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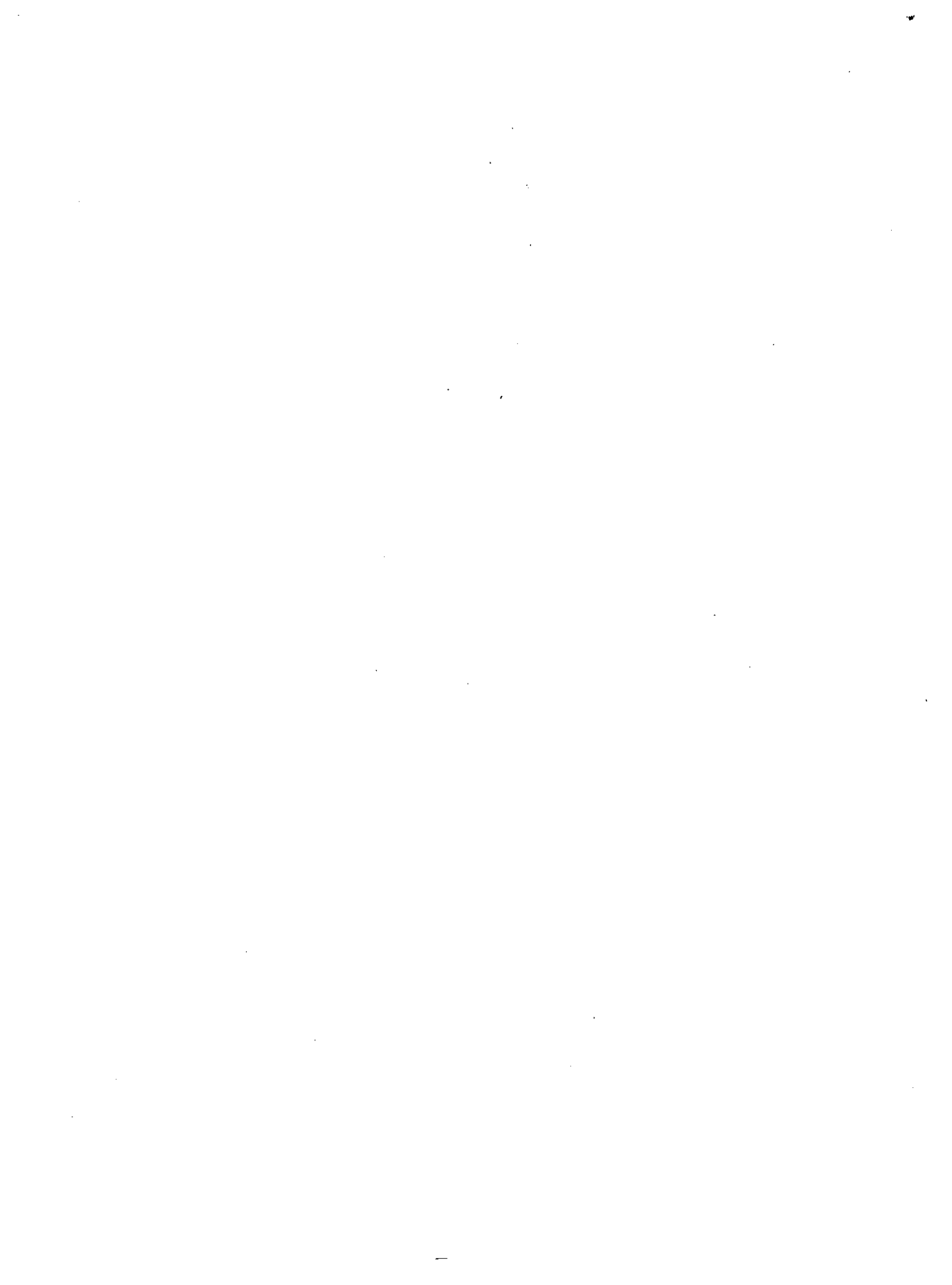
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MEETING OF EXPERTS ON ADMINISTRATION OF PUBLIC
ENTERPRISES IN LATIN AMERICA AND THE CARIBBEAN

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SOME ADMINISTRATIVE PROBLEMS OF PUBLIC ENTERPRISES

Paper presented by the ECLA Public Administration Unit



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1. Approaches to the study of organizations

In the headline of this paper the stress is on "some". It is beyond doubt that the public enterprises of Latin America and the Caribbean constitute a heterogeneous group in important aspects such as kinds of activity, size, and legal framework of the activities. However, as most modern research in organization theory emphasizes common traits of organizational behaviour which cover not only business organizations but many other types of organizations as well, there is undoubtedly a wide field of organizational and administrative problems common to the public enterprises of this region. Stated in even more general terms, some aspects of human knowledge are pertinent to management of organizations in general.

In this presentation we shall stress technical and administrative rationalization on one hand and management training and development of executives on the other.

In order to discuss methods for rationalization it is convenient to look back on some different conceptual frameworks applied to the study of organizations, though it can only be a thumbnail sketch of some organizational doctrines. In the first quarter of this century, the study of organizations was dominated by the point of view of scientific management, presented by Frederick W. Taylor around 1910. (Taylor himself first called the movement "task management" or "task system".) Due to the specific problems faced by industry in those days, the movement emphasized "the use of men as adjuncts to machines in the performance of routine productive tasks".^{1/} The most important contributions of the scientific management movement in today's perspective are the time and methods studies and the precision of measurement it brought into the organization of production activities. Apparently, the scientific management opened the way for the introduction of mechanization and automation in later stages of administrative

^{1/} March, J., Simon, H.: Organizations, New York, U.S.A., 1958, p. 13.

development. By developing time and motions studies, it also provided starting points for pre-determined time standards like MTM, UOS and others, frequency analysis, and other techniques which are now essential parts of cost studies, job organization and wage determination.

Taylor's French contemporary among the pioneers of administrative science, Henri Fayol, presented a wider, more general approach to organizational problems. He defines administration in terms of five elements, viz. to forecast and plan, to organize, to command, to co-ordinate and to control. Administrative responsibility exists at all levels of the organization, its relative importance increasing with higher positions.

Furthermore, Fayol treats the concept of "government", placed above and encompassing administration, with six essential functions: technical activities, commercial activities, financial activities, security activities (protection of property and persons), accounting activities, and administration. In this, administration would be confined to personnel administration excluding all matters concerned with materials or equipment. However, in his major work, "General and Industrial Management" (first published in 1916) Fayol depicts administration as dealing with the integration of the other activities as well as with personnel.

Fayol underlined the need for administrative training within companies to develop personnel capable of carrying out the six essential functions of the enterprise, and also as complementing all kinds of education, beginning already in the elementary schools. In order to organize such training a base of administrative theory had to be established, and Fayol devoted the last decade of his life to the purpose of theory formulation. So doing he formulated a great number of general principles, the most emphasized of which were the "unity of command" and the "unity of direction", that is to say that each individual of an organization should receive orders from only one superior. The idea of functional leadership, sometimes recommended by Taylor, did not appeal at all to Fayol. He recognized the need for specialists but would give them "staff" positions beside the line of authority.

/Another principle

Another principle emphasized by Fayol was the matching of authority with responsibility. He saw a risk that initiative would be hampered by people's tendency to seek authority but shun responsibility, and recommended the careful specification of what responsibility would go with what authority.

Fayol was probably the first scholar to discuss at depth the need for organizational planning. It led over to the problem of planning at national level, but in this respect his ideas were pretty much different from what we nowadays understand with national planning.

In the late thirties the theory of departmentalization began to spread, principally through the fame acquired by "Papers on the Science of Administration", edited by L. H. Gulick and L. Urwick in 1937. Of course, departmentalization of organizations was practised and discussed long before that, but it was scientifically systemized by the movement started by Gulick and Urwick. Their theory is sometimes referred to as the "administrative management theory". Many of its propositions are still very much in vogue because all organizations, except the very smallest in size, are faced with the problem how to departmentalize. Perhaps the most discussed topic is the one of process as opposed to purpose departmentalization. Process departmentalization (bringing together in a single office a large amount of one kind of work; central secretarial pools are an example) takes advantage of skill specialization permitting a high degree of it already in rather small organizations. Purpose departmentalization (giving the responsibility for the accomplishment of any given broad purpose or project to a single director with immediate control of all the experts, agencies and services involved in the work) facilitates co-ordination as the department has a higher degree of selfcontainment. As is commonly known, with increasing size of the organization the co-ordination costs increase, to the disadvantage of clear-cut process departmentalization, whereas the economy of specialization can be attained within the framework of purpose departmentalization.^{2/}

^{2/} See e.g. Devons, E.: Planning in Practice. Cambridge, England 1950, Marschak, J.: Elements for a Theory of Teams, Management Science, 1955, No. 1, or March, Simon op. cit.

If in the theory of scientific management organization members are viewed as physiological complements to technical equipment, one may say that in administrative management theory the employee is seen as an instrument performing given tasks. Only to a limited extent are his motivation, characteriological qualities, or individual behaviour in a wider sense taken into account by the administrative management group. Furthermore, personnel is not viewed as a variable but rather as a given in the organizational system.

In the forties Max Weber introduced the modern studies of "bureaucracies"^{3/} in which motivational elements appeared as part of a broad sociological framework for organizational behaviour. One of the basic aims of his research was to explore whether and to what extent bureaucratic organization is a rational solution to organizational problems. Subsequently, this research came to include supervisory methods, organizational behaviour in response to action of control and other problems involving psychological elements.

Motivation and attitudes are the principal fields of interest of the "human relations" approaches to organization theory, giving important contributions since the early thirties. They take into account the wide variety of roles that organization members are performing and the problems of co-ordinating those roles. What makes an individual want to participate in an organization? In what ways are his individual goals related to those of the organization? Does he identify with extra-organizational groups (e.g. professional associations), the organizations itself or part of it, or does he identify directly with his task? These are some of the questions which have been systematically considered by students of "human relations".^{4/}

Today research on organizational behaviour tries to encompass all the mentioned approaches to the subject, and some more still. One line of study that is likely to prove very fruitful concentrates on cognitive

^{3/} Weber, M.: Essays in Sociology. New York, U.S.A., 1946.
Weber, M.: The Theory of Social and Economic Organization, New York, U.S.A., 1947.

^{4/} See e.g. Likert R.: New Patterns of Management, New York, U.S.A. 1961, or the works of Argyris, C.

aspects of organizational behaviour. No doubt the processes of learning going on continuously in organizations account for important aspects of the observable variations of behaviour for instance, efficiency. The interaction between motivational and cognitive factors is considered essential, and that leads the study of organizations a long way from the instrumental model of the employee held forth by the "classical" theory of organization.^{5/}

The fast-growing management science movement represents the operations research and decision-theory framework of the study of organization. "Management science differs from Taylor's scientific management in many ways. It is not primarily concerned with production tasks and the efficiency of men and machines. Rather, it views efficiency as a secondary achievement which should follow adequate planning. In other words, poor decisions can be implemented in an efficient way."^{6/} Attempting to establish whatever relationships exist between an organization's objectives and its resources, management science cuts across the traditional area of management, as is eloquently explained by Miller and Starr.

The main trend of modern theory of organization including the management science movement is its focussing on the human element of organizational behaviour, whether it be the employees' wants and drives or their cognitive limits or other aspects. Some time ago the technical accessories, particularly in rationalization efforts, tended to be considered per se, not means to other ends. That confusion of ends and means seems to have been due to the fact that the technical development is considerably more advanced than our knowledge of human adaptation to the technology.

2. Technical rationalization

In this context we adhere to the definition of rationalization given in Webster's Third New International Dictionary: "the organization of business or industry upon scientific principles of management and

^{5/} See e.g. March, Simon, op. cit. chapters 5 - 7.

^{6/} Miller D., Starr M.: Executive Decisions and Operations Research, Englewood Cliffs, U.S.A. 1960, p. 9.

simplified procedures to obtain greater efficiency of operation". But we believe that the same concept is applicable to other organizations as well, e.g. government.

In accordance, technical rationalization would mean the organization of production management and the installation of more efficient technical equipment. This matter is somewhat beside the foci of interest of this meeting, as we are dealing with many different branches and industries using different techniques and equipment, but it has an institution-building aspect of concern for the meeting.

Institutions for technological research have been established at an impressive rate in Latin America, among which may be mentioned the Central American Institute of Research and Industrial Technology (created in 1955), the National Institute of Industrial Technology in Argentina (1957), the Institute of Technological Research in Colombia, the Mexican Institute of Technological Research (1961), the Venezuelan Institute of Technological and Industrial Research (1958), the National Institute of Technology in Paraguay (1963), the National Institute of Technology in Brazil, the Institute of Technological Research of the State of São Paulo. This is by no means a complete list of existing bodies for technological development in the region, but it indicates the importance attached by governments and private industry to the problem of efficient production. Unfortunately, financial problems are common among these institutes. Their areas of action are limited by shortage of funds for the upkeep and renewal of laboratories and equipment and in some cases for the current expenses. Up to now, the institutes have not taken full advantage of the possibilities to collaborate in a co-ordinated way. Such collaboration, e.g. by means of the formation of pools, would make it possible to avoid parallel and overlapping work by several institutes on the same problems at the same time.

In countries where the State participates in industrial production through public enterprises, it is quite natural that these enterprises get a share of the research findings and that they, reciprocally, contribute their own experience to further technological development. In many countries of the region the limited size of each industry calls for close co-operation between government and private industry to make the base wide enough to pursue this kind of research.

/Another area,

Another area, adjacent to technical rationalization, which also interests us from the standpoint of institution-building, is the technical normalization. Several countries of the region have fairly recently established institutes for the specification of technical and industrial norms including measurements and standards for quality control. Others, like Mexico, have passed new bills in order to update old requirements. The problem of normalization has received somewhat more interest than the technological research in terms of co-ordination over the borders. In 1961 the Panamerican Committee for Technical Norms was formed with the aim of co-ordinating the different norms existing in the region.

A third way of promoting efficiency-improvement is through the productivity centres that have been created in several countries in Latin America during the last two decades. Worth mentioning is the National Centre of Productivity in Brazil, which now counts with centres in 20 States of the Federation.

As a rule the Productivity Centres are run by employers' associations, sometimes but not always with the participation of governments. These centres do a useful work in organizing training (courses, seminars, etc.) in various matters related to productivity. It is felt that the public enterprises would benefit from participating more than at present in the activities of productivity centres.

Regarding the organizational set-up for government participation in the above activities, many forms are available. Which one to choose is a question of the size of the country, the degree of State involvement in the productive sectors, the orientation of the production, and many other factors. It is generally advisable that the governments of developing countries take an active part in the efforts towards improved productivity and efficiency not only in the public enterprises and other government activities, but in private activities as well. Especially in countries where industrial and/or agricultural production is highly protected by customs policies, and as a consequence lacking the strong incentive to improve on efficiency which is inherent in foreign competition, it is necessary for the governments to apply other means to push enterprises towards improvement of efficiency and productivity.

One means is a determined government engagement in industrial services, including applied research and the other activities mentioned above. On the one hand, governments have a two-fold staff function in this respect, viz. (1) to provide a clearing-house between industry and scientific institutions, interesting both parts in applied industrial research, and (2) to set up the organization and the scientific machinery for applied research.^{7/} On the other hand, there is the direct responsibility of governments for ascertaining high efficiency and productivity in the public enterprises. These functions could and should be combined in the sense that public enterprises are opened for productivity research and that they contribute to similar efforts in private companies. The important thing is that all means to improve productivity be applied throughout the whole of the developing economies. So far as cumulative capital growth is concerned, we would want to know to what extent output grows as a result of merely multiplying machines and to what extent growth is dependent on improvements in technique and organization. If e.g. organization of production is decisive for progress, then efficiency must be sought by creating conditions that encourage a high rate of innovation. This would be just as important as ascertaining capital formation through saving. — We must be sure that it is tried seems to be through active government policies in industrial services.

3. Administrative rationalization

For two reasons the topic of administrative rationalization is more along the lines of interest of this meeting than is technical rationalization. One is that the methodology of administrative rationalization varies less from one branch or type of organization to another, and thus can be discussed in more general terms. The other is that the whole agenda of the meeting is geared to the administrative elements of management.

^{7/} For further discussion on this point see e.g. Administration of Sectoral Planning, ST/ECLA/Conf.30/L.8, presented at the United Nations Seminar on Administrative Aspects of Plan Implementation, Santiago, Chile, 19-27 February 1968.

It has always been difficult to define "administration". In this context we may be content with a kind of operational classification of managerial activities. Let us call production and marketing of goods and services line activities. Then all other supporting activities, like policy-making, finance, personnel, information, etc., may be called administrative functions. That may not be a clear enough definition in many cases, but it satisfies the purposes of this representation. Quite obviously, we shall have to choose only a couple of approaches to this wide field of interest, as has been done all through this paper.

One of the most important facets of administrative rationalization within public enterprises concerns the organizational and functional relations with the ministerial body to which they respond. These interrelations are discussed in "Las relaciones entre las empresas públicas y el gobierno central y su efecto sobre la eficiencia", (ST/ECLA/Conf.35/L.2).

Another important approach to administrative rationalization leads through the budgeting procedures employed by the enterprise. Or rather, budgeting in its widest sense, i.e. each and every means employed to indicate acquisition and allocation of the organization's resources, is by definition affected by all efforts aiming at higher efficiency in the use of such resources. What Galnoor and Gross observe regarding the public budget is valid also for budgeting at enterprise level: "Budgeting is first of all a tool for conflict management whose role steadily grows as the scope of government activities increase. Budgeting is both an art and a procedure for resolving conflicting interests under conditions of imperfect information, ambiguity, changing pressures and turbulent environment".^{8/} In the present trend towards more sophisticated routines for programme or performance budgeting at national level in Latin America enterprise budgeting is influenced, though not all the countries include the public enterprises in the government budget. At all enterprise levels reforms aiming at defining centres of responsibility for the purpose of better budgeting and cost accounting are carried out. Circumstances connected with this matter are treated under other items of our agenda so we leave it with the short remark: "Performance budgeting was not a discovery in public administration.

^{8/} Galnoor, I., Gross, B.M.: The New Systems Budgeting and the Developing Nations, International Social Science Journal, Volume XXI, No. 1, 1969, p. 24.

Followers of Taylor, Organization and Management officers, work measurement technicians and management consultants had long been advocating 'efficiency' and 'productivity' in government. They were simply arguing that by focusing on input-output relationships, the same output may be achieved with fewer inputs, or alternatively the same inputs may generate more output".^{9/} In other words, the very gist of rationalization should be embedded in the budget reforms, whether at national or enterprise level, although the final form of the budget and its degree of details vary considerably between the two.

In administrative functions, no single device or method has contributed more to the improvement of efficiency than the electronic computer. Whether the aim has been to increase output or to limit input of administrative resources, or both, the introduction of the computer at the service of managers has opened new avenues to efficiency. In the first place, computers handle far larger amounts of information per unit of time than any non-electronic method. That means that decision-makers using computers can base their decisions on more extensive and more detailed information than those not using computers. It also means that some information is readily available which would not be accessible at all without the computer. In the second place, the use of computers in administrative work has created a new way of looking at administrative functions. We are right now in the midst of a change of attitudes that in the long run might prove more important for over-all efficiency than the breathtaking data processing capacities of the computer hardware. The conversion of attitudes is towards more and better analytical processes in administrative behaviour as is observable in modern organizations and in management training.

An electronic computer is capable of doing only very simple operations. What it can do is to retrieve at great speed any data previously stored in its memory; furthermore, it can compare two numbers and, if they are different, carry out a programmed instruction to accept one of them; it can combine two numbers (addition or subtraction) and by repeated addition or subtraction perform multiplication and division, respectively. This is to

^{9/} Ibid. p. 27.

say that the computer cannot handle analytic geometry the way human beings do. To make it solve e.g. partial differential equations, a linear, finite system has to be substituted for a non-linear, infinite system with partial differentials. Thus it can be said that it is the intelligent programming that has made it possible to use the computer for solving complex mathematical problems. And not only that; by adding certain terminal, input, and output devices to it, it has been "taught" to write out cheques, keep inventory and accounting records, control different kinds of processes, estimate logistical requirements for military and civil transports, play chess, simulate all sorts of systems by use of models (of traffic systems, production processes, entire national economies). When it was shown that computers were able to prove mathematical and logical theorems, they were said to have artificial intelligence. This concept refers to the computers' way of solving complex problems by means of heuristic models.

How, then, does an information processing device change not only certain routines and procedures in organizations but also the attitudes of managers and others? Jay W. Forrester seems to have pointed at the core of that question when saying: "Management is the process of converting information into action. The conversion process we call decision making. Decision-making is in turn controlled by various explicit and implicit policies of behaviour".^{10/} The introduction of computers as means of processing information for management requires a thorough analysis of a range of situations related to decision-making and the policies of behaviour in order to work out the proper programmes. As in solving mathematical problems, the programmes for managerial tasks are combinations of simple operations, which is equal to saying that computer programming is "a translation of the operations-research description of a problem".^{11/}

The analytical methods developed to study administrative systems, decision-making and other processes are often referred to as systems analysis. This denomination indicates a relation with general systems

^{10/} Greenberger, M. (ed): Management and the Computer of the Future, New York, U.S.A., 1962, p. 37.

^{11/} Miller D., Starr M. op. cit. p. 107.

theory, which deals with any kind of systems - behavioural, physical and others. However, general systems theorists as a rule are more dedicated to the description of existing systems, the analysis of the qualities of open and closed systems, and similar matters, than to the direct application of their theory to managerial control problems. And they have been more inclined towards synthetic studies of complex systems than towards breaking them down into simple parts, as is done for computer programming purposes.

If we keep in mind that the term "systems analysis", as used in the context of management, is not a synonym for general systems theory, we can take a look at its implications on administrative behaviour.

Parallel to the spread of general-purpose electronic computers in business organizations we have witnessed intensified observation of ends-means relationship in administrative work in general. In situations where computers are neither used nor planned to be installed, the "systems analysis" approach has been used in search of ways to improve efficiency. There are principally two facets of this approach that stand out as indispensable in administrative rationalization:

(1) Definition of objectives. Whatever procedure one wants to improve, the first thing to do is to specify what purpose it serves. Normally the people who carry out the technical work of administrative rationalization have little say when it comes to determining objectives, but they are always entitled to claim a clear specification from those responsible for policy-making. In the frequent case that an administrative function (procedure, department, technique or whatever is to be studied) serves more than one purpose, it may be necessary to specify interrelationship of goals and subgoals.

Most people working in administrative rationalization have the experience that once the objectives are well thought over and defined, more than half the work is done. The act of clarifying objectives and making them known is often as good a promotor of efficiency as is the introduction of new techniques.

(2) Feasibility studies of new means and methods. These studies aim at determining the economy of alternative ways of doing the job, and the simple reason for performing them is the desire to eliminate or change those

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functions or tasks whose costs are higher than the utility they bring to the organization. They take widely different forms depending on what kind of activity is studied. The difference in terms of work study methods is great between repetitive manual work and non-repetitive intellectual work. For the former e.g. typing, standards (like predetermined time standards) can be set and capacity can be measured with sufficient accuracy, whereas intellectual processes are difficult to measure while they go on. Generally they are judged by continuous follow-up of the outputs, such as written material or blue-prints. In the case quality or quantity drops below requirements, a special search for the causes must start.

Although the contents of intellectual work are what really matters, there are some reasons for studying the forms of it as well. By finding out how much time is spent for phone-calls, meetings, writing in long-hand, typing, and other forms for the basic activity, it may in certain cases be deducted that the employees work too much on their own, and that the result would benefit from more exchange of ideas. Or the opposite may be found to be true. Needs for conventional office equipment are assessed in this way. Studies of the forms for intellectual work may be carried out by just asking the employees or by observing them according to some systemized pattern of observation. One of these patterns are the so-called frequency studies, which suppose that the time dedicated to a certain activity in relation to, say, a full working day is equal to the number of times said activity is observed in relation to the total number of observations made during the day, provided that enough observations are carried out at occasions selected at random. As the activities observed constitute a random sample of the activities of the day, there is necessarily a standard deviation in the distribution of observations, and thereby in the percentage estimated. But by determining the number of observations on the basis of an allowable error of estimate and a desired confidence interval for it, sufficient accuracy is obtained.

Initially, frequency studies were conceived as instantaneous observation of one person at a time. They have then been supplemented by the so-called Group Timing Technique, in which intervals of observation are substituted for the instantaneous observation. This makes it possible to study whole working teams indicating the observed activity of each group member. The interval is longer the bigger the group, but it seldom exceeds one minute.

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It would lead too far to go into the technicalities of work studies in this context. They are mentioned as one indication of the tendency to break down complex systems or procedures in small parts that are handier to analyze. It should be added however, that this procedure suffers from a general weakness. Most operations, physical or mental, performed by human beings are not equal to the sum of their parts. It is also worth repeating that the sum of work studies, time and method studies, flow-charts of operations and other means and tools is not equal to administrative rationalization. The tools are helpful in determining how to improve the input-output ratio. But the actual implementation - introduction of new methods, elimination of unnecessary operations etc. - is done under the responsibility of the respective line executives. The existence of a unit of organization and management experts does not guarantee the administrative efficiency of the organization, nor do theoretical principles for good administration by themselves give solutions to administrative problems. There may exist beliefs to that effect among some scholars and practitioners in the field, but most of them adhere to the following statements made by Simon, Smithburg, and Thompson:

- "(1) Practical rules simply do not exist which can be applied in an automatic or mechanical fashion to actual organizational problems.
- (2) At the present state of knowledge, administrative theory is of far more practical use in diagnosing situations than prescribing suitable courses of action.
- (3) The practice of administration involves skills - skills that have become thoroughly incorporated in the administrator's personality - rather than mere intellectual knowledge.
- (4) Practical recommendations for organization action always depend upon the values of a person making the recommendations".^{12/}

Let us finish this fragmentary exposition of approaches to administrative rationalization by mentioning one based on findings from behavioural science and personnel research: the job enrichment study. The theoretical framework for job enrichment studies was laid by Frederick Herzberg.^{13/} Job

^{12/} Simon H., Smithbug D.W., Thompson V.A., Public Administration, New York, U.S.A., 1950, p. 20 f.

^{13/} Herzberg F.: "One More Time: How Do You Motivate Employees?" Harvard Business Review, January-February 1968.

enrichment seeks to improve both task efficiency and human satisfaction by means of building into people's jobs greater scope for personal achievement and its recognition, more challenging and responsible work and more opportunities for individual development. These ideas are not at all new, but only recently have they been built out to a theory that can be - and has been - consistently applied to management problems.

Three representative studies^{14/} involving laboratory technicians, sales representatives and design engineers, respectively, indicate significant improvement of output both in terms of quantity and quality, and also higher rates in job reaction surveys measuring attitudes to the job. In all cases the change of performance of experimental groups was significantly superior to that of control groups.

One of the main traits of job enrichment is to pass responsibility and scope for achievement down the line. To give an idea to what extent this was done in the studies referred to, it is sufficient to mention that the design engineers previously had to seek approval from three higher levels of management for expenditure over US\$ 5,000. After the change they actually placed orders of equipment for as much as US\$ 500,000 on their own authority! The report states: "Yet in no case did disaster result ... By the end of the trial period, the nerve-racking gambles of a few months before were hardly worth mention".^{15/} The whole result supports the theory that control procedures designed to prevent presupposed mistakes and guard against potential irresponsibility in effect create the very carelessness they are meant to suppress. "The motivators, on the other hand, make it possible for the individual to advance the base line of his performance. The road is open for improvements, while present standards remain available as a reference point and guide. When a man is given a chance to achieve more, he may not take that chance, but he has no reason to achieve less".^{16/} Is this not a very valid statement regarding public enterprises in developing countries where managerial skills are scarce, and decentralization is a way to make sure that they are not lost at non-managerial tasks?

^{14/} Reported in Paul W.J., Robertson K.B. and Herzberg F.: "Job enrichment pays off", Harvard Business Review, March-April 1969.

^{15/} Ibid., p. 73 f.

^{16/} Ibid., p. 74.

4. Development of executives in public enterprises

We have already referred to management as the conversion of information into action and said that decision-making is the process that does it. This means that the characteristics of the decision-making process is what distinguishes management of one kind of organization from another. Are there any differences, for instance, between decision-making in public enterprises and in private business? Or between public enterprises in developed and developing countries? Probably not in the fundamental aspects of basic functions like production, marketing, accounting, finance, personnel and labour relations. While the contents of decisions vary widely, the decision-making processes surely require the same kind of skills and much the same knowledge in private and public enterprises, in industrialized and industrializing countries.

The emphasis of managers as promoters and guides of change highlights their importance in developing countries and makes management training a matter of prime interest for this meeting. Management has been referred to both as a science and as the most creative of all the arts. Which of the two is more correct, we may leave open. The harsh truth is that there is at present a shortage of good artist/scientists to perform it.

According to a recent United Nations publication ^{17/} the contribution of the general educational system to management development seems less direct and less definite in most industrializing countries than in industrialized countries. "Judging by the educational background of public enterprise managers in developing countries, it seems obvious to identify a comparatively early pattern of management professionalization. The new breed of public enterprise managers seems to be largely the product of the system of higher education. It takes twenty-five years - more or less - to produce an abundant supply of this breed in newly independent countries".^{18/} A similar period of time is probably pertinent also to countries with long history of independence but insufficiently developed higher education.

^{17/} Sherif F.A.: Top-level Management and Personnel Problems of Public Enterprises (in Organization and Administration of Public Enterprises. Selected papers. ST/TAO/M/36) p. 172.

^{18/} Ibid.

In what ways may the education and training of managers be stepped up so as to avoid twenty-five years of shortage of senior administrators? One obvious way to try would be to increase the kind of specific managerial education given in schools of business administration. Another is a carefully planned technical education based on surveys of future needs in industry, construction, transport, and other fields demanding technical and engineering skills. A third way would be to establish more programmes of in-service training within the enterprises aiming at preparing intermediate level managers for top-flight positions. A fourth possibility would be that governments organized special courses in management for graduates in other subjects who have been working some years after graduation.

What Sherif calls an "early pattern of management professionalization" in industrializing countries hints at a future development of managerial education in those countries similar to the one experienced in Western Europe and the U.S.A., where management to some extent has passed from being an ancillary subject taught in relation to technology, accounting etc., to becoming the basic framework of the schools of business administration. Management has developed some features that make it independent in relation to the kind of activity managed. Executives move from one organization to another even though the activities of the two organizations are totally different. In industrialized countries there is a clear trend towards formation of relatively more executives-generalists. We shall later on mention what kind of knowledge and experience these generalists represent. But before that, it is important to point at the high degree of specialization which runs parallel to the development of generalists. Functions like research and development (including technological forecasting), operations research, logistics, automatic data processing, and many others, are all highly specialized and require equally specialized education and training. It may well be that these fields are just as important - or more so - to developing countries as is general management. It would surely be an acknowledged feat by this meeting if it could clarify what indispensable skills are most scarce in present-day public enterprises of Latin America and the Caribbean.

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With a higher degree of specialization in certain fields, problems of co-ordination increase. The executive-generalist is an answer to those problems. "Such executives could maintain the company's existence no matter what product was made. They could develop abstract organizational forms which were independent of the individuals who at any time happened to compose the management group. They could co-ordinate the contributions of all of the specialists of an organization. Their task required the ability to employ structure before content in coping with the extreme diversity of information produced by the organization".^{19/}

General management education in its modern version should comprise elements of knowledge and abilities, and considerable influence of individual and public interests. As for abilities and individual interests, most managerial education ought to form executives with entrepreneurial and innovative capacities. Naturally, personality types lacking these capacities cannot be changed by training alone, but training programmes can be designed to enhance and develop the kind of flexible personality which is easily adaptable to change and thus likely to promote innovation better than a rigid type of character. This can be done by including in the education certain aspects of personal psychology which will create awareness of the mechanisms of psychological defense we use to protect ourselves from threats, and of psychological patterns of interrelationships among people (individuals and groups). Sherif underlines the importance of psychologically oriented leadership training when saying that "the manager cannot be task-oriented to the extent of pushing aside the problem of work relations. Nor is he justified in maintaining neutrality in personal relations, or in perceiving only formal organizational relations which might disguise real inter-group conflicts. He should display a positive attitude to conflict resolution. He is called upon to acquire new leadership skills".^{20/}

^{19/} Miller D., Starr M.K., op. cit. p. 8.

^{20/} Sherif, F. A., op. cit. p. 177.

Not only the contents of management training but also the forms in which it is given bear upon the objectives of personality formation. By means of case studies, role playing, and management games, learning may proceed under conditions resembling real-life situations, thereby actually preparing the participants for the kind of action required from them in subsequent jobs, not merely exposing them to certain facts, concepts or theories.

The kind of facts, concepts, and theories that must be familiar to top executives of public enterprises are the ones represented in such subjects as accounting, administrative theory and organizational behaviour, business-government relations, finance, marketing, operations management, personnel and industrial relations, quantitative methods (operations research), and, for a large number of public enterprises, special fields like transportation, urban development, and others. Few people can be expected to acquire expert knowledge in all these fields, and what a top executive needs is a broad knowledge about them in order to be able to co-ordinate the work of experts. Besides that, he is probably a better manager the more he knows about techniques for fact-finding, reporting, understanding, reading, etc.

The kinds of technical, task-oriented knowledge (e.g. electrical engineering, petro-chemistry, ship-building, or what the case may be) required for the management of public enterprises are not of direct interest to this meeting. But it is not out of the way to mention some aspects of educational planning pertinent to academic education in these fields of technology.

All developing countries report a shortage of well-prepared engineers and technicians. In the competition for this scarce resource public enterprises are often hampered by restrictions of salaries or other conditions which do not prevail in the private sector. That puts public enterprises in a position of relatively greater shortage than the rest of the productive sector, which in turn obliges them to make the best possible use of available technological knowledge. They should make arrangements for the engineering staff to keep up with the development of their specialty through courses, seminars, etc. and organize the work so as not to waste technological skill on non-technological tasks.

/Normally, when

Normally, when engineers and other specialized categories of personnel are promoted up the organizational ladder, ever more administrative responsibility is entrusted to them at the expense of tasks related to their specialty. It is not uncommon to find top executives with a back-ground in engineering devoting less than a fifth of their time to technological matters. This could be avoided and technological capacity be saved if management training were stepped up, permitting engineers and technicians to stay longer in their field of specialization. The most difficult obstacle to surmount is no doubt the rigid notion that general management has higher status than specialized technological work. Probably that could be overcome by diminishing the relative salary difference between management and technological work. Another difficulty is to forecast what technological skills will be needed in the next twenty or thirty years. This is where educational planning enters the scene. Developing countries cannot afford not to plan carefully their higher education, letting thorough studies of demand be the base for determining the size of university faculties. A society with underemployment of one kind of professionals, say architects, does not only bear the direct costs of this underemployment, but also the opportunity costs equal to the sum of productive contributions these people would have made, had they received another education.

In all that concerns the economical employment of human resources, public enterprises should assume the role of "model organizations", which means among other things co-operation with the planning and educational authorities in their efforts to assess future needs for professional education

Internally, public enterprises can investigate what "reserves" exist at each organizational level for possible training and promotion to more responsible posts.

In general, whatever can be done that facilitates the full usage of existent human resources must be tried. In this aspect there is an enormous waste in the industrialized societies which developing countries have no reason to copy.

5. Summing up and looking ahead

In order to safe-guard a continuous improvement of the performance of public enterprises, it would help to develop a managerial discipline based on the decision theory approach and a systems approach to the enterprise, its environment and divisions. That would make it easier to eventually develop a common administrative language for operational communication.

One of the most important qualities of these approaches is that they provide an efficient aid to learn from experience. Management being the conversion of information into action - or, which is another way to describe it, the controlling of a system "towards certain goals and under the influence of outside forces which can only partly be predicted"^{21/} - it needs to rely heavily on earlier experience. Thus, the cognitive aspects of management stand out as fundamentals for organizational efficiency. Learning to learn will be a corner-stone in future management education.

^{21/} Paulsson-Frenkner T., Development of Operational Management Methods: What does it Mean for the Education of Managers? International Social Science Journal, Volume XX, No. 1, 1968, p. 33.

