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THE SYSTEMS APPROACH TO ADMINISTRATIVE MODERNIZATION*

by Masood Hasan

Is administrative modernization necessary at all? Since change is inevitable and we cannot cry halt to it, it is important for us to be flexible enough to adapt to the altering environment. As such institutions involved in organized activity, be they public or private, commercial or industrial, service or contracting in nature, must be aware of what is going on in and around them so as to be prepared to objectively evaluate fresh developments. *The systems approach is analytical in nature and involves viewing organizations at different levels,* the overview, the ground view, the intermediate view(s), and equally important, being able to relate the information gleaned at each level of the organization so as to ensure that there is no conflict in interpreting what is seen from each point of view. This approach ensures that the objectives of an organization are being best attained by reducing as far as is humanly possible inter-functional rivalries and, conflict, which as we are very well aware, is the cause of so many of our administrative ills today.

Ever since World War II we hear more and more of the word "system". The larger the scale of any organized effort the more we hear of it as a sub-sub-system, sub-system, etc. This world has come to the fore with the vastly increased size of organizations; public or private, commercial or industrial, administrative or service. The Oxford Dictionary defines this word as "complex whole, set of connected thing or parts, organized body of material or immaterial things". We know of so many systems, be they static or dynamic, deterministic or probabilistic in nature. Consider the following systems: government, political, transportation, communication, education, procurement, costing, power generation, power distribution, irrigation, drainage and so on.

If we look at the short list given above we observe some of the smaller systems fitting into the large. Again considering ourselves as individuals we can go up the scale somewhat as follows: groups, communities, nations, world, solar system, galactic, universe. We can go down the scale from organs to cells, virus, molecules, atoms, nuclei, fundamental particles. We are, therefore, able to discern the hierarchical nature of systems. The higher the system the more complicated its set of goals becomes. But if must be very clearly understood that when we talk of administrative systems, progress in reaching higher levels depends upon the adequate performance of the lesser systems. It must be equally clearly understood that the mere efficient functioning of an individual lesser system is by itself is no guarantee that progress will be achieved by the system as a whole.

This necessitates the overview, that is, looking at a given situation at different levels. In Canada it was recently found that taking colour photographs at 4500-9000 ft. height from a cruising aircraft of bean fields revealed certain patterns that could not be observed walking through the field at ground level. The aircraft photographs showed scientists certain blight-infection patterns which were impossible to miss. Walking through a field there was no guarantee of stumbling across the disease. If the same terrain were photographed at 80,000-90,000 ft. a different pattern of information, useful to another expert would make itself manifest. A photograph from a satellite would provide a yet newer overview of the same situation. What is important, is the understanding that a view at a certain level provides information peculiar to itself. But if any view can assist in coordinating the others it is the overview of the lot.

The same sort of situation exists when we look into administrative (or commercial) systems. To attempt to improve matters at a particular work centre, cost location or desk may merely shift the bottleneck to another work centre, cost location or desk and in the bargain create more complications then existed before the attempt to improve matters started! In any case it is also pertinent to note that procedures have lives that hardly exceed five years. Further, procedures become more complicated as time goes by: they build upon the efforts of the past.

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The conclusion that one is forced to draw is that we must base our attitude towards work on the assumption of change. The fact that we prefer to call an undeveloped country (static thought) such as ours a developing country (dynamic thought) in itself presupposes change.

Change if it is not guided amounts to permitting water uncontrolled to find its own level. Guidance calls for the planning process. Planning if it is to be of any consequence demands systematization of formalization of the management process. This at once leads to the necessity for explicit definition of objectives. The definition of objectives is by no means easy, but it can be assisted by the proper assembly of data, of facts, of information. When we marshal these data, facts, information we are vitally interested in being able to check their degree of correctness or validity and that too in a reasonable period of time. It is not easy to meaningfully cross check on account of the ad hoc fashion in which the information networks of large organizations have grown up. No one budgeted for quick expansion of the organization hence no one ever thought of planning the paper work.

At this stage it is relevant to indicate how or why this has all come about. Up till 1700 the philosopher was the custodian of all scientific knowledge. However, on account of the increasing store of such knowledge which he could not cope with he gave way to the natural philosopher, who as his scientific successor-in-interest held the baton till 1850. At about this time the Universities split up into the Arts and the Sciences. The natural scientist was born. With this split in academic knowledge seeking the superiority of the scientific method was very quickly made apparent. Progress in physics, in chemistry, in biology, went on at an exponential rate and this is true to this very day. Around 1900 the social sciences, psychology, sociology, anthropology, started to command attention. Ths continued splitting of disciplines in academic knowledge seeking proceeds apace. This is also tacit admission that the human mind finds itself incapable of functioning efficiently unless it breaks a problem down to size, so that we can "manage" it.

An analogous development took place in the application of the results of scientific research. New idea conceived in the laboratory made for technological progress and organizations grew in size so much so that we have today econometricians, engineers of dozens of different kinds, industrial, psychologists, ergonomists, methods time measurement specialists, short interval schedulers, statistical quality controllers, etc., looking after numerous functions such as purchasing, marketing production, maintenance, cost accounts, personnel, public relations, financial accounts, etc.

The problem arising out of this functional fragmentation is that of coordinating a host of varying viewpoints within a large organization so as to ensure that the output is maximized, whatever resource input (human and otherwise) we may choose. We are fortunate that such problems have been faced by large organizations the world over. We are also fortunate that such problems have been solved by those large organizations that have had the courage to hazard a good look at themselves so as to understand what is going on, as condition precedent for streamlining administrative systems. We, in developing countries, should, therefore, investigate the ways and means used successfully by others in dealing with large size, which is synonymous with complexity. To deal with complexity our work methods for control have to be equally sophisticated to be effective.

It is pertinent, therefore, to examine carefully the management services/sciences which have developed during the last two decades. They are: Work Study (O&M); Systems and Procedures (S&P), Electronic Data Processing (EDP), and Operations Research (OR).

It is true that Work Study goes back before World War II but significant developments in this field have been generated during the last twenty years or so.

The advent of the computer has hastened the management process. Because human beings ask questions and the computer does not, this is where our troubles begin. Further, since the computer has never "seen" an organization chart, nor does it comprehend why a file "refuses to move", this only adds to the confusion. Another difficulty arises out of the over-dramatic presentation of the "idiot" (the computer) because this hides its ways and means of functioning meaningfully behind a lot of tinsel, windows dressing and jargon. This is a very unfortunate situation.

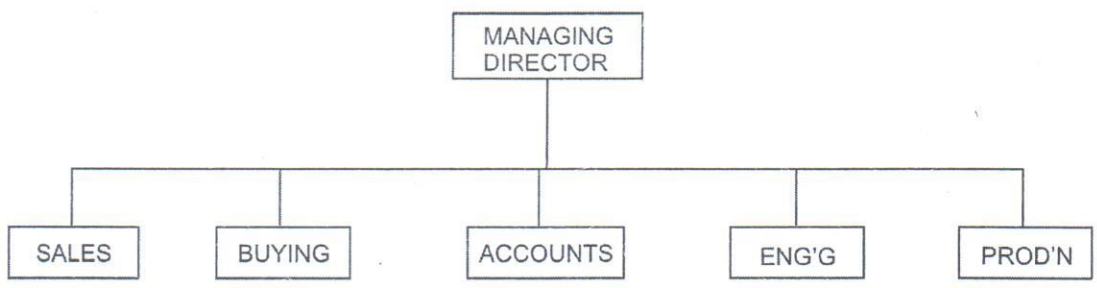
Systems and Procedures is the key in providing a sound bas for the computer to take off form. This statement is restricted to normal administrative/commercial work on organizations where plenty of paper work floats around. As a by-product, Systems and procedures provides an O&M (Clerical Work Study) team with a full understanding of what is going on in an organization, thus making it possible for an O&M investigation to work effectively. Normally, O&M teams are a frustrated cynical lot, particularly in Pakistan, because they do not have access to the total detailed picture, but more of this later.

What then is the Systems and Procedures approach. It is significant that it is an approach for it helps to remodel one's thinking on logical lines. It attempts to routinize as much of the work in an organization as possible. Since involvement of management is a *sine qua non* of the success of any type of effort to streamline work flow, Systems and Procedures provides the ways and means of involving personnel at different levels to the extent desirable.

Systems and Procedures is a complete disciplined approach to the task of systems investigations including both management and systems staff. It provides management with an extraordinarily powerful tool for recording and analysis of what is going on in an organization. Because Organizations have grown rapidly without a plan to guide expansion over the years it is wrong to presume that matters can be "put right" merely at the snap of one's fingers within a few weeks. Certain attitudes and traditions have been built up with the best of intentions so it takes time for gentle persuasion to convince individuals to first accept the fact that there might be a better way of doing things and secondly of the specific changes that have to be made.

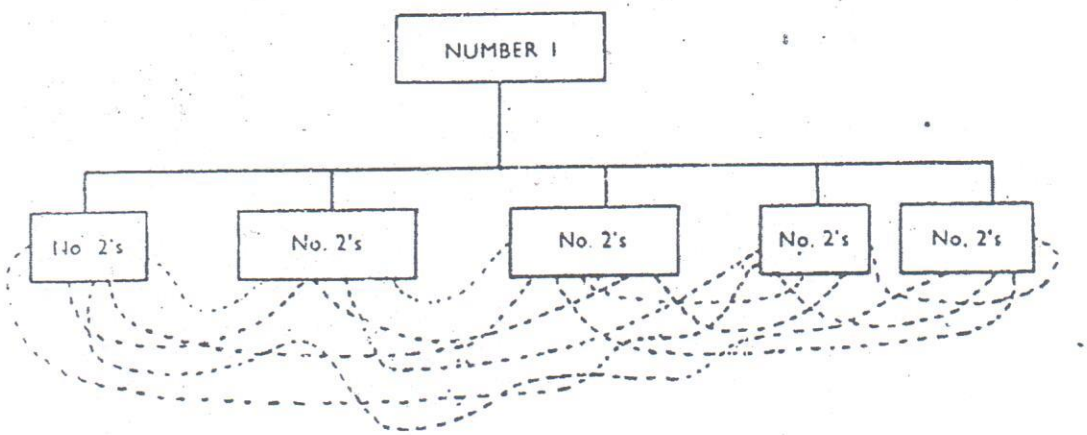
So many times we come across individuals who having made a study of the structure of their organization come to the conclusion that the organization chart represents the way organization functions. Nothing could be farther from the truth. The organization chart foes no more than represent the levels of authority. The addition of job definitions associated with each little square on the chart only confirms who has what authority. The familiar looking chart (Diag 1) below indicates the levels of authority.

DIAGRAM NO. 1



However, if we are to find out how work actually flows we must look at not only the formal but informal ways and means of progressing work. If we were to follow the paper work we will have achieved our purpose. For we know that work flows or does not if the paper work associated with it moves or does not move. The modified "organization" chart (Diag 2) below indicates how information flows inn the progressing of work.

DIAGRAM No. 2



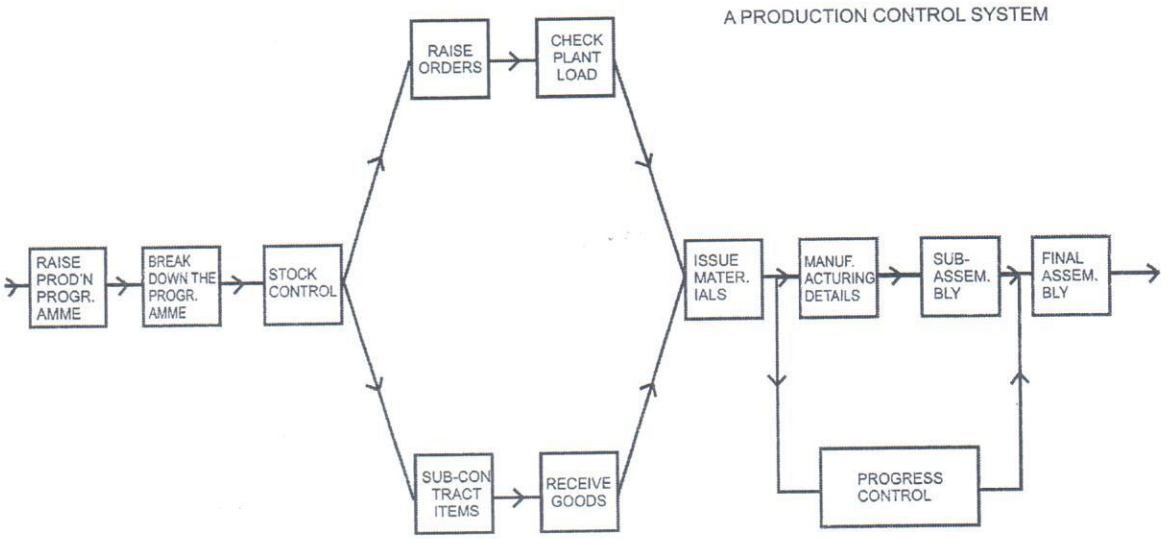
We observe the lateral or horizontal movement of such information. So if we could determine exactly how such horizontal movements take place we will have been able to understand how work is actually accomplished. If this picture looks untidy, it is so, because the communication network is untidy.

Readers will recall an earlier reference made regarding viewing a system at different levels. It is necessary in a somewhat similar way to view our administrative systems. For purposes of avoiding semantic confusion it is necessary to define exactly or quantify what is meant by the word Procedures and the word System.
A procedure is "an established clerical routine or series of clerical operations involving one or more persons in one or more departments". An example of a procedure could be: getting stationery issued. An authorized individual would fill in an Issue Note or Requisition (in duplicate or triplicate) entering the cost centre, work station or desk number, the description and number of the items required, the date, etc. This document would then be presented to the Store Keeper who would give it a quick glance to see that it has been filled in properly, then number it serially, hand it over to his assistant who would go to the bin, pick up the items, strike off a similar number off the perpetual inventory record (also noting, if necessary, whether it has gone below minimum cover) hand over the items and get a receipt for the same. The completed Issue Notes would then be sent to the Ledger clerk the following day and a number of further clerical operations would ensue. Or Take the example of a student wishing to appear in an examination. He would fill in a form in quintuplicate and post it to the authorities concerned. The receipt clerk would remove the documents from the envelope making the requisite entry in the Inward Register and send the papers on to .... Till ultimately the roll number would be issued to the student advising him to what centre he would have to report for answering the examination papers.

We can think up very many procedures other than the two given above. The reader may have already discerned that looking at matters at the "procedural level" is not getting the overview.

Now let us consider what is a System: "a System is a network of related procedures developed according to an integrated plan for performing a major activity of the business". We can have Marketing Systems, Production Control Systems, Accounting Systems, Purchasing Systems, a Personnel Recruiting System. The most complex are Production, Planning and Control Systems where thousands of different piece parts may be involved encompassing Procurement and Stores on the one hand and Production and Cost Control on the other. In such a system we may have as many as 200-500 documents floating around and there may be as many as 32 copies of one document! If this not represent complexity, what does!

DIAGRAM NO. 3



In any case it is pertinent to point out that whether we are considering organizations involved in job orders (manufacturing a ship, putting up an hotel, erecting a dam) or providing a service (transporters, telephones, coordinating agencies with administrative authority) or issuing statements (insurance companies, electric utilities, banks) or the process industries (edible oils, rayon, paper, petroleum manufacturers) the problems experienced for purposes of coordination/control boil down to "what is put down on documents/statements/returns" so as to provide relevant information enabling decisions to be made with an adequate background, as nothing can be so dangerous as decisions based on ignorance. Above is a simple block diagram (No 3) is indicated a Production Control System.

It is self-explanatory. It indicates very broadly an overview of work flow based on the documentation highways traced by the statements/returns/reports enabling each functional specialist (Buyer, Store Keeper, Cost Accountant, Production Engineer, Maintenance Engineer, Financial "Accountant, Salesman) to achieve results in the performance of their work.

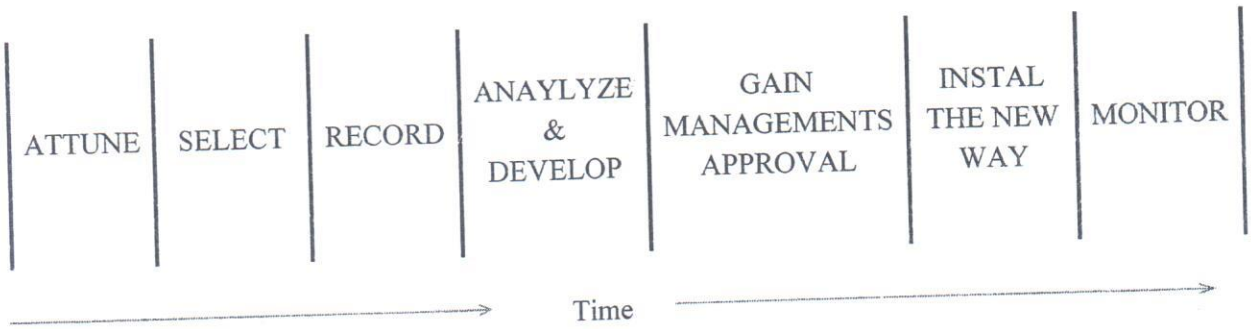
If we attempt to follow the work flow process it is vitally important that the senior administrators/managers in authority accept one fact and that is: an objective enquiry into the present state of affairs may reveal some skeletons in the proverbial cupboard, for it is like dust hidden under the carpet, if you do not look for it you never ever see it.
If such a frame of mind is forthcoming it is possible to proceed to the next state, ie what area should be selected for investigation first. Shown sequentially it would look some what as follows (Diag 4):

DIAGRAM No. 4

ATTUNE ONE'S MIND	SELECT THE AREA

Having selected where to begin, we are in a position to commence recording, and progressively analyze and develop, gain management's approach for the new way of doing thing, install the streamlined way and finally monitor it. The diagram No 5 below indicates the phasing:

DIAGRAM No. 5



If we add the Time dimension below the sequence of operations (as shown above) we have constructed an Horizontal Time Line (HTL) that portrays the sequential operations required in a project to improve/discipline the work methods that exist in the organization being investigated.

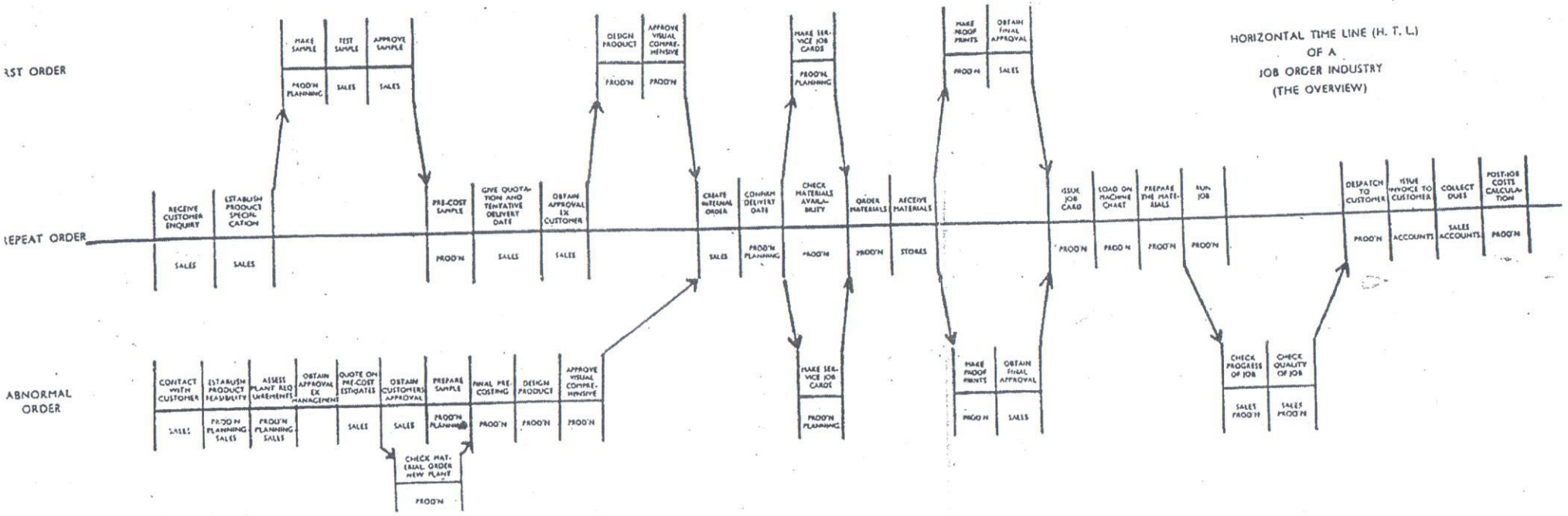
The "recording" aspect (the third phase in the sequence) is of paramount importance, because without it we cannot analyze and develop, gain managements approval, install the better way of doing things or monitor what continues to go on. Monitoring or auditing the system ensures that any change (internal or externally oriented) can be absorbed into the system in a formal fashion. This is of significance if we consider any large organization and makes an attempt to catalogue the various forms floating around.

This means it is necessary in the long run, to set up a small section concerned with the well being of the information networks of the organization in question. Because information is common to all functions such a section must report directly to an individual competent to deal with inter-functional differences; this may mean restructuring the organization somewhat.

Having understood what the HTL is (an overview) we must find ways and means to construct such a picture for all the activities of an organization----sales, accounts, purchasing, legal, personnel, and so forth. At page 8 Diag No 6) is an HTL of an organization involved in a job order industry, ie manufacturing goods to order. Most orders are repeat (as one would expect), some come in for the first time and yet others are abnormal. Each order type follows a certain procedural sequence wherein some phases may be common to two or all of the different order types. Diagram No. 6 indicates in an overview of the total picture.

DIAGRAM NO: 1

HORIZONTAL TIME LINE (H. T. L.) OF A JOB ORDER INDUSTRY (THE OVERVIEW)



The method used in constructing the total overview is to enlist the active cooperation of the senior managers of the organization concerned. All functional heads get together at a single time and agree to the sequential flow of work thereby aiding in constructing the HTL (Diagram No. 6). In the course of constructing this overview such participation brings about involvement and quite a few cobwebs are cleaned out quickly enough. It is amazing to witness the range of conflicting opinions as to how work flows in an organization! This merely on account of each department considering it's functions to the total exclusion of all else.

It is possible to construct (with the active cooperation of those concerned) overviews of any organization involved in any type of activity, the sole proviso being, if we are to justify the resources allocated to such an effort, that it should be of a size where plenty of documentation exists. But the overview by itself does not get down to the detailed aspects of work flow and we know that unless the individual procedures are also defined clearly it is pointless just knowing in an overall fashion how the objectives of an organization are being attained.

At page 11 in Diagram No. 7 a procedure concerning part of a Personnel Recruiting system is shown. The symbols used make possible a short-hand pictorial representation of what is going on at a particular cost centre, work station or desk. Each document is assigned an horizontal line. Hence if we wish to follow the flow of a particular document we keep out eyes trained on one horizontal line for the life of the document in question. Such flow charts are called Horizontal Data Systems Flow Charts (HDSFC) and several of them (depending on the number of activities systems/sub-system etc. that the organization is made up of) when put together give us the total detailed picture. Each procedure may take up 8-12 ft of charting. Hence if there are 60 procedures to be charted we end up with 600 ft. of HDSFCs. This might sound impractical but it is not. What we have achieved is the creation of a true mirror which can show us in a very short time (one picture is worth a thousand words) the completely detailed movement of all the documents floating around (including carbon copies!)

NARRATIVE DESCRIPTION OF THE PERSONNEL
RECRUITMENT PROCEDURE (PARTLY) SHOWN

An application for employment is filled-in in duplicate and sent to the prospective employer, where the Inward Clerk receives the same. He makes the relevant entry in the Inward Register kept in the Receipt Department after date stamping the letter. The Inward Clerk separates the two applications and sends the original to the Personnel Section where it is received by the Asst: Personnel Officer. The A.P.O. checks whether it is a first application or a repeat. If it is the first application of the candidate the A.P.O. marks the Department concerned and hands the application over to the Personnel Officer The P.O. telephonically checks with the Department manger whether the applicant should be called for an interview, if he has to, Form Letter No. 22 is duly filled in by the P.O. indicating the time and date fixed for the interview. The letter is sent to the Despatch Section to forward the same. The application form is filed away temporarily to be made use of later. If the candidate is not to be called for an interview Form Letter No. 32 is filled-in for dispatch to the candidate.

The second copy of the Application Form is filed by the Inward Clerk in an Application File in the Receipt Department.
If the applicant has applied for a job in the past or was formerly employed by the organization his application form is kept pending. Further action to be taken after a discussion with the Personnel Officer.

REARRANGED DESCRIPTION FOR PURPOSES OF
FACILITATING FLOW CHARTING

1. The applicant sends application (in duplicate) filled-in by hand which is received by the Inward Clerk, who date stamps and give4s it a chronological number, these details are entered in the Inward Register kept in the Receipt Department.

2. The two copies of the application are separated. The second copy is filed by the Inward Clerk in an Applications File in the Receipt Department.

3. The first copy of the application is sent to the Personnel Section, where it is received by the Asst: Personnel Officer, who checks whether it is the applicant's first application or not.

4. If it is not his first application, then it is kept pending for further action after discussion with the Personnel Officer.

5. If it is the first application then the A.P.O. indicates which Department Manager is concerned and hands over the same to the P.O. who telephones the Department concerned asking whether the person should be called for an interview. If the answer is no then the application is filed in the Personnel Office and cyclostyled Form Letter 32 is sent to the applicant by the P.O.

6. If the answer is yes then cyclostyled Form Letter 22 is sent to the applicant by P.O. giving him the date and time for interview. The applicant's form is filed away temporarily to be made use of at time of the interview.

DIAGRAM No. 7

PART OF A PERSONNEL RECRUITING PROCEDURE

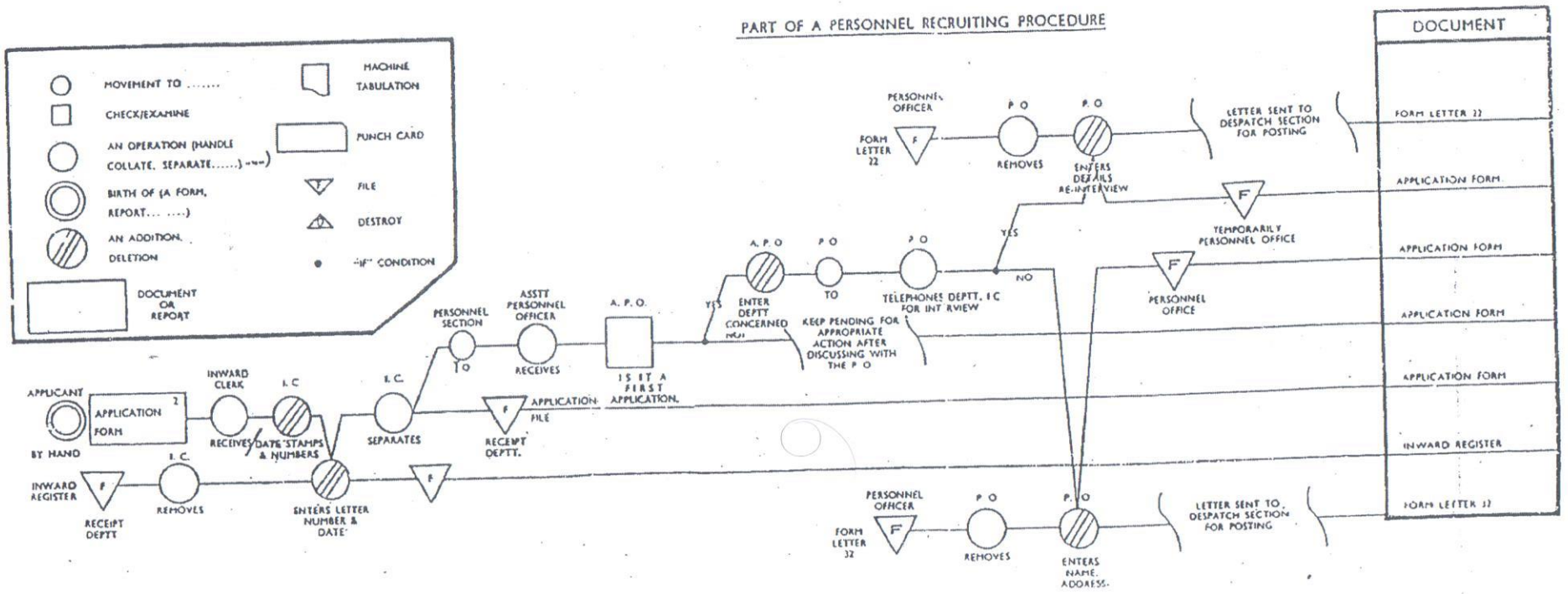
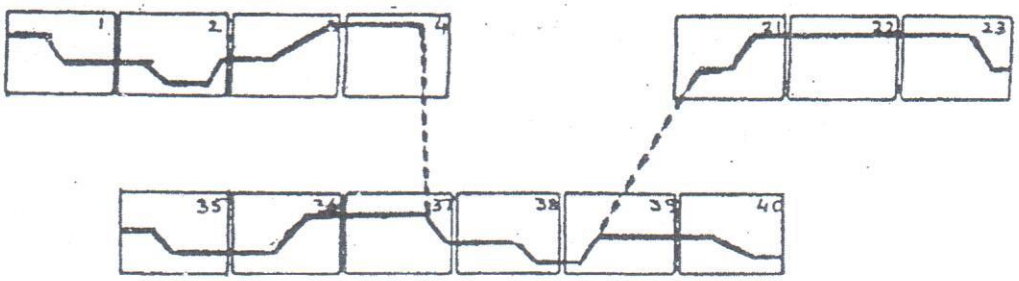


DIAGRAM No 8

PART OF A TOTAL DETAILED PICTURE

(THE GROUND VIEW)



Explanation:

The line(s) drawn across each individual HDSFC (detailed charts) indicates the path that takes longest in work accomplishment. This is better know as the CRITICAL PATH. There can be more than one such path in a single system.

All the HDSFCs are stuck together (Diag No 8) sequentially representing the movement is analogous to work flow. In order to get the intermediate level picture a Summary Chat, which could be 10-15% of the total detailed picture (HDSFCs) is made. This Summary Chart provides the basis for top management intervention, it has enough detail in it to enable policy decisions to be meaningfully interpreted into practical procedures.

Each individual chart (the around view a little at a time) forms the basis for an effective O&M effort---one procedure at a time can be tackled keeping in mind the total detailed procedures of an organization, this eliminates conflict, optimizing the effort.

In order to appreciate the picture thus generated all the charts are stuck together (see Diagram No. 8 at above. A heavy line is drawn through each procedure's critical path (ie, the bottleneck path) so as to direct our attention to those aspects of work flow that should be looked into first. The line going up and down across the charts represents the path taking the longest time.

As far as senior management is concerned the degree of detail indicated above is not required. So a Summary Chart of some 10-15% of the completely detailed picture (not shown) is made. It is thus made possible for senior management to quickly encompass the work flow operations at an intermediate level. What is left out in the HTL and what is impossible to quickly extract out of the HDSFCs is made apparent in the Summary Chart. At this stage the time element can also be entered which will show up very clearly where effort must be directed to streamline the system.

To recapitulate, at this stage we have achieved the following:

1. Involvement of senior management through construction of the HTL.
2. Involvement of junior management through construction of the HDSFCs.
3. Obtained a completely detailed (ground view) picture of work flow--- (HDSFCs).

4. Obtained an intermediate view of the work flow (Summary Chart, not reproduced here).

5. Obtained the overview of the organization as a whole (HTL).

Where do we go from here? There are three aspects to this question: (1) Because of involvement of senior and junior managers we have improved the organizational infrastructure for appreciation of the necessity for streamlining. It is difficult to overemphasize this very important phase of the effort; (2) The individual HDSFCs can be handed out, one at a time, to an O&M team who can then get down to highly localized streamlining. And that too with full confidence that whatever improvements they may recommend will not merely move a bottleneck from a particular cost centre, work station or desk to another cost centre, work station or desk, ie point A to point B within the system, but in fact improve in an overall fashion the work flow. *It is possible, because they have access to the full picture.* Present day O&M teams do not have this access, hence such workers are usually highly frustrated individuals! (3) The Summary Chart is the foundation stone for senior management to lay down where and how what should be done. Also, because the extent of the work has been quantified, it is possible to budget resources (human, time and financial) meaningfully in the streamlining effort. The improved way of doing things may relate to manual methods only or machine aided work as well.

We have shown how S&P is related to O&M. S&P is also related to Electronic Data Processing (EDP) because the streamlined way of working provides the basis for a sound computer systems design. It bears repeating that the human being asks questions but the computer does not, hence the absolute necessity for streamlining (disciplining, making more logical, reducing uncertainty, eliminating chaos and disorder, decreasing entropy) in a scientific fashion our work methods that have grown up over the years in an uncoordinated and haphazard fashion.

There are several organizations in the developed world who in their extreme hurry to "improve matters" have plugged a computer into their system hoping that things will improve. Since it is not the custom to advertise failures, we do not hear much of the added confusion created through such unprepared use of the computer. It is only wen the input (feed) to the computer is logical that the output is also logical and meaningful. Any other approach will produce very quickly and expensively the best quality rubbish as the output, in addition to generating a pessimistic attitude towards the possible productive use of this extension of the human brain. Disciplining a system ensures that the computer is made a part of it thus making possible optimization of any resources allocated to such an effort.

The conclusion that we are forced to draw from all that has been said is that it is necessary for us to continuously review our work methods which necessitates making use of techniques developed in the last decade, namely, that the Systems and Procedures approach is basic and common to large organizations of all sorts, that the Systems approach provides the basis for a coordinated attack on inefficiencies and in so doing makes possible an effective O&M (clerical work study) effort, overall improvement in the current way of doing things and incidentally lays the foundation of a good computer systems and design should the computer be justified later.