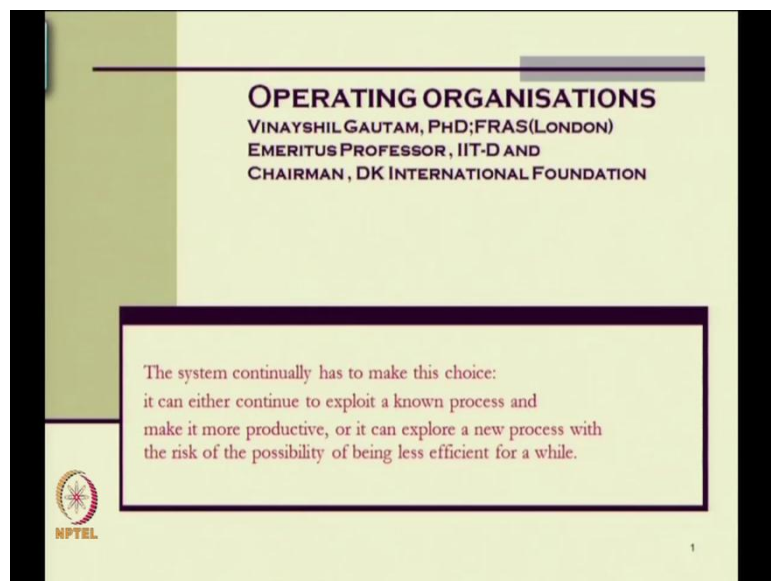


Organization of Engineering Systems and Human Resource Management
Prof. Vinayshil Gautam
Department of Management
Indian Institute of Technology, Delhi

Module - 1
Basics of Organizations and Human Resource Management
Lecture - 11
Operating Organizations

We have so far looked at concerns of understanding organizations, looked at ways of organizing engineering business and systems. We have considered the structure and process issues in organizations, and of course we have talked of the design concerns. We are going to conclude the first module by talking of the manner in which organizations would actually function, and this has been captioned appropriately as operating organizations.

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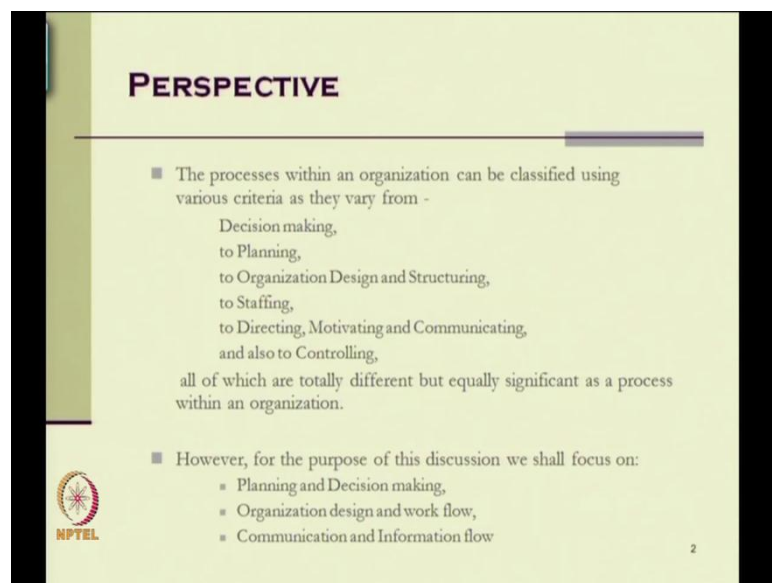


I would like to present to you a statement which reads the following. The system continuously has to make this choice: What is the choice? It is as elaborated in the subsequent lines. It can either continue to exploit a known process and make it more productive or it can explore a new process; the risk of the possibility of being less efficient for a while.

Meaning thereby, that when you are operating organizations at any point of time you have got two options; one is work with the existing systems and improve it, which means building upon your experience, your feedback, your evaluation, and then going forward. The second is it can explore a new process with the risk and with the risk of the possibility of being less efficient for a while. Now the possibility of reduced efficiency; if you try a new system is inherited, but it remains a possibility.


Therefore, the first submission I wish to make to you is to accept that risk management really begins with the exercise of choices on a very simple concern. Are we going to work the organization as it has always worked and keep incrementally improving it, or are we going to work the organization with a complete shift in paradigm and approach, and see where that clicks us? These are several concerns in operating organizations and to my mind, these are appropriate choices which need to be considered even though it raises concern of risk management

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PERSPECTIVE

- The processes within an organization can be classified using various criteria as they vary from -
Decision making,
to Planning,
to Organization Design and Structuring,
to Staffing,
to Directing, Motivating and Communicating,
and also to Controlling,
all of which are totally different but equally significant as a process within an organization.
- However, for the purpose of this discussion we shall focus on:
 - Planning and Decision making,
 - Organization design and work flow,
 - Communication and Information flow

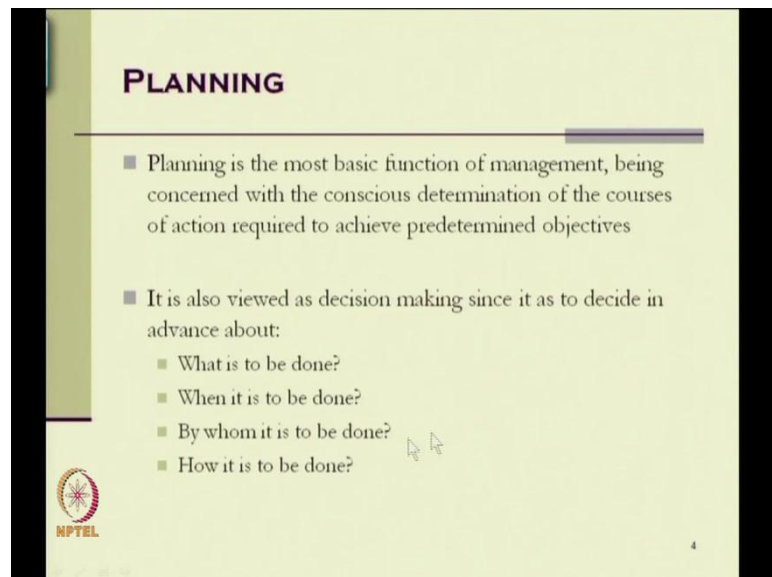
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The perspective therefore, in operating organizations is essentially one of classification of the activities in operating organizations, and what are the activities which are involved in operating organizations. Because that word operating may not make same sense to everyone. It looks at decision making, moves on to planning, moves on to organization design and structuring, moves on to staffing, moves on to directing, motivating, communicating and also to controlling; all of which are totally different, but equally

significant as a process within an organization. So, all these processes help to operate organizations.

Therefore, the perspective which we are talking of in this context is a holistic perspective. It is the perspective which requires considered thought and the thought that we will give is under three heads. Planning and decision making an organizations, organization design and work flow, communication and information flow. Under these three heads, we are going to look at the various dimensions of operating organizations and position ourselves in a knowledgeable manner, so that the choices can be wisely exercised.

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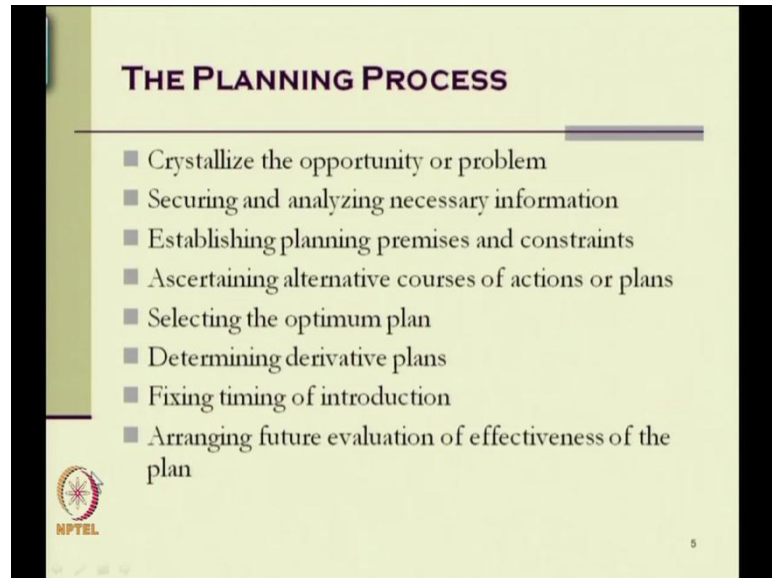


First the planning and the decision making process. What is planning mean? As we all know planning is the most basic function of management, being concerned with the conscious determination of the courses of action required to achieve a predetermined objectives. So to put it simply, all management is goal-driven, objective-driven. Planning is the basic function which concerns itself with a conscious choice of the course of action required to achieve those objectives.

Planning also has its parallel activity of decision making because no planning would take place unless there was adequate decision making, which put in a planning frame requires to decide in advance, what is to be done, and that is why what makes it planning. You decide in advance what is to be done, when it is to be done, by whom it is to be done, and how it is to be done? So, the key questions are what, when, whom, and how? These are

difficult questions to answer, but nobody nobody ever suggested that management was an easy choice. We will reflect upon these concerns and that would be how we will be looking at the question of operating organizations.

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The planning process crystallizes the opportunity or the problem. To crystallize the opportunity or the problem, the planning process has to secure and analyze the necessary information. So, everything in the planning process has to be data based, and this is an important prerequisite of the entire planning activity or operating organizations. Do you have the requisites facts at hand?

Once you have the facts at hand, then you establish planning premises. Advance the planning premises are established then you analyze the constraints. Ascertaining of the alternative courses of action is an important precursor activity. Because alternative courses of action would require an evaluation of the options available, how much of it is practicable, and how much of it really speaking is a possibility, what will certainly not a probability? The putting together of the data, clarity on premises and constraints, and generation of the options; would it is expected lead to the selection of the optimum plan?


Selection of the optimum plan would lead to determining of the derivative plan, and then gets the time factor in, and the time factor requires fixing timings of the introduction of the entire process, and arranging future evaluation of effectiveness of the plan. The point to be made here and to be noted is that, truly speaking, evaluation of effectiveness begins with

the process of setting up of the plans themselves, and that is how we operate organizations. We will be on course of time also looking at decision making, but planning is second only to setting objectives and then decision making follows.

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TYPES OF PLANS

- Classifying based on time dimension
 - Short-term (Plans extending generally upto 1 year)
 - Long-term (Plans of more than one year)
- Classifying based on functions
 - Production planning
 - Marketing planning
 - Sales planning and so on
- Another way of classifying is dividing them into – Objectives or goals, Strategies and tactics, standards, budgets, policies, procedures, programmes, rules, and methods.

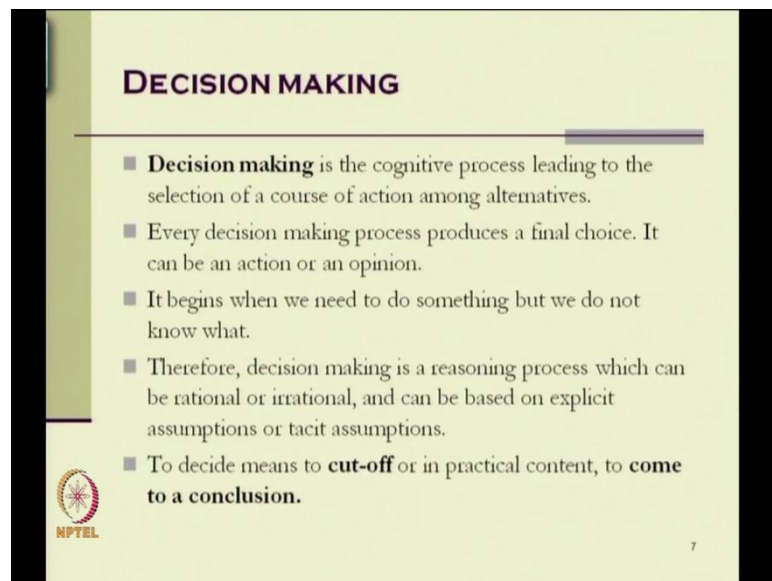
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There are different types of plans. Plans can be classified on time dimension. They often are short-term; that is plans extending generally up to 1 year. Then there are the long-term; plans more for more than a year. There are people who put between the short-term and the long-term what is call the medium-term. There is nothing sacra cent about these figures. It is not as if 1 year alone can be short term. There are industries where they would look at 6 months as a short-term or 2 years as a short-term. It has to do with the incubation time the plan would need. Similarly, the definition of long-term can vary from more than a year to more than 3 years, to more than five years, or indeed up to five years, or up to three years, and some where the cusp between the short-term and the long-term would be termed as the medium-term.

Classifications based on functions would require production planning, marketing planning, sales planning, and the important phrase here is so on. Because three types of plans have been listed, it does not mean that that has exhausted the full potential of the plans. You can have a financial plan; you can have a human resources plan; you can have a plan with reference to just about any function. In fact, it may be a good idea to have as many plans as are critical functions of an organization.


Another way of classifying is dividing them into objectives, goals, strategies, and tactics, standards, budgets, policies, procedures, programs, rules, methods. I have given to you on the screen roughly a book A of captions, which can be utilized for classifying the plans and sub dividing them in to operational norms. The significant factor will be that of trying to understand how that organization works and how it is to operate.

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DECISION MAKING

- **Decision making** is the cognitive process leading to the selection of a course of action among alternatives.
- Every decision making process produces a final choice. It can be an action or an opinion.
- It begins when we need to do something but we do not know what.
- Therefore, decision making is a reasoning process which can be rational or irrational, and can be based on explicit assumptions or tacit assumptions.
- To decide means to **cut-off** or in practical content, to **come to a conclusion**.

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I would now like to move over to decision making, and the definition of decision making is obviously rooted in exercising choices. But these have to be as per rational choices, these have to be conscious choices, and these cannot be choices at random. Decision making is the cognitive process leading to the selection of a course of action amongst alternatives is the more considered way of explaining it.

Every decision making process produces a final choice. It can be an action or an opinion. Now this is important. A decision making can also be an opinion if it is not held by a stake holder of the actual decision making because the tricky part is; where as the results of a decision may affect a large number of people, it is very rarely that all those stake holders come from all the affected groups of the decisions. Now in an ideal model, all affected by a decision would be considered stake holders.

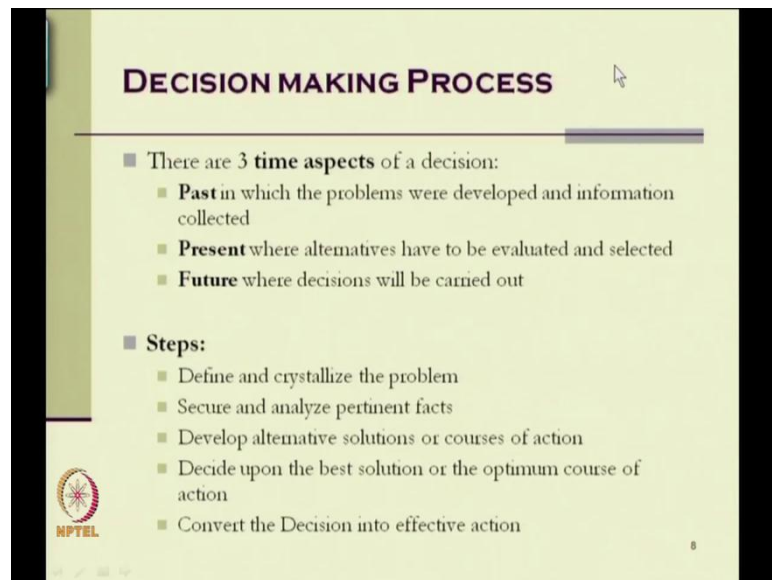
But in real life operational situation, it is not so common to find every single class of stake holder becoming a participant in the decision making process. Very often, the decision is carried out by an individual, or by a group, or by a designated authority, or by a designated

body institution, but then the bridge between the ideal model and the operational model lies in recognizing, that the decision maker will hopefully have taken into account the views of all the stake holders through a consolidated process, which brings us around to a very critical component of decision making. That is the processes of consultation.

Every decision making process produces either an opinion or a final choice; it begins when we need to do something, but we do not always know that we need to do something. Therefore, the knowledge that a decision is due is itself the first critical step. Therefore decision making is a reasoning process, which can be rational or it can be at times irrational and can be based on explicit assumptions or tacit assumptions. The nature of decision making being what it is in organizations. Very often, there are tacit assumptions made on people's nature, made on people's reaction, made on people's approach, which are as likely to be right as wrong. But they do affect decision making.

The explicit choice assumptions are more easy to list and more easy to accept. But the challenge of the situation is many decision makers are guided by a tacit assumption of the results of the outcome. But in operational terms, they never accept that these considerations affected the decisions. To decide therefore, the means of how far you go and how far you do not in the practical content is now coming to a conclusion. When you say you have come to a conclusion, then you have put a cut-off on how long you will agenzize, how long would you consider, and how long you would think about a situation, and that is the way decision is made.

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DECISION MAKING PROCESS

- There are 3 **time aspects** of a decision:
 - **Past** in which the problems were developed and information collected
 - **Present** where alternatives have to be evaluated and selected
 - **Future** where decisions will be carried out
- **Steps:**
 - Define and crystallize the problem
 - Secure and analyze pertinent facts
 - Develop alternative solutions or courses of action
 - Decide upon the best solution or the optimum course of action
 - Convert the Decision into effective action

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There is a decision making process and the decision making process has three aspects: All three of it in a time sequence; past in which the problem was developed and information collected; present, where the alternatives have to be evaluated and selected; future, where decision will be carried. Now if the decision making touches the past, then in management theory we link up decision making with what is called longitudinal thinking, which is basically distilling the past for its impact in the processes of the present.

Then there is the present, which leads evaluations and some selection; and finally the future, where decisions are carried out. The steps to it are the following; and let me elaborate them for you, and then I will try to explain it. Define and crystallize the problem. Secure and analyze the pertinent facts. Develop alternative solutions or courses of action. Decide upon the best solution or the optimum course of action. Convert the decision into effective action of a template, which has nothing much to do with the explanation of the process other than to establish that the whole thing is scientific.

How do you define and crystallize the problem? You define and crystallize the problem by structuring it. In fact, there is a precursor activity even to structuring it. How do you know there is a problem? How do you know that something needs to be done? Now that is a very important step in decision making. When certain goals are not being met, then you know that a decision is in order. So put it very simply, a decision is required when certain goals

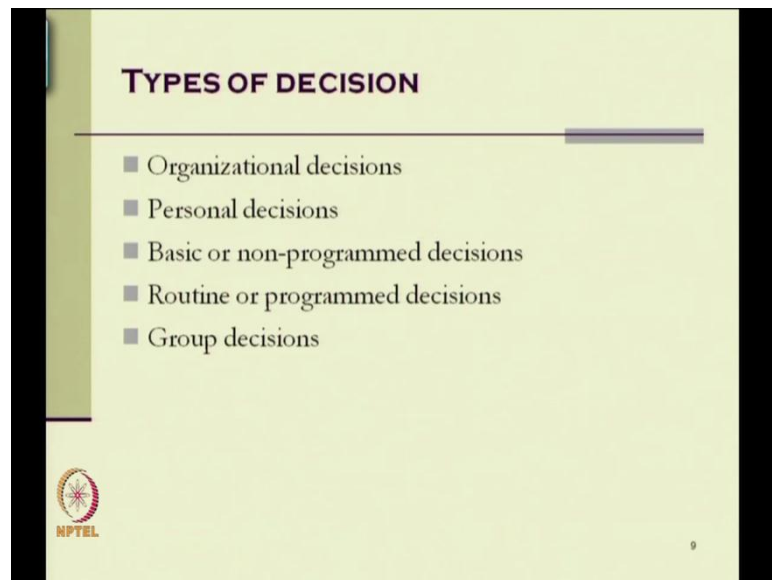
are not to be met. A decision may be required when there are certain unwanted symptoms. In either of the two cases, the situation has to be captured, analyzed, and structured.

After you have recognized the situation, if after you have analyzed the situation and after you have structured the situation, you are in a position to define and crystallizing the problem. Therefore, you can clearly see that the process of defining and crystallizing the problem is itself really half the battle. You cannot solve a problem unless you recognize there is a problem. Even after you recognize the problem, you can't solve the problem unless you believe that something needs to be done about it; and after you have recognized the problem and you believe that something needs to be done about it. The fact still remains. The problem has to be understood.

The feeling that there is a problem is not the same thing as understanding what the problem is; and after you have understood what the problem is, then you try to strengthen the scientific mode, analyze it, structure it, and then take it forward. So to undertake any of these sub steps, one has to secure and analyze the pertinent fact which is what the slide had shown you. Let us go back to the slides so that you are able to capture it. Remember here, I have said secure and analyze the pertinent facts. Decision making by and large has to be scientific, to be actionable, to be impact making, and to get somewhere so far as the problem is concerned. Therefore, decisions which not based on facts do have the possibility of going right, but that is a huge huge risk.

Risk is considerably mitigated if you have marshaled the facts. You develop alternatives of how to improve upon the situation, how to create a situation where you have no means of going getting around it, unless you are willing to live with it; and nobody wants to live with a problem. So, develop alternatives solutions or courses of action, and then once you have developed alternative sources or courses of action, then each action has to be evaluated for its pros and cons. It has to be evaluated for its strengths and weaknesses, and in a tabular mode best alternative has to be selected. This is how organizations operate.

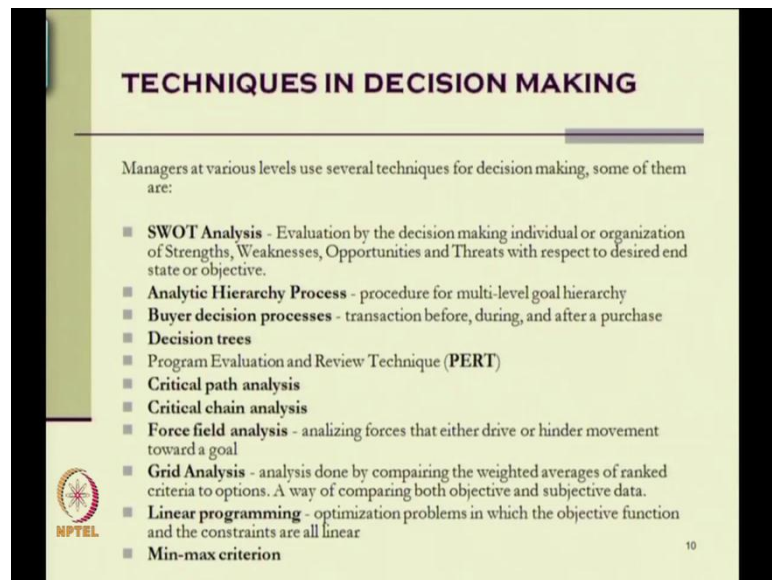
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So, how many types of decisions can possibly there be? Really it's the list can be as long as you would wish it to be. But for the purposes of our discussion here, I would like to identify a few generally accepted types of decisions. There are organizational decisions; decisions which touch the entire organization for one reason or another. There are personal decisions; decisions which touch an individual, which have which have an impact for the individual, and which can go no further.

Basic or non-programmed decisions; they are also a type of decision. These are decisions, but they haven't been programmed. Then as you can well imagine, just as there are basic and non-programmed decisions, there are routine and programmed decisions and finally, there are group decisions. So as I have already questioned you, it is not as if this is like an exhaustive list of decisions. So, let me show it to you so that your recall on this is clear. The five decisions I talked about are listed here, but they are only illustrative and they go only so far.


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TECHNIQUES IN DECISION MAKING

Managers at various levels use several techniques for decision making, some of them are:

- **SWOT Analysis** - Evaluation by the decision making individual or organization of Strengths, Weaknesses, Opportunities and Threats with respect to desired end state or objective.
- **Analytic Hierarchy Process** - procedure for multi-level goal hierarchy
- **Buyer decision processes** - transaction before, during, and after a purchase
- **Decision trees**
- **Program Evaluation and Review Technique (PERT)**
- **Critical path analysis**
- **Critical chain analysis**
- **Force field analysis** - analyzing forces that either drive or hinder movement toward a goal
- **Grid Analysis** - analysis done by comparing the weighted averages of ranked criteria to options. A way of comparing both objective and subjective data.
- **Linear programming** - optimization problems in which the objective function and the constraints are all linear
- **Min-max criterion**

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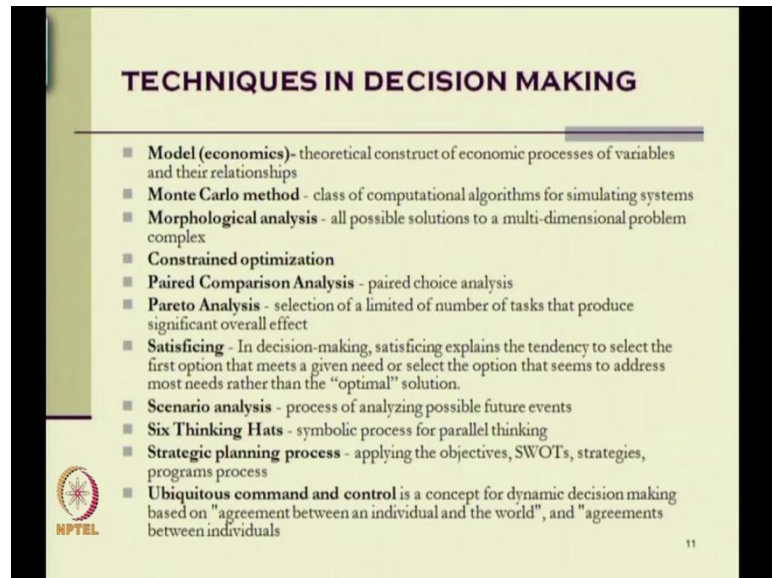
The techniques of decision making are really large. In fact, you can have a full course on techniques of decision making. It will not be possible for us to go through the entire list, but let me show to you certain illustrative techniques of decision making. It does not really matter if you are not familiar with each of them or you are not able to note every single act techniques which are may be elaborating.

But so long as you are aware that there are techniques of decision making, you will have a level of confidence in recognizing the fact that decision making itself is a very scientific process, and there are time-tested ways of coming to a conclusion. The first ban example which comes to my mind of techniques of decision making is what is generally termed as SWOT analysis. SWOT analysis is an analysis of the strengths, weaknesses, opportunities, and threats of any situations. Evaluation by the decision making individual or organization of strengths, weaknesses, opportunities, and threats with respect to to the desired achievement of objectives is SWOT analysis. For the present, I believe that is adequate.

To move forward some of the other techniques of decision making could be the analytic hierarchy processes, which is a procedure for multiple-level goal hierarchy. There is the buyer decision process; transactions before and after a purchase. There are decision trees. Program Evaluation and Review techniques, popularly refer to as PERT. There are critical path techniques. There are critical chain analysis methods. There is the forced field analysis.


There is the grid analysis, and of course it is possible you have heard of linear programming, and the min-max criterion; and the techniques just go on in a manner which would almost make it appear that there are endless techniques. The techniques may be endless, but their use and their efficacy is another matter. We have to select from the kit, the techniques which works best for the problem we are trying to handle.

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TECHNIQUES IN DECISION MAKING

- **Model (economics)**- theoretical construct of economic processes of variables and their relationships
- **Monte Carlo method** - class of computational algorithms for simulating systems
- **Morphological analysis** - all possible solutions to a multi-dimensional problem complex
- **Constrained optimization**
- **Paired Comparison Analysis** - paired choice analysis
- **Pareto Analysis** - selection of a limited of number of tasks that produce significant overall effect
- **Satisficing** - In decision-making, satisficing explains the tendency to select the first option that meets a given need or select the option that seems to address most needs rather than the "optimal" solution.
- **Scenario analysis** - process of analyzing possible future events
- **Six Thinking Hats** - symbolic process for parallel thinking
- **Strategic planning process** - applying the objectives, SWOTs, strategies, programs process
- **Ubiquitous command and control** is a concept for dynamic decision making based on "agreement between an individual and the world", and "agreements between individuals"

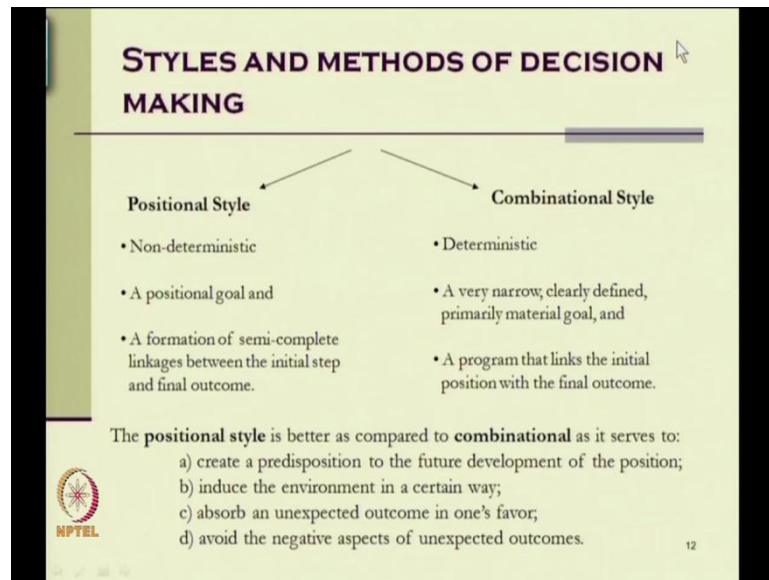
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Some of the other techniques of decision making would include modeling; that is theoretical constructs of economic economic processes of variables and their relationships. Modeling need not be only of economic processes, it can be any activity, any action, which has variables in a relationship under what can be called processes; could lend itself to modeling. There is the Monte Carlo method; that is the class of computational algorithms for simulating systems. A good technique for making assumptions and looking at possibilities of the consequences, and then trying to generate end number of options so that the ultimate choice is reason driven.

There is a morphological analysis, which looks at all possible solutions to multiple-dimensional problems. There is constrained optimization. There is paired comparison analysis, which is essentially a paired comparison or choice analysis. Pareto analysis is selection of a limited of number of tasks that produce significant overall effect. The list would also include scenario analysis, the six thinking hats, strategic planning process, ubiquitous command and control, and as I said the list can go on. The ubiquitous command

and control is a concept for dynamic decision making based on agreements between the individual and the world as it work. It is also an agreement between individuals. It has to do with operations and selections of techniques to take matters forward.

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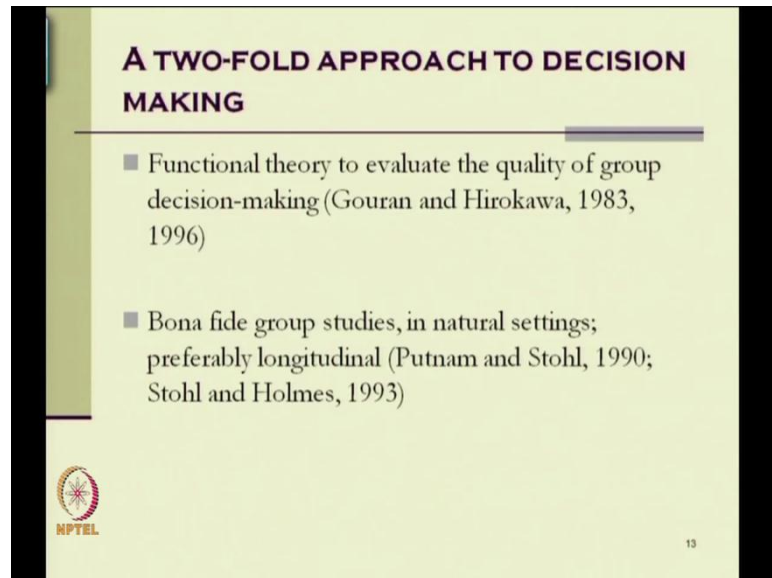


I would like at this stage to make a reference to styles and methods of decision making. I would pause here for a while so that you are able to absorb the components. To go through it, there is the positional style; there is the combinational style. The positional style is a question of how you go about using the techniques. For the same technique, you could have a non-deterministic style; you could have a deterministic style. You could have a positional goal; and you could have a very narrow, clearly defined, primarily material goal. You could have a formation of semi-complete linkages between the initial steps and the final outcome, and you could have a program that links the initial position with the final outcome.

Now these clusters are decision styles using different kind of decision techniques. The purpose of walking you through this is very simply to course awareness of the complexities of decision making, because management is all about decision making as I alerted you right in the beginning. For some positional style is better compared to combinational as it serves to: Create the predisposition to the future development of the position. It induces the environment in a certain way. It absorbs an unexpected outcome in one's favor. It avoids the negative aspects of unexpected outcomes.


Most importantly, it avoids the negative aspects of unexpected outcomes. To course that therefore, one has to take certain steps which will mitigate the negative aspects. And that again makes operative organizations an art, where even while taking a decision with a primary phase be a right one has to be conscious, that if there are negative fall outs, they have to be contend.

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A TWO-FOLD APPROACH TO DECISION MAKING

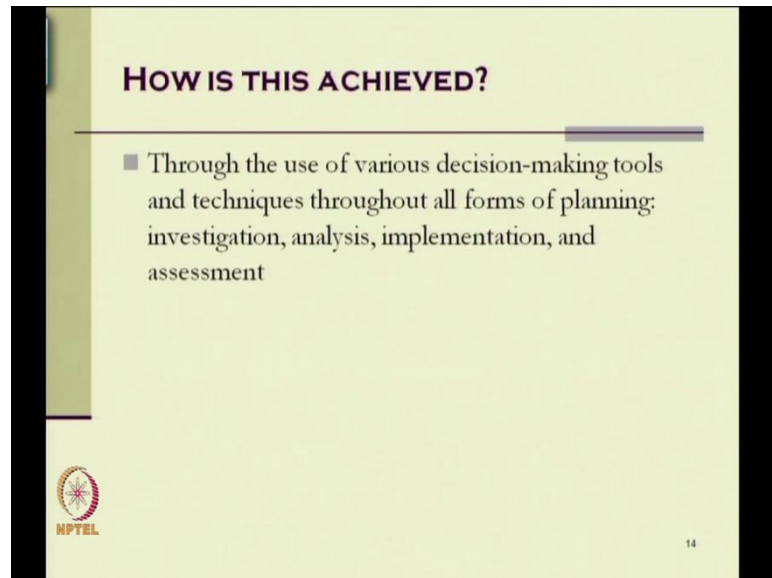
- Functional theory to evaluate the quality of group decision-making (Gouran and Hirokawa, 1983, 1996)
- Bona fide group studies, in natural settings; preferably longitudinal (Putnam and Stohl, 1990; Stohl and Holmes, 1993)

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There are two-fold approaches to decision making and a lot of work has gone behind it. Gouran and Hirokawa had said years ago that functional theory to evaluate quality of group decision making is the best, where as the others like Putnam and Stohl, and Stohl and Holmes, who said that bona fide group studies in natural settings preferably longitudinal are what is required. Now the distinction between a functional theory to evaluate quality of group decision making, and bona fide group studies operate on to assumptions. So, decision making is a huge area of debate, elaboration, analysis. At this stage of your learning, so if I said to state and for you to absorb that there are complexities and it is not as if decision making is a simple exercise of choices.

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HOW IS THIS ACHIEVED?

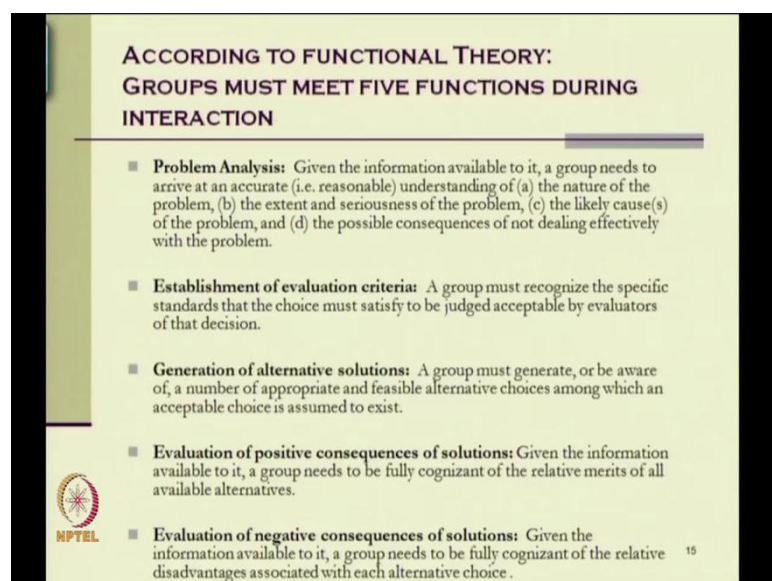
- Through the use of various decision-making tools and techniques throughout all forms of planning: investigation, analysis, implementation, and assessment

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But one question remains. If there are different approaches to decision making and if there is the use of various decision tools in decision making and techniques, then how is this achieved? Planning, investigation, analysis, implementation and assessment are the handmaidens for this, and these handmaidens have to be taken together with various other theories of decision making. The selection is an art, the practice requires a scientific base and ultimately like always in management, the art and the scientific bases together become the craft.

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**ACCORDING TO FUNCTIONAL THEORY:
GROUPS MUST MEET FIVE FUNCTIONS DURING
INTERACTION**

- **Problem Analysis:** Given the information available to it, a group needs to arrive at an accurate (i.e. reasonable) understanding of (a) the nature of the problem, (b) the extent and seriousness of the problem, (c) the likely cause(s) of the problem, and (d) the possible consequences of not dealing effectively with the problem.
- **Establishment of evaluation criteria:** A group must recognize the specific standards that the choice must satisfy to be judged acceptable by evaluators of that decision.
- **Generation of alternative solutions:** A group must generate, or be aware of, a number of appropriate and feasible alternative choices among which an acceptable choice is assumed to exist.
- **Evaluation of positive consequences of solutions:** Given the information available to it, a group needs to be fully cognizant of the relative merits of all available alternatives.
- **Evaluation of negative consequences of solutions:** Given the information available to it, a group needs to be fully cognizant of the relative disadvantages associated with each alternative choice.

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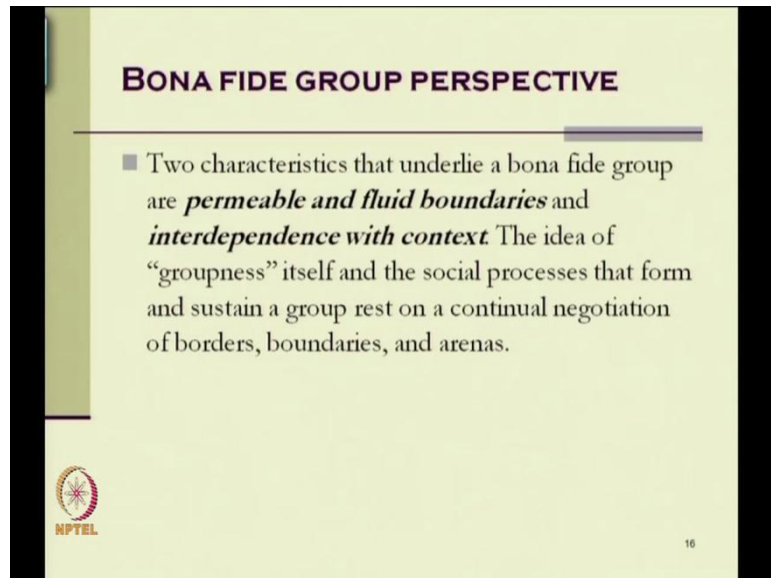
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According to the functional theory, groups must meet five functions during interaction. Hardly of that again on the screen for a few movements, so that you are able to read it; then I will try to walk you through it to explain what is the sum and substance, which I wish you to register through this elaboration. Let us try to walk through this. Problem analysis requires understanding of the nature of the problem, the extent and seriousness of the problem, the likely causes of the problem, the possible consequences of not dealing effectively with the problem. All decision making begins with problem analysis. This is a relatively commonsensical approach broken up in to a sub segments elaborated here a, b, c, d which moves on to the establishment of the evaluation criteria.

A group must recognize the specific standards that the choices must satisfy. Now this is a very important dimension to bring in to decision making. Decision making is not just problem solving, which of course it is. But the decision must have a quality. It must satisfy that the goals have been achieved and it must be acceptable by the evaluators of the decision; otherwise, the decision will not be sustained. There is a generation of alternative solutions which is required. A group must generate or be aware of a number of appropriate or feasible alternative choices, among which an acceptable choice is assumed to exist.


It gives the feeling which is important for taking it forward that all options were explored. If all options were not explored and a decision was taken before the actual decision was taken, then you have a problem; hence the need to be aware of appropriate and feasible alternative choices, all of which would have a certain level of acceptability. The evaluation of the positive consequences of the solution are important because given the information available, a group needs to fully to be fully cognizant of the relative merits of all available alternatives, and this links up with the immediate preceding thought. Just as you look at the positive consequences of a decision, you need to recognize the negative consequences of a decision; and therefore be conscious that the negative consequence of a decision which will very often be there, cannot out way the positive outcome of a decision.

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BONA FIDE GROUP PERSPECTIVE

- Two characteristics that underlie a bona fide group are *permeable and fluid boundaries* and *interdependence with context*. The idea of “groupness” itself and the social processes that form and sustain a group rest on a continual negotiation of borders, boundaries, and arenas.

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Hence, there is a need for being bona fide in group perspective. Two characteristics that underlie a bona fide group or what can be called permeable and fluid boundaries and interdependence with the context. The idea of groupness itself and the social processes that form and sustain a group, because both of these rest on continuous negotiation of borders, boundaries, and arenas, and here decision making becomes an art. One has to be conscious of the continual negotiation of boundaries, borders, and arenas, because they keep changing within that groupness itself; and the social process has to bring about a bona fide group perspective because everyone who is affected needs to be a party to this.

There are various views of people which will be elaborated, and they will be discussed. But before we get into this, any decision making, any problem solving, any need to operate an organization lies in three things. First, the organization itself must create a feeling of a considered response to a given situation or a demand or a pressure on it. It cannot be adhoc; it cannot be a casual; it cannot be erratic; it cannot be predetermined.

The second is that any organization, when in the mode of decision making will have to do it with resource optimization, because any wastage of resources is not the way forward. In a era of human civilization where resource management is one of the keys to the sustainability of civilization itself. This is a still more heighten need. It has always been a need, but resource optimization is perhaps more valid concern today than it has ever been in the past.

The third concern has to do with the fall outs of decision making; and the fall outs of decision making have to do with its impact on organizational renewal, organizational vitality, and to what extent is the organization gaining from the decision itself. Is it revitalizing itself? Because all organizations undergo the metabolic process, that is the interplay of anabolism and catabolism. Anabolism is the process of destruction of the cells. Catabolism is the process of renewal of those cells. So, anabolism and catabolism together are the essence of the metabolic process. This is how a human body is kept alive.

We have drawn the analogy of the human body in understanding structures. We have drawn the analogy of the human body in understanding processes. I am drawing once again the analogy of the human body in understanding decision making consequences. And saying that whatever does not strengthen the metabolic process of an organization or those processes of the organization, which have to do with the renewal of the organization, which we have to do the sustenance of the organization, which have to do with the survival of the organization and its scoping strategies. To meet the challenges to which it does and will forever be affected is also an important touch stone of decision making.