individual will require for successful entry into a work situation will be determined from an assessment of the changes required in his behaviour pattern.

Training Technology

This terminology refers to the processes, skills, methods, techniques and equipment used in the operation of a training system. Use of the term technology as applied to training is relatively new and has resulted from advancement made in the development of teaching aids and their introduction in training programmes in industry and the defense agencies. An interesting corollary terminology that is gaining usage is the substitution of Manager of Learning for Training Director.

Training Co-ordination

Training Co-ordination is the activity concerned with the "linkage" between the education and training provided in an institutional type of programme and the on-job work experience phase of a co-operative programme. Articulation of the two phases are essential for the operation of an effective programme.

Vestibule Training

Vestibule training as the name implies is the entry or basic training an employed worker receives before he is assigned to the regular production line. The method is most prevalent in industry operations where complex machines such as textile weaving looms are used in production and where an inept worker could damage the equipment, spoil the product or become injured. Usually one machine is set up in an anteroom, free of distracting noise, where the beginner can develop a level of skill required to move into the production shop.

Employment Service

A national employment service participates directly in the employment process by providing a central exchange through which an employer can obtain quickly from all available workers those best qualified for his particular jobs, and through which a worker can obtain employment counsel and advice and be directed to the job best suited to his abilities and interest. The employment service can act as a major operating agency of the nation in the implementation of an active manpower and employment policy.

The key functions of an employment service can be summarized as: placement; occupational analysis; labour market information; employment counseling; and participation in national, regional, and local labour market manpower and employment planning.

A national employment service can be the focal point in the economy to provide the driving force and continuity in the development, dissemination and application of the techniques and methods for effective manpower utilization, job development, and the organization in freedom of the labour market. Once established, a national employment service provides a permanent administrative organization for these purposes with operating offices in every major community.

Manpower Development Strategy

Manpower planning is concerned with the comprehensive means by which country goals of economic growth, rising living levels, and social justice, including equitable distribution of national income, are attained in human terms through the promotion of high levels of productive employment and the provision and utilization of adequate numbers of trained manpower required in the development process.

Strategy as applied to manpower development is concerned with the decisions that must be made in regard to the most effective and economical methods to be used in the development and utilization of the skills of the work force required to support a programme for economic and social development. Such items as long and short-range objectives, economic and social development priorities, effective utilization of human and material resources, political aspirations, bureaucratic problems and financial support are important and controlling factors that must be given appropriate consideration.

Lecture 10

Organizing for Co-ordination of Training

(Presentation Outline)

1. The basic concern of economic development is the production of more goods and services that will support the developmental process.
2. Increasing the level of skills of the work force and their effective utilization is an essential element for increased production.
3. The judicious selection of appropriate training systems, methods and techniques is basic to effective and economical manpower development.

4. The identification and assessment of manpower requirements is basic for planning training programmes.
5. Establishment of goals, objectives and feasible targets are essential elements of a manpower development strategy.
6. The development of a staff capable of planning, organizing and managing systems for training the work force is a prime target for the co-ordination project.
7. The co-ordination project staff should possess the following knowledge and abilities.

- a. Ability to identify and assess the capability of existing education and training institutions as related to a functional role in manpower development.
- b. A knowledge of the various education and training systems, methods and techniques that can be used to up-grade the skills of the work force.
- c. The ability to make judicious choices of institutions, systems and methods for use in manpower development.
- d. Ability to establish feasible goals and objectives for the production of manpower skills, quantitatively and qualitatively, based on existing and potential training facilities.
- e. Ability to develop an organizational plan for a viable programme based on available human and financial resources.

f. Authority for Co-ordination

There are at least two approaches to the administration and co-ordination of training: the compulsory method which is supported by appropriate legislation; and the voluntary method which may or may not be supported by legislation.

The development of the work force is so essential to a nation's economic development that appropriate legislation should be enacted. Some countries have hurriedly passed laws that are too rigid and difficult to enforce and as a result, the programme for manpower development may be affected adversely. Legislation that has an element of flexibility and permits judicious decisions by the administrative authority seem to be much more workable.

It is suggested that before any legislation is enacted a thorough study should be made concerning the following items:

- (a) The role of private industry and business.
- (b) The role of national, State and local governments including Ministries of Education, Labour and Development.
- (c) The role of international and other agencies providing technical assistance.
- (d) The role of the Military.
- (e) The problem of funding.
- (f) The problem of legislation.
- (g) The problem of developing and use of training professionals.
- (h) The problem of facilities - buildings and equipment.
- (i) The problem concerning relationship with the existing multiplicity of on-going training institutions.

Lecture 11

Summary

During the past two weeks we have talked about many things concerning manpower development required for economic and social progress. We have shared our problems and our wisdom.

I have tried to bring you perhaps what you may consider a different point of view about education and training. I have discussed the interrelation of education and training and we have considered some definitions of the learning process - how we learn and the importance of learning readiness - and that people have different rates of learning which are subject to innate abilities both physical and mental. Also that motivation, sense of values and a host of other things can effect one's ability to learn.

I think we agreed that all manpower skill requirements are generated at the work place where the production of goods and services take place - that worker training is not always the most appropriate answer when there is a problem at the production level. We discussed the fact that quite often we treat the symptom and not the cause. Thus, we should give more attention to analyzing the production problem carefully and arrive at the real cause. We reviewed several factors that can cause production problems such as poor management, underpaid workers, inadequate equipment and process and others. I think we also agreed that the greatest and most immediate impact for improvement in the production of goods and services can be made by providing organized training on-the-job. But we also agreed that it was necessary to start first with top management and particularly middle management - the supervisors and foremen. Only in this way can an appropriate "climate" be provided for effective on-job worker training. However, we did not overlook the fact that there are many conditions under which on-job training may not be feasible, the most appropriate nor the most economical.

We agreed that it could be more effective to train off-the-job in an institution when the workers do not have the skills to transmit to the trainees, and also that it usually is more economical to teach such subjects as arithmetic, blueprint reading, certain basic knowledge and academic subjects in groups off-the-job. We also made the point that while education and training are different processes with different goals and objectives - they have one process in common, teaching and learning. Then too I think we agreed that because workers must make decisions and exercise judgement they must have both education and training. Although we did recognize that different occupations because of their nature require higher levels of education than others and that as industry and business become more complex, they demand higher levels of basic education and training. We talked about training systems - inputs and outputs and I think I said that if a job can be defined that training for it can be designed. However, we did not overlook the fact that the problem of manpower skills deficiency may not be the result of the absence of training but by its inadequacy. We discussed the apprentice training system and the need to have the active participation of both labour and management in the design, organization and operation of the system. I tried to make the point that apprenticeship is as modern as the industry or business where on-job work experience takes place. That apprentice training to be effective has to be more than just a training programme. That it must be recognized as the skilled workers "College" or "University". It must have prestige and status and add dignity to the occupation, individual and the community. I placed a great deal of emphasis on the linkage of on-job training and formal education. I pointed out that almost any size of a community can have an effective vocational training programme by utilizing the existing work opportunities; also that only through this system can the small community take advantage of formal vocational training - that it is easily implemented into regular University-oriented secondary schools because there is no need to build shops and purchase expensive equipment; also that the new staff requirement is at a minimum. The

system has greater holding power for the students and acts as a vehicle to bring business and schools closer together. Also it provides indirect on-job training for employers co-operating with the school programme since they learn by doing how to plan and conduct a training programme for their employees.

We talked at great length about the role of free trade unions in economic and social progress. While there was some dissent there seemed to be agreement that labour unions are useful institutions and that an effort should be put forth to encourage leadership training, training in industrial economics, accident prevention and techniques of collective bargaining. Also that it was essential for effective manpower planning and development to include worker representation through joint participation with employers, government and the general public. I don't think there was any question about the fact that the Ministry of Labour has a key role and specific responsibility for improving the lot of the workers and encouraging the development of effective free trade unions.

I pointed out to you the need for a National Policy for full employment. Some of you expressed the opinion that such an idea was inappropriate at current levels of development. However, I believe we agreed after discussion that a full employment policy as a long-range goal could help provide direction to manpower planning as well as provide a definable measurement for economic and social progress.

We discussed at length such items as basic concepts for training such as the evaluation of training is the measurement of learning and that evaluation of learning is the measurement of change in the behaviour of the individual. And we also said that the development and operation of a training system requires knowledge and skills concerning the learning process, education and training methods and techniques and a capability to make judicious decisions relative to their appropriate utilization.

I don't think there was any dissent from my statement that the capability to develop an effective manpower development strategy required a staff with the following abilities.

1. Ability to identify and assess the capability of existing education and training institutions as related to a functional role in manpower development.
2. A knowledge of the various education and training systems, methods and techniques that can be used to up-grade the skills of the work force.
3. Ability to make judicious choices of institutions, systems and methods for use in manpower development.
4. Ability to establish feasible goals and objectives for the production of manpower skills, quantitatively and qualitatively, based on existing and potential training facilities.
5. Ability to develop an organizational plan for a viable programme based on available human and financial resources.

We discussed the multi-level teaching and learning system and some other modern innovations in teaching and learning including educational television. I think we agreed that some of the methods certainly could improve the process of teaching and learning but that research is needed for adaptation in developing countries; also that a country should not rush into the use of some of the systems until adequate research is carried out.

We did talk finally about organizing for the administration and co-ordination of national training systems. I hope we agreed that there are at least two methods: compulsory training under a specially designed law as exemplified by the INCE law in Venezuela; and a voluntary system as exemplified by the PCTPI programme in Sao Paulo, Brazil, but which may still be authorized and supported by adequate legislation.

I think we are in agreement that administration should be left to the entities who carry on education and training programmes while the co-ordination could very well be carried on by a specially constructed training commission headed by representation of the various agencies concerned with manpower development and adequately supported by a competent technical staff.

I could go on but you have had a long session and technically the course was terminated since you got your diplomas yesterday, but I do want to emphasize strongly again that you give some thought to using the regional approach to train your professional training administrators, supervisors, co-ordinators and particularly specialists in the areas of preparation of instructional materials. I have been told that the African countries are particularly nationalistic and object to regional centres. I agree with you that every effort should be made to build-up your own capability to train instructors, prepare teaching materials, etc., but I believe you will find it more feasible and economical to use regional centres to train the small numbers of top-level personnel.

ANNEX I

TRAINING COURSE IN HUMAN RESOURCES PLANNING IN AFRICA

LIST OF PARTICIPANTS

<u>Name</u>	<u>Country</u>	<u>Job Title</u>
1. MANSOURI SLIMANE	ALGERIE	Administrateur Civil - Direction Générale du Plan, Palais du Gouvernement - Alger
2. ALPHONSE BITSINDOU	CONGO (B)	Chief Planning Division
3. JEAN AMOUSSOU	DAHOMY	A. Director Human Resources
4. JEAN-PIERRE BELLEKA	CENTRAFRIQUE	Inspecteur du Travail et des Lois Sociales, Ministère de la Fonction Publique et du Travail - B.P. 66 - Bangui
5. SANGANOKO ZOUMANA	IVORY COAST	Administrateur des services financiers B.P. 5894, Abidjan
6. GEORGES BESSALA	CAMEROUN	Administrateur Civil, Chef du Service de l'Assistance Technique et des Ressources Humaines - Direction du Plan et de la Coopération technique - Yaoundé
7. EDWARD ROGERS	LIBERIA	Sr. Statistician, Department of Planning & Economic Affairs - Monrovia
8. KONE ISSA	MALI	Adjoint technique administratif, Division Planification des Ressources Humaines, Service du Plan - Koulouba
9. SERGE FANCHETTE	MAURITIUS	Education Officer
10. OUAHID ABDELKADER	MOROCCO	Responsable de la Section Emigration au Service de la Main-d'Oeuvre, Ministère du Travail - Tangers
11. F.I. ODUAH	NIGERIA	Administrative Officer
12. J.P. KOROMA	SIERRA LEONE	Administrative Officer, Establishment Secretary's Office, Departmental Bldg., Freetown
13. FOUAD ABDEL GADIR EL AGABANY	SOUDAN	Manpower Officer

<u>Name</u>	<u>Country</u>	<u>Job Title</u>
14. HEZEKIEL SIOHP MAMBA	SWAZILAND	Training Officer, Prime Minister's Office, Mbabane
15. FRANCIS S. MENSAH	TOGO	Inspecteur du Travail et des Lois Sociales
16. SILEYE MAMADOU DIA (Course auditor representing Senegalese Govt.)	SENEGAL	Attaché à la Direction de la planification de la main-d'oeuvre au Ministère de l'enseignement technique et de la formation des cadres.

ANNEX II

LIST OF "HUMAN RESOURCES COURSE" LECTURERS
(FULL NAME AND ASSOCIATION)

1. Prof. TIJANI M. YESUFU, Dean, School of Social Studies,
University of Lagos, Nigeria.
2. Prof. WILLIS E. GIESE, Lecturer Manpower, c/o IDEP, P.O.Box 3186,
Dakar, Senegal.
3. ADRIAN ZIDERMAN, Lecturer in Economics, Queen Mary College,
University of London, Consultant, Unit for
Economic and Statistical Studies on Higher
Education, London School of Economics.
4. Prof. LE THANH KHOI, Professor, Institute of Economic and Social
Development (University of Paris), ILO
Expert, Paris, France.
5. KENNETH F. SMART, M.A. Expert in Educational Planning, Member of
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6. MARION COULON, Inspecteur Général, Conseiller Pédagogique au
Ministère de l'Education Nationale et de la Culture,
Brussels, Belgium.
7. Dr. JAMES DEENY, Chief of the Unit of Senior Staff Training,
WHO, Geneva.
8. Prof. SAMIR AMIN, Lecturer National Accounting, c/o IDEP,
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9. Dr. FERGUS B. WILSON, FAO Lecturer, Chief, Agricultural Education
Branch, Rural Institutions and Services
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10. Prof. SANFORD COHEN, Professor of Economics, University of
New Mexico, Albuquerque, USA; and UNIDO
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11. ROBERT A. WILSON, International Training Specialist, Labour
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12. Prof. VOISIN, Associate FAO Lecturer, Rome.
13. STANLEY GREENE, Regional Adviser, UNECA, P.O. Box 3001,
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