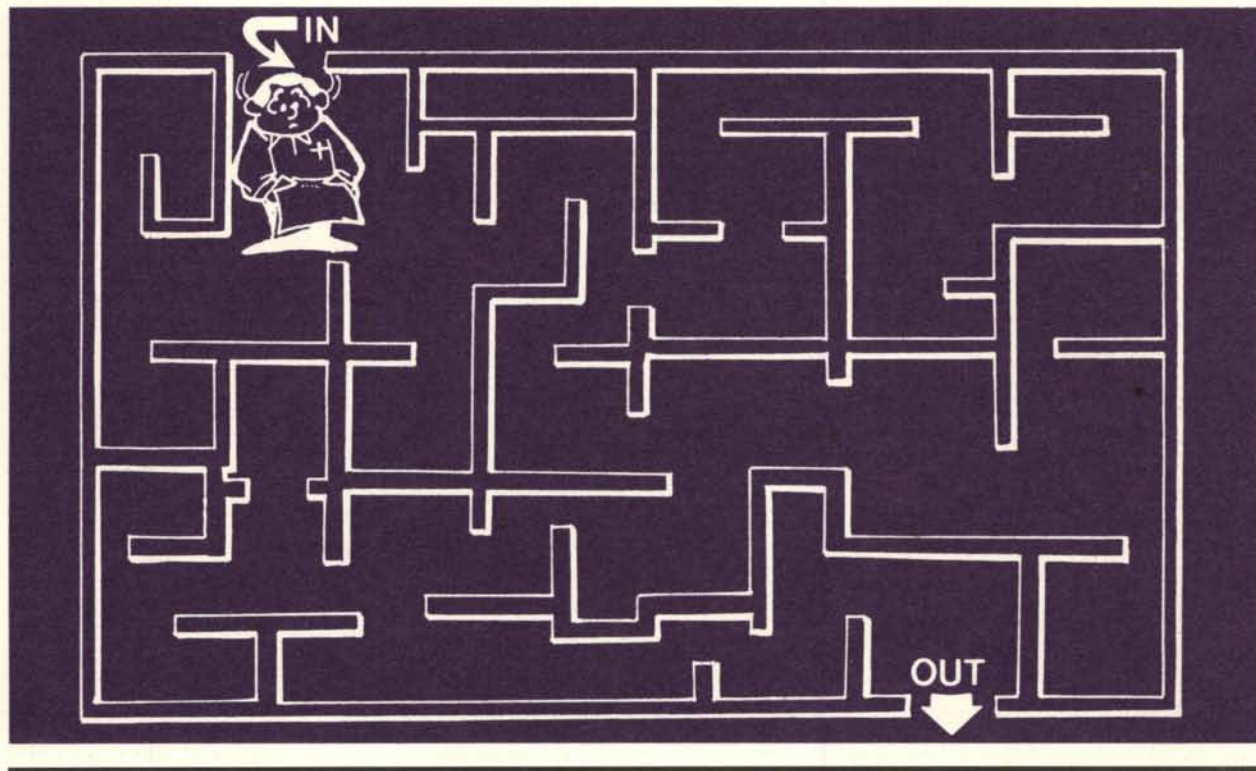




# RESEARCH MANAGEMENT LEARNING PACKAGES



Module Subject:

## Systematic Managerial Analysis



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# RESEARCH MANAGEMENT LEARNING PACKAGES

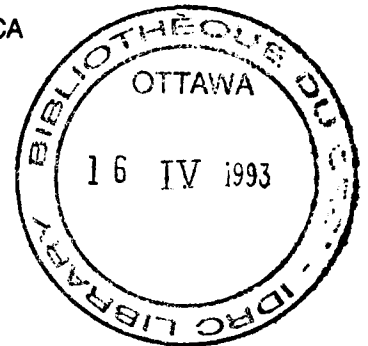
Module Subject:

## Systematic Managerial Analysis

Module Developer:

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A collaborative project of the **SouthEast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)** and the **Research Management Center (RMC)**, College of Economics and Management (CEM), University of the Philippines Los Baños (UPLB) with funding provided by the **International Development Research Centre (IDRC)** in Ottawa, Canada.

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## Preface

Management in research has come of age. There are three major features of this development.

First, while traditional research is usually narrow in scope and focused on a single discipline, present-day researches are usually interdisciplinary, requiring the participation of several researchers coming from diverse disciplines. With the tendency of high-caliber researchers to be strongly individualistic and independent, the management of an interdisciplinary group of researchers working on a common problem requires different skills transcending technical expertise.

Second, research organizations are getting bigger, becoming more complex and more bureaucratic. There is an increasing number of complementary functions, such as data management, experimental facilities management, research and extension linkage, etc., that have to be wedded with research. These would thus require a high degree of management expertise.

Third, there is an increasing demand for research to solve development problems. Before, the generation of knowledge was the major reason for research. Today, research is required to convert this knowledge to viable solutions to urgent problems of society. A research institution must, therefore, deal not only with researches but also with end-users, politicians, entrepreneurs, industrialists, organized groups, funding agencies, mass communicators, technology transfer institutions and other development agencies.

Where then will this new breed of managers come from? Are the managers of business enterprises and other non-research institutions not eligible as research managers? We think that research managers need to have expertise in both management and research. To be effective in directing scholars and researchers, one has to earn peer credibility and professional respect. The successful research manager therefore has to be a respected man of science, as well as a proficient manager and administrator. Herein lies the distinctiveness of research management.

Considering that the process of adding research expertise to professional managers is more difficult than adding management expertise to researchers, it seems that the most feasible source of good research managers is from within the research system itself. To do this, however, there is a need to deliberately enhance and develop the managerial expertise of scientists/scholars through a well thought-out training program.

Toward this end, the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and the Research Management Center (RMC) of the University of the Philippines Los Baños (UPLB), with support from the International Development Research Centre (IDRC), join hands to satisfy this need. Our product is a series of learning modules designed to consolidate and package learning materials into syllabi, cases and source materials for short-term and long-term courses in research management. Each learning module consists of a lesson plan, teaching cases, expert's analysis, source monograph, visual support and self-evaluation. The modules were so designed as to enhance learning through an approach whereby students/participants engage in a more active process of knowledge acquisition. The modules could be used in a self-paced learning schedule where the student/participant would be able to proceed without the presence of the instructor. Moreover, the learning packages could be used singly or as a set of modules for a specific course or degree program. It is hoped that through this effort those involved in managing the complex process of research will internalize the principles, frameworks, perspectives and philosophies as well as derive learnings from reality-based experiences in the world of research management.

This particular module is one of 26 modules covering the following subject-matter areas:

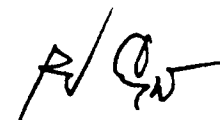
- Bureaucracy in Scientific Organizations
- Information Systems Management
- Interdependence of Research and Support Services
- Budgeting in Research
- Coordination in Scientific Organizations
- Managing Disciplines in Scientific Organizations
- Management of Change in Scientific Organizations
- Systematic Managerial Analysis

- o Resource Generation
- o Organizational Development and Principles of Administration
- o Organizations and Systems of National Agricultural Research
- o Research-Extension Linkage Management
- o Communication-Extension Campaign
- o Communication Planning and Presentation of Research Programs
- o Formulating Research Plans and Programs
- o Agricultural Research Policy: Issues and Process of Formulation
- o Organizational Behavior of Research Institutions
- o Managerial Leadership In Research Systems
- o Motivating Knowledge Workers
- o Networking and Scheduling Techniques
- o Personnel Management Systems for Research Institutions
- o Technology Assessment and Evaluation in R & D
- o Public Relations in Research Systems
- o Financial Management for Research Systems
- o Creativity and Research Management

We wish to express our gratitude and appreciation to the following institutions and individuals who provided the project assistance and cooperation without which this project would not have been born and completed: to **IDRC** for providing financial assistance; to **UPLB**, for making its faculty and staff available to participate in this project, and to the many module developers who labored for weeks to come up with their module output. We also would like to extend our appreciation to Ms. Ma. Theresa H. Velasco who edited the manuscripts and made them look good and easy to read. Finally, to our workforce, Dr. Melinda F. Lumanta (Senior Researcher), Ms. Ma. Theresa A. Baril (Research Assistant) and Ms. Ma. Magdalena L. Junsay (Secretary), our appreciation for their labor of love on this project.



Dr. Arturo A. Gomez  
Director, SEARCA



Dr. Rogelio V. Cuyno  
Director, RMC

Los Baños, Laguna, Philippines  
October 1989

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**Module Subject:**  
**SYSTEMATIC MANAGERIAL  
ANALYSIS**

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# LESSON PLAN

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## Need

Making decisions and solving problems are managerial prerogatives which separate managers from non-managers. The tools for decision-making and problem-solving have been reduced to a process technology called **Systematic Managerial Analysis (SMA)** and tried successfully across continents.

The SMA process makes for a more efficient operation and leads to getting the job done even in management of research. This is the case because research operation in modern times has become not only a creative exercise but also a production system. In fact, successful research management is indicated by creativity, productivity and efficiency in performance.

## Purpose

This module intends to make the manager/supervisor of research and research-support services learn the tools and processes in decision-making, problem-solving and potential problem analysis so that he or she can improve the efficiency and productivity of his or her research operation.

## Learning Objectives

More specifically, this module aims to enable the participants to:

1. identify, discuss and give examples of the following standard steps in SMA - - situation appraisal, goal-setting, decision analysis and potential problem-analysis; and
2. develop acceptable analyses for cases 1, 2, 3 and 4 using the prescribed tools and processes in SMA.

## **Content Outline**

1.0 Introduction: Rationale and Development of the Field

2.0 Definition

2.1 Management Problem

2.2 Decision-Making

2.3 Potential Problem Analysis

3.0 Steps in Problem-Solving

3.1 Situation Appraisal (problem identification and definition, diagnoses and appraisal)

3.2 Goal Setting

3.3 Decision-Analysis (criteria, options, evaluation, decision)

4.0 Potential Problem Analysis

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# SOURCE MONOGRAPH

## Systematic Managerial Analysis for Problem-solving and Decision-making

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### Introduction

Solving problems and making decisions are tasks that distinguish managers from other workers in an organization. Managers are expected to be in control of problems in their units. They have greater responsibilities and for this they are compensated more. In the book **Rational Manager**, this subject of systematic managerial analysis and problem-solving and decision-making is dealt with in greater detail. It was published in 1965 and written by two social scientists, Charles H. Kepner and Benjamin B. Tregoe.

The insights found in this book were derived from a six-month research conducted by the authors back in the early '50s. They studied how managers in a variety of businesses went about solving problems and making decisions. The word **rational** in their book is not just a put-on. The two researchers found out that successful managers follow certain steps when they solve problems and make decisions. Rationality here means that there is a systematic way of doing this task. Actually, the historical line of this rational process of problem-solving and decision-making goes many years back with John Dewey's rational thinking and Francis Bacon's scientific process.

In a more recent book **Passion For Excellence**, authors T. Peters and N. Austin, concluded from their study of 75 successfully managed firms that one characteristic common among the successful firms is that their managers are problem solvers. When problems crop up these successful managers don't temporize or indulge in processes that will result in delayed solution to the problem.

This monograph presents in a more popular way the steps involved in this so-called **systematic managerial analysis (SMA)** and how these can be applied to agricultural management problems. It is our hope that by citing and describing the steps involved (**Table 1**), agricultural managers could examine their own way of problem-solving and decision-making and compare it with SMA. In the process, they will acquire new insights based on scientific research.

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**Table 1. Steps in Systematic Managerial Analysis (SMA) for Problem-Solving and Decision -Making.**

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1. Situation Appraisal
  2. Goal Setting
  3. Decision-Analysis
  4. Potential Problem Analysis
- 
- 

## **Situation Appraisal (I.0)**

We shall assume here that the four steps cited in **Table 1** will be applied in a situation where a manager is implementing a project, such as a research or a community development project.

In implementing any project, things will not always come out exactly as planned. Deviations from plans are likely to occur no matter how well-prepared they are. The reasons for this may be:

- o The information and premises used by the planner during the planning process may be erroneous (i.e., in preparing the budget the price used for each item of expenditure may be too conservative thus causing a low estimate of the total project cost).
- o Circumstances in the environment may have changed, which is beyond the control of the implementor (i.e., a reorganization in a government department led to a change in leadership, wherein the new leader now decides to modify terms in the contract).

- o Some internal and external forces not considered in the planning may emerge during the implementation process (additional signature is required before withdrawals and purchases are considered valid).

Problems do not just emerge from nowhere. They arise from some situations. These situations have to be appraised (**Table 2**) to warrant a statement that there is in fact a problem.

## Problem Identification (1.1, 1.2, 1.3)

A problem (**Table 2**) is technically defined as the **discrepancy** between what was originally **desired** (expectation, target, objective) by the planner and **what is existing** during implementation. If the gap between the desired situation (**1.1, Table 2**) and the present situation (**1.2, Table 2**) is small, the problem is regarded as small also. But if the gap is large, the problem is regarded as large. All managers wish that undesirable events do not happen during implementation so that what was planned will be realized without deviation (**Figure 1**). But as we pointed out earlier, the occurrence of this gap is inevitable during implementation.

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**Table 2.** How to Do Situation Appraisal - I.0

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<p>1.1 Desired Situation</p> <p>1.2 Present Situation (Present facts, observations and performance of the system)</p> <p>1.3 Gap = Problem</p> <p>1.4 Problem Statement</p> <ul style="list-style-type: none"> <li>- where</li> <li>- extent</li> <li>- when</li> <li>- who</li> </ul> <p>1.5 Problem Appraisal</p> <p>1.6 Problem Analysis/Diagnoses</p>	
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Problems are undesirable, unwanted and they thwart goal attainment. That is why they have to be solved.

A good manager does not get surprised or ambushed by problems. Through continuous observations or data collection during implementation, the manager monitors and evaluates the project's performance. Two kinds of information must be available to him at all times so he can discern any deviation-- data of what is going on (**1.2, Table 2**) and the statement of the desired condition (**1.1, Table 2**). This is part of scientific management-- the collection and use of empirical data in problem identification and decision-making. Formulating the statement of desired condition and stating managerial objectives and targets will be discussed in a later section on goal setting .

#### Problem Statement (1.4)

Problems to be solved by the manager need to be described precisely. In problem solving certain resources are mobilized and actions applied on the defective part as a corrective measure. The manager must ask for certain information before any corrective action is determined.

Precise description of the problem should include the following information: location (**where**); extent of deviation (**how much**); time of occurrence (**when**); and names of persons responsible (**who**).

**Location** is important; otherwise, the manager would not know where to send resources or whatever to solve the problem. Imagine a fleet of fire trucks running at full speed with their sirens blaring in response to an SOS call with the group leader not knowing where the fire is.

Knowledge of **extent of the problem** is likewise important because the appropriateness and measure of the solution would depend on the magnitude of the deviation that has to be corrected.

Certain problems require immediate solution; otherwise, any delay would render them irreversible. Information regarding the **time** the incident occurred is therefore essential.

Since most management problems are caused by people, it follows that the solution would also be people-bound. In describing the problem it is important to include information about the **people who were responsible for its occurrence.**

### Problem Appraisal (1.5)

Problem-solving requires intervention from the manager so that the discrepancy or gap can be closed, the unwanted condition corrected or the undesirable situation stopped. Considering that some fluctuations in performance constitute a normal phenomenon, the intervention process has to be calculated. In some cases, making changes or doing something presumably to solve the problem may even do more harm than good. For instance, reorganization as a solution to intra-organizational conflict may bring more problems rather than solve what could be a temporary situation.

In problem appraisal we ask, must we intervene to solve the problem or just hope the problem will solve itself in due time? There are tests that can be used to answer the above question (**Table 3**). These tests are **seriousness, feasibility, urgency** and **trend**. The rule of thumb for the **seriousness test** is -- the greater the magnitude of the discrepancy, the greater the need to intervene to prevent further deterioration of the condition. The adverse consequence on the system of a problem that is large in magnitude is greater than if the magnitude is small.

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**Table 3. Tests for Problem Appraisal (Shall I Intervene or Not?)**

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- seriousness
  - feasibility
  - urgency
  - trend
- 
-

The **feasibility test** is an extension of the seriousness test. At times the magnitude of the problem is so large that the most rational and objective action to take would be to give up on it. In this case any action on the situation would only mean losing more because the situation had deteriorated so badly that it is beyond redemption. As it is said in business -- "**Don't throw good for bad money.**" In a business venture in the face of continuing losses the thing to do is to declare bankruptcy. With this the businessman can at least be given some relief in terms of tax deduction.

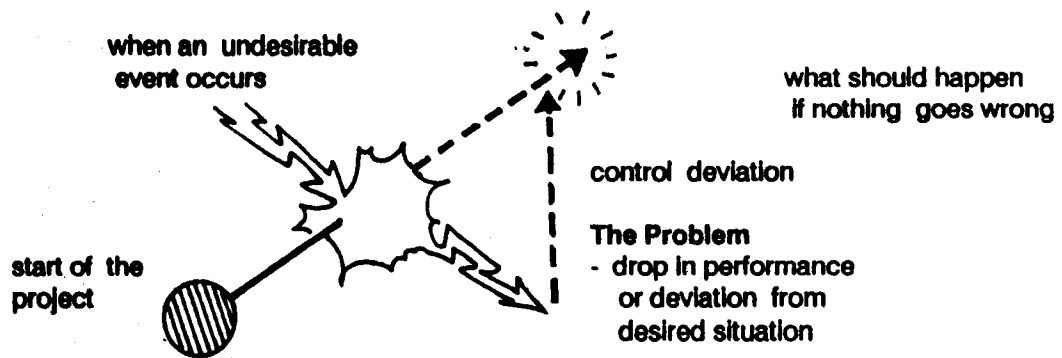
**Urgency** of the problem means gap or deviation requiring instant intervention; otherwise if action is delayed the problem would no longer be reversible. This is known as the "life or death" test. In the urgency test, the rule of thumb is --the more urgent the problem, the more priority is given to its intervention.

A problem may be urgent but not serious or it may be serious but not urgent. A small fire in the attic of a house is urgent requiring fast response, but not serious in extent because it could only involve the burning of some waste papers. On the other hand, a patient may be seriously affected with hypertension but no urgent intervention is necessary as long as the patient does not show signs of alarming elevated blood pressure at the moment.

As for **trend**, it is the patterned behavior in a time series. For trend to be established there has to be some consistency in the behavior spread over a time period. The rule of thumb in the trend test is -- intervention is warranted if it is demonstrated that the problem is steadily deteriorating over a time period.

## Problem Analysis/ Diagnosis (1.6)

Problems are caused. They do not spontaneously spring up by their own doing. An agent must exist, a force whose coming precipitates a change in the course of events (Fig. 1). This causes the performance to decline or the situation to turn sour. This causal agent has to be found and incapacitated so that it will not cause performance deviation from the expected.



**Figure 1.** Problem as it occurs during implementation.

The physician, in trying to treat a patient for an illness (deviation from normal health), first determines the symptom's cause before prescribing medicine. Wrong diagnosis will lead to wrong prescription, which in turn will not effect a cure or might even aggravate the patient's condition.

The test of a particular suspected cause is --when it is removed, the symptom stops.

The cause of a problem sometimes operates as a chain of secondary and tertiary causes originating from a single root cause.

For instance, the performance of the unit is lagging behind because of absenteeism. This is caused by intense conflict within the ranks, but the root cause is really favoritism of the boss for a worker who is more junior, one perceived by the others as incompetent. In this situation no amount of disciplinary measure to curbe absenteeism or to reconcile the parties at war will work unless the root cause of the problem is eliminated -- favoritism.

Sometimes the so-called root cause is called by another term -- "breeder problem." This is the system producing the symptom or the force that is hampering performance. A good example of a breeder problem is the queen of a termite colony. Unless the queen is destroyed, termites will continue to pester the household, notwithstanding daily spray of pesticide.

The series of cartoons (Figs. 2, 3 and 4) are instructive in terms of understanding diagnosis, treating the symptom and the root cause.

**Figure 2** shows a man trying to disentangle the messy thread. He goes about this by patiently looking for the node or knot which is causing the mess. Without the knot there would have been no mess. If the person succeeds in disentangling the knot, he will automatically straighten the mess.

**Figure 2.** Illustration of a Diagnostic Process



**Figure 3** shows a tree with twisted branches due to lack of moisture and damaged roots. By applying moisture, assuming the roots are not yet dead, the branches will become normal again and the tree will recover. The picture is a metaphor of the Middle East problem. Observers of the troubled region say that unless the Palestinian issue is resolved, there will always be fighting between Israel and its neighboring Arab countries.

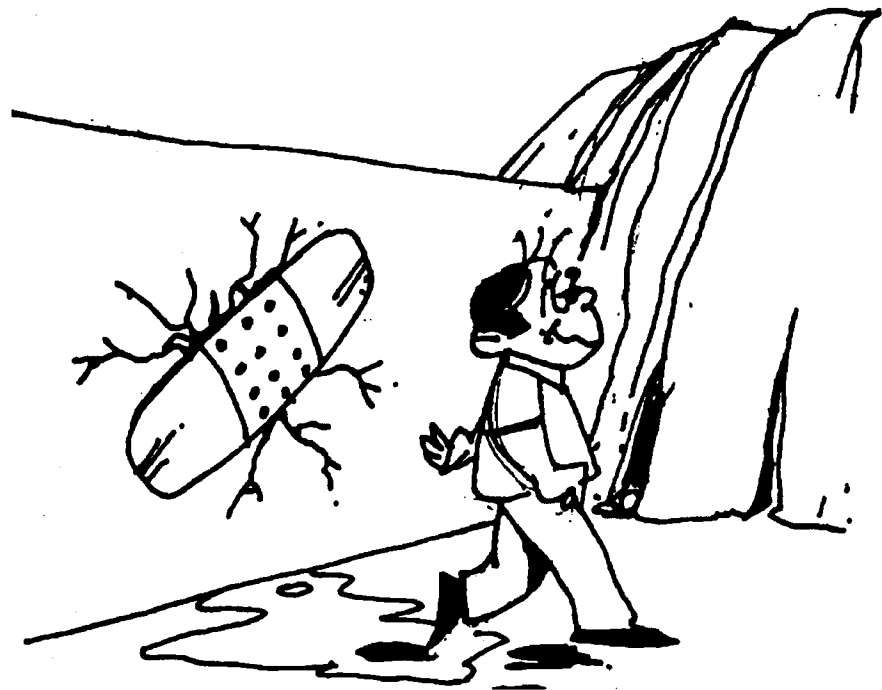
In **Figure 4**, we see a man applying a band aid on a crack at the dam hoping to temporarily stop the leak. Of course this will not work as he is only treating the symptom, not the cause of the problem. Momentarily, the crack in the dam will open up and the water will rush out beyond control.





**Figure 3. Illustration of a Root Cause**

Incidentally, **Figure 4** is also instructive of what an urgent problem is. Initially, the problem (small crack in the dam) is negligible but without swift remedy, it soon becomes devastating.



**Figure 4. Treating the Symptom Rather than the Cause**

## **Goal Setting (2.0)**

So far we have discussed what a problem is (deviation from expected); we know how to state or describe the problem in precise and accurate terms; we have developed a four-way test to determine whether intervention is the right thing to do or not; and we have learned about problem diagnosis.

We now go to goal or objective setting. As we resolve to correct the shortfall in output (T2, Table 4) using present performance as the new baseline, we set a new goal for the next performance period (T3). What then is a goal? It is the standard of performance that you want to reach which is set at the time of planning.

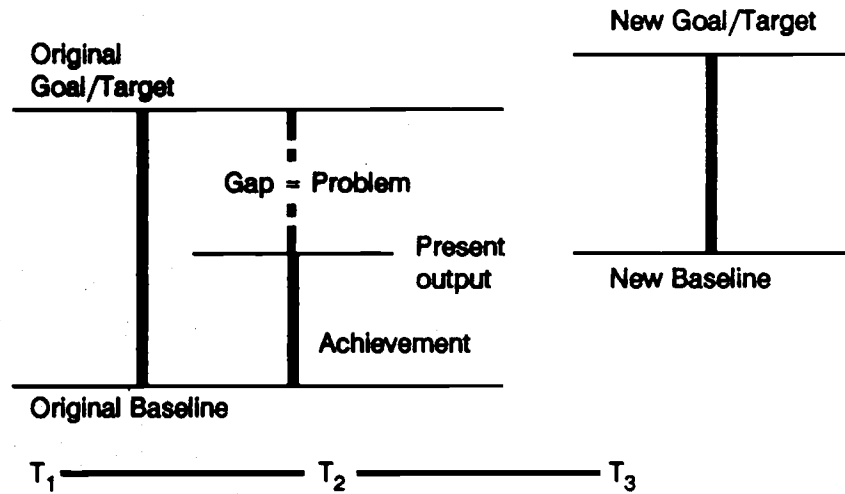
In formulating a goal statement, certain standards or criteria have to be met. They must: 1. specify the name or kind of product or result which is intended to be produced; 2. indicate measurable standard of performance; and 3. indicate time frame within which performance is expected.

## **Decision Analysis (3.0)**

With a clear idea of the performance desired (objective), the problem-solver then proceeds to decide on the best solution or means to achieve the objective.

As shown in Table 5, a clear statement of objective is a necessary condition before setting off on the steps to decision analysis. In this context we emphasize the idea that the purpose of decision-making is to attain a management objective. A change in the management objective will also lead to a change in decision criteria. We will elaborate on this below.

**Table 4. What is Goal/Objective Setting (2.0)**



**Table 5. Decision Analysis (3.0)**

**STEPS:**

- 0 Clear Statement of Objective
- 3.1 Developing Criteria
  - "Must"
  - "Discriminating"
- 3.2 Collecting Alternatives
- 3.3 Evaluating Alternatives
  - Quantitative
  - Qualitative
- 3.4 Choosing Best Alternatives

## Developing Criteria (3.1)

The first step in decision analysis is development of criteria. Criteria are set of standards that have to be satisfied by the alternatives. Theoretically, the best alternative is one which best satisfies the set of items in the criteria. We say theoretically because in some situations the alternative chosen is the second best choice due to practical reasons. For example, although we would have wanted to hire a particular top candidate for a vacant position we may finally decide on another candidate because we cannot afford the former's asking rate.

There are two kinds of criteria which have to be developed: "must" and "discriminating." The **must criteria** are those that are considered prerequisites which cannot be compromised. They are the most basic and mandatory. The **must criteria** are the minimum criteria that have to be satisfied by the alternatives before comparative evaluation of the alternatives is done. For example, in choosing a secretary-typist, the conceivable minimum (must) criteria would be typing proficiency and perhaps a year's experience in secretarial work. Aspirants short of this minimum qualifications would not even be entertained. These must criteria are like the pre-qualified bidding requirements which bidders have to satisfy first before they apply for bidding in a construction project. The must criteria serve to cull or eliminate alternatives which obviously do not make the grade.

The final set of criteria is called "**discriminating**" **criteria**. Only those options that pass the must criteria will be evaluated using the discriminating criteria set. To use our previous example, we might use the following discriminating criteria in evaluating aspirants for the position of secretary-clerk -- public relations, knowledge of bookkeeping and proficiency in use of word processor (computer).

## Collecting Alternatives (3.2)

After establishing the criteria, gathering of alternatives/options follows. It is advisable that criteria development precedes the gathering of options for efficiency and objectivity. The decision-maker has to be protected from being overloaded with options which have a very remote chance of making it, considering the objective to be met. For quality decision, the number of options for consideration has to be manageable for the decision-maker.

As for objectivity, the decision-maker must not be placed in a situation where criteria will be used to justify a previous choice. In rational decision-making, the decision-maker gives the options equal chances of being chosen based on previously determined criteria.

## Evaluating Alternatives (3.3)

Decision-making implies making a choice from a number of competing alternatives. There are two methods of doing this: 1. quantitative; and 2. qualitative.

In the **quantitative method**, the decision-maker is aided by some quantitative tools in choosing the superior alternative. With the use of quantitative tools, the decision-maker has a way of at least distancing, detaching himself or removing personal and subjective consideration in making the choice. The use of a quantitative tool helps in making decisions based on inherent merits of the alternatives rather than personal preference.

**Scaling** is a commonly used quantitative tool. Here, the decision-maker simply uses a scale device or continuum from low to high. The spread of the scale is variable but there has to be a symmetry or balance in the number of points on the left and on the right side of the mid-point (Table 6). The most common is a scale with three and five points. The scale method is particularly useful if the criteria items are equal in their importance (Table 7).

**Table 6. A Five-Point Scale**

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	1	2	3	4	5
	Least Desirable		*Mid- Point		Most Desirable

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**Table 7. Evaluation sheet using scaling technique**

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Alternative	Rating					Total
	1	2	3	4	5	
	Least Desirable				Most Desirable	
A						
B						
C						

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In some instances the criteria items are not identical in their importance to attaining the management objective. When this happens, another method should be used. This is the **variable weight method**. In this method the criteria items are assigned variable weights according to their relative value or importance to attaining the objective.

**Table 8** shows an example of variable weights assigned to the criteria. Criterion 1 is given a load of 50 percent, criterion 2, 30 percent and criterion 3, 20 percent. Points given for each alternative should not exceed the assigned percentage load. Because of the disproportional distribution of percentage load, alternatives which are superior on the criteria given bigger load are more favored. This is later reflected in the total column.

As for the **qualitative method** of evaluating alternatives, a simple "strength-weakness" device is used (**Table 9**). In here the decision-maker tries to identify the strong and weak points of each alternative which are then placed in the corresponding cells in the Table. The identification of strengths and weaknesses may be undertaken following an imagined set of dimension of criterion. This is good for comparability in the dimension. However, alternatives vary from one another in terms of the dimension they excel in. We should therefore be more flexible in identifying strong and weak points.

**Table 8.** Evaluation sheet using variable weight method of scoring criteria

Alternative	Criteria			Total
	1 (50%)	2 (30%)	3 (20%)	
A				
B				
C				

**Table 9.** Qualitative Method of Evaluating Alternatives

Alternative	Strength	Weakness
A	:	:
B	:	:
C	:	:

## Choosing the Best Alternative (3.4)

The decision-maker, after evaluating the comparative desirability of the alternatives, can then make the choice. In the quantitative method, the choice would depend on the numbers under the column total. Following the principle of objectivity, the alternative with the highest score should be chosen.

In the qualitative method, the decision-maker decides on the final choice after comparing the relative strengths and weaknesses of each alternative. There is much subjectivity here compared with the quantitative method since the comparison may not use common dimensions. Furthermore the measures are not quantified.

## Potential Problem Analysis (4.0)

Plans, no matter how well thought out they are, will not be implemented in exactly the same way they were prepared. Deviations are to be expected due to:

- o human errors in planning;
- o uncontrollable externalities; and
- o change in objectives.

A popular quotation is often used to show that problems are common occurrences --"If there is anything that will possibly go wrong, it will." This is called **Murphy's Law**. It seems from this quotation that in a project, the engine of "something will go wrong" might have been set in motion already and it is only a matter of time before it arrives and causes damage in terms of embarrassment, frayed nerves, people getting fired, non-attainment of goal/target and more expenses.

Is this pathway "something going wrong" irreversible or inevitable? Certainly, this is not the case. With the appropriate tool, we can abort the process, prevent it from being realized or minimize its negative impact if it comes.



Perhaps we can modify Murphy's Law --"If nothing is done about it, what should go wrong will happen."

The management tool of **Potential Problem Analysis (PPA)** is our **antidote** to Murphy's law. What is PPA? It is the process of anticipating what problems will possibly crop up in implementation, identifying measures to prevent the problems from being realized and preparing contingency measures to soften or minimize the impact.

What are the steps in PPA? The *first step* is *brainstorming*, preferably by a group. This is done by *listing all those things that could possibly go wrong*. This is the first column of the worksheet (**Table 10**).

What do we mean, "possibly go wrong"? These are events, acts of God or acts of persons interfering in normal processes that prevent or frustrate goal attainment. An exercise like this will lend itself better to collective rather than individual efforts because of contributions from many sources with varying experiences.

The *second step* is to *reduce the entries in the first column* "what could possibly go wrong", into a manageable number. Some of those in the list are incredible, preposterous, wild, inconsequential that keeping them for further analysis would be too time consuming and would only complicate decision-making. We have seen an example of this wherein the inclusion of many problems only led to "**paralysis by analysis**" if not inaction out of fear of failure.

How do we reduce the list of "possible things that could go wrong"? This is done using the so-called **P & S analysis**. **P** stands for **probability**, while **S** is for **seriousness**. For each possible problem, the group engaging in PPA will have to estimate the probability of its occurrence. The **P** of occurrence of a problem could be **high, medium or low** (**Table 10**). Those low in probability or quite improbable, like no food available (in a well-established restaurant), should be taken out of the list.

**Table 10. Potential Problem Analysis Worksheet**

What could possibly go wrong	P and S Analysis						Possible Cause(s)	Preventive measure(s)	Contingency
	Hi	Med	Lo	Hi	Med	Lo			

As for seriousness analysis, the problem may be regarded as low, medium or high. Those in the list, which will not seriously affect the result or outcome of the activity, should also be eliminated. For example, forgetting to bring a fountain pen to a meeting will not seriously affect the outcome of the meeting or the quality of participation.

Some problems may be low in probability but their consequences are so serious that it is wise not to take chances. An attempt on the life of a high official may be remote because of the secret nature of the mission. But if it does happen, the adverse effect on national security and economic stability will be serious.

The *third step* in PPA is *identifying the possible cause(s)* of the problem previously considered. It is only when a possible cause is known that we can abort or avoid occurrence of the problem.

Let us consider an activity of a field trip. One highly probable problem whose occurrence will seriously affect success of the activity is engine trouble. While doing PPA and trying to identify what could cause engine trouble during the trip, you learned from the driver that the *carburetor is already defective*. This in its defective condition could potentially adversely affect the success of the field trip.

The *fourth step* in PPA is *determining the preventive measure* to be used so that when it is applied to the possible cause, the problem will not occur. To use the previous example, having the carburetor repaired or replaced is a preventive measure. Doing any of the two measures will prevent the occurrence of engine trouble, thus ensuring a smooth trip.

The *fifth and final step* in PPA is *planning for contingency*. **Contingency** is a remedial action which is put on reserve only to be used when the problem occurs. Having a contingent plan is like having a spare tire in the trunk of your car. Even with some delay in case of a flat tire, at least the activity could go on after putting in the spare tire.

In our previous example, a contingency measure would be to bring a spare carburetor so that in case the one being used conks out, it can be replaced.

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# CASE 1

## (For Situation Appraisal and Objective Setting)

### "The Wrong Seeds"

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At the year-end review of the Palayan ng Bayan Project (PBP), Mr. Cruz, the agronomist, reported that the total harvest of the farm for that season was 1,200 tons from the 500 ha. planted.

Mr. Angeles, the project manager, invited comments from the group. He asked, "Is this something to celebrate?" Mr. Sanchez, the assistant project manager, remarked, "Last season, when we were planning this season's operation, I remember the Secretary of Agriculture telling us that he expects a production of 1400 tons from an area of 400 ha. If we compare our actual production with the Secretary's expectation, we certainly have not done very well."

Mr. Angeles, a little disturbed, asked, "What happened?" Mr. Cruz, sensing that the question was directed at him, volunteered, "In some areas the yield was as high as 5.5 tons/ha. However, in some areas it was also as low as 1.2 tons/ha., particularly in Block L which has an area of 100 ha."

"Incidentally, I noted in my log book that the whole Block L was severely infected by blast," said Mr. Martinez, the plant pathologist. "What started as a whitish water-soaked lesion eventually resulted in extensive burning of the leaves," Mr. Martinez added.

Mr. Cruz pointed out that there were other problem areas. Five hectares in Block C had nitrogen deficiency, while 50 hectares in Block D received very little water at the time the rice plants were about to flower. This was due to poor canal maintenance.

Mr. Angeles was very concerned. He wanted to know why certain fields were diseased while others were not. At this

point Mr. Cruz suddenly remembered something. He told the group, "Last season the supply officer was short of IR 20 seeds. The seeds available were good only for 400 ha. The supply officer, Mr. Santos, delivered IR 5 (a blast susceptible variety) seeds for the remaining 100 ha. instead of IR 20. " Mr. Angeles wanted to get into the bottom of the matter so he asked Mr. Santos to explain what happened. "The original order as shown by this requisition was really only for 400 ha.," Mr. Santos tried to explain. At this point, Mr. Sanchez, the Assistant Project Manager whose job was to determine the quantity of seeds, blurted, "But I told you, we were going 500 not 400 ha.!" Mr. Santos complained, "I'm sorry Mr. Sanchez, I never received that message."

After more discussions it turned out that Mr. Santos' secretary to whom Mr. Sanchez's secretary relayed the information failed to contact her boss that day. It was Friday 4 p.m. as she was about to go home when Mr. Santos' secretary received the message. She was excited to go home already for a long anticipated happy weekend out of town that she forgot to leave a note for Mr. Santos about the additional IR 20 seed requirement.

## **Participants' Task**

Using the SMA steps on Situation Appraisal and Objective Setting cited earlier, show how the steps are applied in this case. The aim of the task is to give you a chance to practice applying and interpreting the steps.

If you were the Secretary of Agriculture, what would you do so that this problem-situation will not be repeated?

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**EXPERT'S CASE 1 ANALYSIS**  
*(Please Read Only After Analyzing The Case)*

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# EXPERT'S CASE 1 ANALYSIS

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## SITUATION APPRAISAL

### Step 1.0 Situation Appraisal

#### **Sub-steps 1.1, 1.2 and 1.3. (Problem Identification).**

By comparing the expectation of the Department of Agriculture (3.5 T/ha.) with the actual yield performance of 2.4 T/ha., a discrepancy of 1.1 T/ha. is observed. With this, we therefore conclude that a *problem exists* (step 1.3).

**Sub-step 1.4. (Problem Statement).** If we describe the problem more precisely, we can say that in terms of *where* the problem is, it is Blocks L, D and C. As for *extent*, the area of Block L is 100 ha., Block D, 50 ha. and Block C, 5 ha. The persons who had some roles in the situation were Cruz, Angeles, Sanchez, Martinez, Santos and the two secretaries. As for *when*, it is clear that the problem happened last season.

**Sub-step 1.5. (Problem Appraisal).** In a situation like this, is intervention warranted? We shall subject the problem to the four appraisal tests. As for *seriousness*, we can see that by multiplying the per hectare discrepancy of 1.1 T with the total area planted which was 500 hectares, the total lost opportunity was 550 tons. With this information it can be concluded that this is a serious problem.

What about the **feasibility test**?

It looks like the situation is not insurmountable. While the total area affected by the various causes was large (155 hectares out of 500 or approximately 30 percent), the mistake as we shall see later was quite simple and caused by human misjudgment.

As for the **urgency test**, since preparations should be underway for the next cropping season, the matter of

corrective action to avoid a repeat of the problem should be done immediately.

Finally the test for *trend*. Since no time series data are available it is not possible to establish a trend.

**Sub-step 1.6 (Problem Diagnosis).** Mr. Cruz, the agronomist, reported that the yield in Block L was only 1.2 T/ha. This is lower than the overall average of 2.4 T/ha. Further verification yielded the information that rice blast infected the entire 100 ha. in Block L. Upon additional query it was known that something unique happened in Block L. IR 5 was planted in Block L while IR 20 was used in the other areas. Incidentally, research has shown that IR 5 is susceptible to the rice blast organism.

Later, it was learned that IR 5 was planted instead of IR 20 due to the shortage of IR 20. The supply officer, Mr. Santos, bought IR 20 seeds good for only 400 hectares which he knew was the original area to be planted. Somebody decided to increase the area by 100 ha. and no one apparently informed him about it. Since IR 5 was the only seed variety available, that was what Mr. Santos bought.

Mr. Martinez, the plant pathologist, observed early signs of the rice blast disease in Block L but he did not do anything about it. Research in plant pathology indicates that certain chemicals can be used to control the spread of the disease. If spraying was done, the yield reduction would not have been as large. Mr. Martinez did not even bother to share this information with anybody, not even with Mr. Angeles, the project manager.

Furthermore, Mr. Martinez should have been consulted whether or not IR 5 was a good substitute for IR 20. As a plant pathologist, he should know that rice blast is endemic in the area and that IR 5 should not be planted because it is susceptible to rice blast. It is apparent that his advice was not solicited.

The assistant project manager, who was responsible for determining requirements and purchases, may have taken the matter of change order in purchases too casually. Since this is a major decision involving a lot of money, a more



formal and reliable system of communicating the order should have been done. Transmitting an important piece of information by word-of-mouth is unreliable and too casual.

Compounding this sloppy internal communication system were the ineptness and negligence of the two secretaries, more so with the secretary of Mr. Santos. One can only speculate that there is something wrong with the hiring system and training of support staff of the project management. In fact, the fault in the hiring system may be widespread, including the hiring of the technical and supervisory personnel.

In Block D, the area involved was 50 ha. The average yield in this place is not known. It is safe to assume that with the lack of water during the flowering stage, the yield loss must be quite substantial. Research reports indicate that a situation like this would reduce yield by about 20 percent.

The question is why did this situation of poor canal maintenance occur? We have no information to make a direct answer. We can only speculate that the decision to plant 500 ha. instead of 400 ha. as originally agreed with the Secretary must have some relations with what happened.

What happened in Block C was minor. It only involved 5 ha. But the neglect in applying fertilizer to an area, no matter how small, is indicative of a deeper problem with serious consequence to the whole project. In fact, what happened in Block C may not be independent of what happened in Block L and Block D.

## **Conclusion**

As we pointed out earlier, unless the root cause or the breeder agent for the deviation in expectation is uncovered, any treatment to correct the problem would only be superficial. This will only be treating the symptom not the root cause of the problem. The effect of treating the symptom is temporary. Unless the root cause is treated, the symptom will reappear at another time and another place.

In this particular case, what seems to be the root cause or breeder agent of the problem? Let us recall the specific relevant issues that surfaced:

- o the change in the area to be planted from 400 ha. to 500 ha.;
- o the use of variety IR 5 instead of IR 20;
- o the lack of moisture in Block D;
- o the lack of N fertilizer in Block C;
- o the failure of the secretaries to relay vital information (additional order of IR 20);
- o the failure of the plant pathologist to report early findings of rice blast occurrence;
- o lack of consultation among the purchasing officer, agronomist, plant pathologist and assistant project manager; and
- o the project manager's and the agronomist's apparent lack of knowledge or information about what was happening in the field.

The bottom line in this series of human errors and misjudgments appears to be **poor management system (Fig. 1)**. In particular the following management functions and practices are defective:

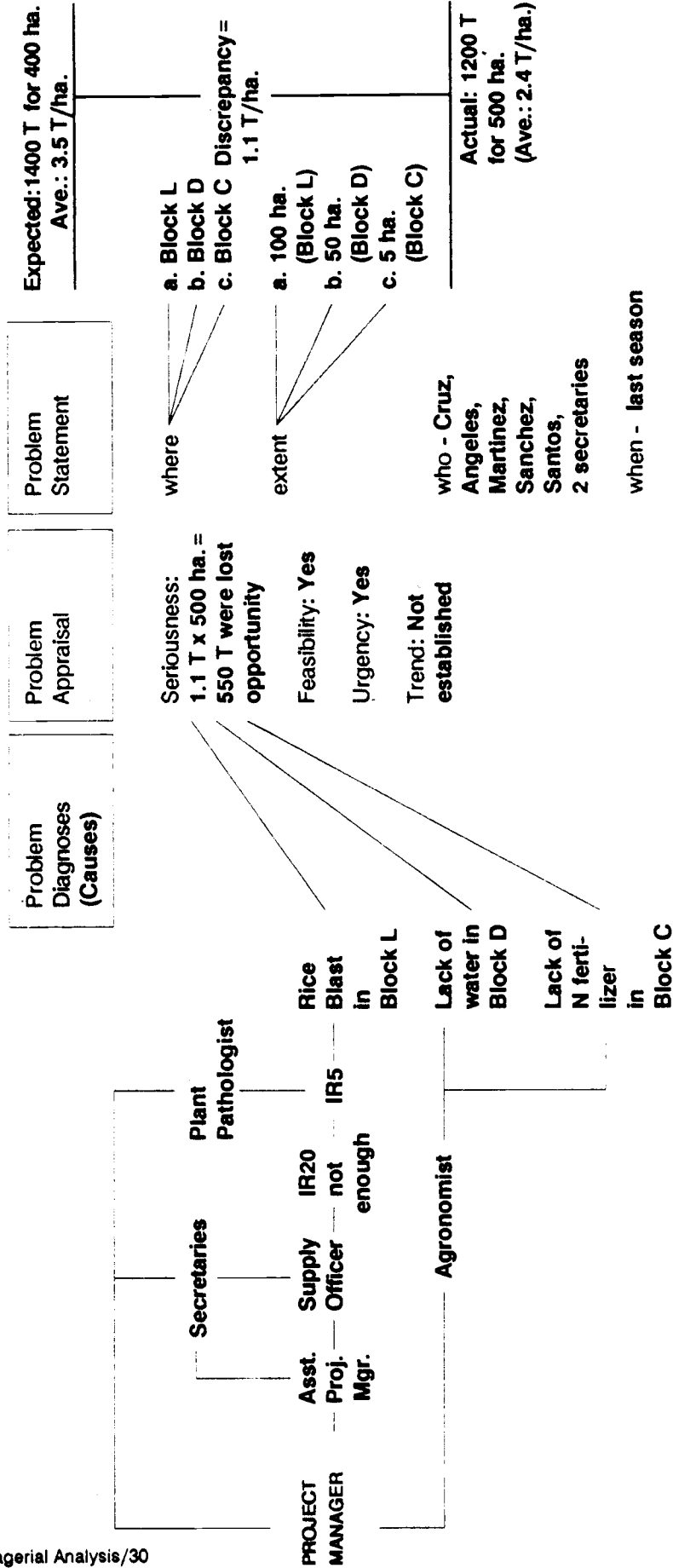
- o planning;
- o decision-making;
- o consultation;
- o internal communication;
- o internal coordination;
- o monitoring; and
- o standard operating procedure such as in purchasing.

Given the facts and the conclusion, what then needs to be done if you were the Minister of Agriculture to whose office the Palayan ng Bayan Project is accountable?

Solutions like using IR 20 instead of IR 5, repair and maintenance of the canals going to Block D and applying N fertilizer to Block C, are all treatments of symptoms rather than treatments of the root cause of the problem.

Since the root cause is poor management system, this is where the minister has to concentrate if he wants a more permanent solution to the problem. Three options seem to

Figure 1. Problem path analysis (from left to right)



be worth considering. The more drastic one is the change in the major actors from the project manager down to the functional supervisors. The other option is to change only the project manager, since he has the greatest role. As head of the project, he is the big difference and his influence is pervasive in all aspects of the operation.

The more lenient option is to give the management team another chance with a warning that they will all be fired if another miscue will happen in the future. It is to be expected that during this grace period, they have to review the management system and procedure and come up with an overhaul of the system. The minister must insist that a written report be submitted on the intended change in structure and management system and procedure.

On superficial analysis, the shortfall in yield of 550 tons (1.1 ton x 500 ha.) is due to rice blast infestation in Block L, lack of water in Block D and lack of N fertilizer in Block C. On deeper analysis, the blast, water and nitrogen problems are mere symptoms or third generation problems. The root cause is really mismanagement. If I were the Secretary of Agriculture, I'll have the following options:

1. Fire the project manager (PM) who is really the original or root cause of the problem.
2. Give the PM an ultimatum or last chance but require him to submit a new management system and organizational set-up. This will be followed up by a job-oriented management training for all concerned.

## **OBJECTIVE/GOAL SETTING**

There are three elements to be observed in formulating a goal or objective statement. The objectives must:

- o specify the product to be produced or the results to be delivered
- o be expressed in measurable terms; and
- o include the inclusive time frame within which the result is expected to be produced.

Using these criteria the following goal/objective is proposed:

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**In the next cropping season (July to October), the project will produce a total of at least 1750 tons of IR 20 (rough rice) from an area of 500 ha.**

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Below is the analysis of the objectives/goal statement using the criteria:

- A. **Product/result to be produced - IR 20 (ROUGH RICE)**
- B. **Measurable term - TOTAL OF 1750 TONS (FROM AN AREA OF 500 HECTARES, ave. of 3.5 T/Ha.)**
- C. **Time frame - NEXT CROPPING SEASON (July - October)**

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## **CASE 2 (For Decision Analysis: Quantitative Method of Evaluating Alternatives) "The Honolulu Dilemma"**

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### **Participants' Task**

Your task is to select which of your three employees below will be sent to a two-month advanced supervisory course, on full scholarship, to the East-West Center, Hawaii. You are hoping that with this, you can build up your mid-level-managers group.

### **Data on Employee A**

He was promoted to his present position of Supervisor I only a month ago. He has little training in supervision and management. He is well liked by his supervisees but he tends to be carried by the group rather than sticking to his own principles and standards. He has implied that he wants supervisory training. Right now he is doing average work but you believe he can do better.

### **Data on Employee B**

He is an old hand and your trusted technical assistant for many years already. You think he is already doing a very fine job. Recently he has been asking you why he has always been passed up everytime there is opportunity for training abroad. Your reply is always the same old piece, "I need you around."

### **Data on Employee C**

She tries her best to do her job as a supervisor. Her weakness seems to be lack of confidence in herself in managing her people. Oftentimes, she comes to you to check out her action or to consult you on what future actions to take. She seems to be indecisive when it comes to managing her work team. She thirsts for training.

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**EXPERT'S CASE 2 ANALYSIS**  
*(Please Read Only After Analyzing The Case)*

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## EXPERT'S CASE 2 ANALYSIS

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The first thing that needs to be done is to develop both the "must" and the "discriminating" criteria. In doing this you have to remind yourself of the aim/objective to be achieved by your decision. In this particular case, the aim is to develop your mid-level-managers group and your task now is to select the best candidate so that you can give this person the opportunity to attend a two-month advanced supervisory course in Hawaii.

As for the "must" criteria, the minimum criteria for purposes of this exercise might be: a. must be a supervisor (it is not wise to send somebody whose role will not be enhanced by the supervisory course and who will not contribute to the purpose of building up the mid-level-managers group); and b. interested in participating in a two-month course (this is important because a person may want to go for a reason not quite noble, like to visit relatives or to have a good time. It should be noted here that this course is tough, competitive and prestigious. A person with less motivation and interest is not likely to survive two months of hardwork and rigor).

With the use of a matrix device shown in **Table 1** we see that Employee B fails in the criterion of "must be a supervisor." As a technical assistant he really does not supervise anybody. He operates alone as a "sidekick" of the boss. He is therefore eliminated from the list. You will now have to choose from the two finalists, employees A and C. You will now use the discriminating criteria for the final selection.

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**Table 1.** Use of "must" criteria in evaluating alternatives

Must Criteria	Alternatives		
	Employee A	Employee B	Employee C
1. Must be a supervisor	Pass	Fail	Pass
2. Must be interested (considering hardwork and rigor)	Pass	Pass	Pass

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It should be pointed out here that some technical assistants do have staff to supervise. Therefore, if Employee B has people whom he supervises, then he should not be excluded in the final round of evaluation.

The discriminating criteria (Table 2) have to be relevant to the purpose and fair to all the candidates. In this particular case the purpose is development of the mid-level managerial group. For purposes of this exercise three criteria are identified (see Table 2). These criteria will then have to be weighed relative to their potential contribution to attain the purpose. Those with greater potential contribution should be given more load so that they can be used to favor the candidate possessing superior qualification on these criteria.

**Table 2.** Use of "DISCRIMINATING" criteria in evaluating alternatives.

Discriminating criteria	Weight	Employee A	Employee C
1. Good material for higher leadership position	50	45	25
2. Present supervisory performance	30	20	20
3. Seniority	<u>20</u>	<u>15</u>	<u>20</u>
<b>Total</b>	<b>100 points</b>	<b>80 points</b>	<b>65 points</b>

In Table 2, the criterion of "good material for higher leadership position" is given a weight of 50 points (out of a possible total of 100 points). The criterion "present supervisory performance" is given 30 points and 20 points is given for seniority.

With variable maximum points already assigned to the criteria, the next operation is to grade the candidates on the criteria items. The grades must not exceed the maximum assigned to the criteria.

On the leadership criterion, Employee A is graded higher (45 points) than Employee C (25 points). This is based on available data. On present supervisory performance Employees A and C are even with 20 points each. Finally, on the seniority issue, Employee C is given full points (20), whereas Employee A is given only 15 points.

By adding the points, we can immediately see that Employee A got it.

## Conclusion

Two factors appear to have favored the selection of Employee A. They are: a. the purpose of building up a strong mid-level managers group; and b. the criterion of "good material for higher leadership position."

What is crucial in this decision-making is that the final outcome is greatly influenced by the *process*, which in turn, is subservient to the *purpose*. Had the purpose been to reward employee loyalty and good work performance instead of human resource development, the process (criteria and assignment of points) would have favored Employee B who has been a loyal worker, a trusted lieutenant of the boss, is more senior and appears to be doing a good job.

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## **CASE 3 (For Decision Analysis: Qualitative Method of Evaluating Alternatives) "Who Among Them"**

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It has been six months since the post of Deputy Director for Administration (DDA) of the National Corn Research Institute (NACRI) became vacant. Atty. Roberto Lim, who had been the DDA for 10 years, resigned after the Board of Governors (BG) of the Institute put excessive pressure on him. Atty. Lim lost the confidence of Dr. Mortiz, the Institute Director and eventually the BG, after they heard so many complaints about Atty. Lim's style and performance. It was alleged that Atty. Lim was practicing favoritism and nepotism. He was said to have violated the recruitment and selection procedure by employing his townsmen, relatives and recommendees of his patron, Congressman Molina, who was responsible for his occupying the position.

Dr. Mortiz's problem now is to submit to the BG his recommendee for the vacant position in two weeks' time. Three names have been considered-- two from within NACRI and one from a management school in a nearby city.

**Mr. Carlos Tan** is at present head of the accounting section of NACRI. He is 32 years old and has just gotten back from a study leave with an MBA, major in Finance. He rose from the ranks starting as a clerk 10 years ago. He is hardworking, moderately refined and jolly in disposition. Mr. Tan, being young, goes out often with his gang. He is kind-hearted and often lends money to his subordinates during hard times or emergencies. On the whole, he gets the job done. People under him say he gives them more freedom. There are virtually no complaints against him. However, observations show that people under him tend to absent themselves frequently, come to work late, or leave the office a little earlier in the day and the office atmosphere is more informal and loose.

**Mrs. Lourdes Reyes**, 45 years old, is the head of the personnel section. Unlike Mr. Tan, Mrs. Reyes is relatively new on the job, having joined the organization only three

years ago. Mrs. Reyes used to work as government auditor in another province before joining NACRI. She moved to NACRI to be close to her husband and children. Her husband teaches at the nearby College of Agriculture. Her previous boss, who was a woman, was reluctant to release Mrs. Reyes because she was her idea of a model auditor -- extremely strict, legalistic, disciplinarian, unapproachable. At NACRI, her people are afraid of her and are thus well behaved. They come to work on time and seldom leave their desks before 5 p.m. In the office there is no horsing around. Everybody is serious in his or her work and gets the job done. Although her people are very efficient, the technical staff are complaining. In fact in the past 10 months, five senior research assistants left NACRI for other organizations. The reason for leaving was, they felt the personnel office had not helped them enough during the hearings of the Civil Service Commission. As a consequence their long awaited promotions did not come.

**Mr. Nick Ramos** is a scholar and professor of Public Administration in a nearby city. He has an MPA degree from a ranking university in the USA. In the last 12 months, Mr. Ramos has been serving NACRI two days a week as a consultant trying to help the Director design a management system and procedure. Mr. Ramos is strictly academic in training and experience. He is well-known in his field as a researcher, professor and consultant. In his 40 years, his experience in administration is limited to being acting chairman of his department for six months. The short time given him was hardly an opportunity to introduce changes nor show his mark in administration. However, nothing adverse happened in the department while he was the acting chairman.

## **Participants' Task**

Assuming you were Dr. Mortiz, who would you recommend to your BG as your next Deputy Director for Administration? You are left with three names after the others were eliminated.

For purposes of this exercise, you are asked to evaluate the candidates using the qualitative technique of evaluating options.

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**EXPERT'S CASE 3 ANALYSIS**  
*(Please Read Only After Analyzing The Case)*

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## EXPERT'S CASE 3 ANALYSIS

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In this situation, Mr. Mortiz is expected to select from among the names in the short list the best person who can assist him in the day-to-day running of the administrative services. With a good DDA he could spend more time on technical matters, external relations, policy formulation, resource generation and infrastructure development. It is important that his next DDA's style is compatible and comfortable with his and that he can work with him as a team member.

The merit of this technique is more to serve as a device in organizing the data for ease of comparison. Furthermore, there are dimensions in the qualifications of the alternatives that are non-quantifiable and can only be presented qualitatively.

How is Mr. Mortiz to proceed with qualitative analysis? As shown in **Table 3** there are two columns that need to be filled up before evaluating the alternatives. These are the **strengths** and the **weaknesses** columns. Mr. Mortiz should then identify the strong and weak points of the alternatives based on available information about them. **Table 3** provides a prototype of how this may be done.

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**Table 3. Qualitative technique of evaluating alternatives**

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Alternatives	Strengths	Weaknesses
(A) C. Tan	<ul style="list-style-type: none"><li>o Has advanced degree (MBA)</li><li>o Rose from the ranks</li><li>o Hard working</li><li>o Has good disposition</li></ul>	<ul style="list-style-type: none"><li>o Too young, less experienced in administration</li><li>o Tends to fraternize with staff</li><li>o Loose control</li></ul>
(B) L. Reyes	<ul style="list-style-type: none"><li>o Long experience in administration</li><li>o Good control</li></ul>	<ul style="list-style-type: none"><li>o New at NACRI</li><li>o Rigid/inflexible/too bureaucratic</li></ul>
(C) N. Ramos	<ul style="list-style-type: none"><li>o Technical expertise</li><li>o Has prestige</li><li>o Comes from more liberal and open climate</li></ul>	<ul style="list-style-type: none"><li>o Limited experience in administrative work</li></ul>

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The decision-making in the qualitative method is more subjective in the sense that the measures are not quantified. Also, some of the dimensions for comparing the candidates are not common and the available information on the candidates are not even.

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## CASE 4 (For Potential Problem Analysis)

### "The Big Occasion"

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Members of the Cereals Research and Development Center (CRDC) Executive Committee are finalizing plans for the inauguration of the new Research and Development (R & D) facilities. They decided on the following plans.

1. Guest of honor will be the Secretary of Agriculture.
2. The helicopter, with the guests on board, is expected to arrive at the Center's playground at 7:30 a.m. The reception committee will meet the guests with garlands and corsages while the brass band plays. Breakfast will be served at the Center's Canteen up to 8:30 a.m.
3. At 8:30 a.m., there will be a ribbon-cutting ceremony. After this, the guests will be given a tour of the exhibit area, the new laboratories, seed processing pilot plant, greenhouses and experimental plots where there will be demonstrations of how the different equipment work.
4. A program will be held at the new auditorium at 10 a.m. The program is as follows:

National Anthem .....	Brass Band
Welcome Address .....	The Director, CRDC
Facility Turnover .....	Ambassador of the Government of Netherlands (GN) to the Secretary of Agriculture
Remarks .....	The Ambassador, GN
Remarks .....	The Secretary of Agriculture
Special Number .....	Trying Hard Dancers
Introduction of	
Guest Speaker .....	CRDC Director
Speech .....	The Secretary of Agriculture
Closing Remarks .....	Deputy Director, CRDC

### Participants' Task

In your small group, do a potential problem analysis of the above situation, using the model found in Table 10 (see under **Source Monograph**).



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**EXPERT'S CASE 4 ANALYSIS**  
*(Please Read Only After Analyzing The Case)*

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What Could Possibly Go Wrong (Future Scenario)	Probability Lo Med Hi	Seriousness Lo Med Hi	Possible Cause	Preventive Measure	Contingency
1.0 The Secretary does not come.	/	/	Emergency call from President	(We have no control over the Secretary's time.)	Ask the highest ranking official to substitute.
2.0 The Helicopter cannot land because the original landing area is flooded. Eventually, after 20 minutes, the helicopter lands in another site which had to be cleared first.	/	/	Heavy rains the night before	(We have no control over the weather.)	Survey alternate landing area.
3.0 Brass Band is unable to meet the guests.	/	/	Change in landing venue	(We have no control over the weather.)	Proceed to alternate landing area.
4.0 The Secretary develops allergy to the food.	/	/	Allergy to sea food	Ask those close to Secretary about his allergy history; do not serve food that he is allergic to.	Have anti-allergy pills available.
5.0 The pair of scissors are too dull to cut the ribbon.	/	/	-----	-----	-----
6.0 Some personnel are unprepared in demonstrating how the equipment work.	/	/	The personnel previously assigned to give demonstration given another assignment at the last minute	Have alternates and rehearse beforehand.	Make high officials of CRDC prepare and ask leading questions.
7.0 The stage, where members of the brass band are seated, gives way.	/	/	-----	-----	-----
8.0 The CV of the Secretary is not available.	/	/	-----	-----	-----

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## VISUAL SUPPORT

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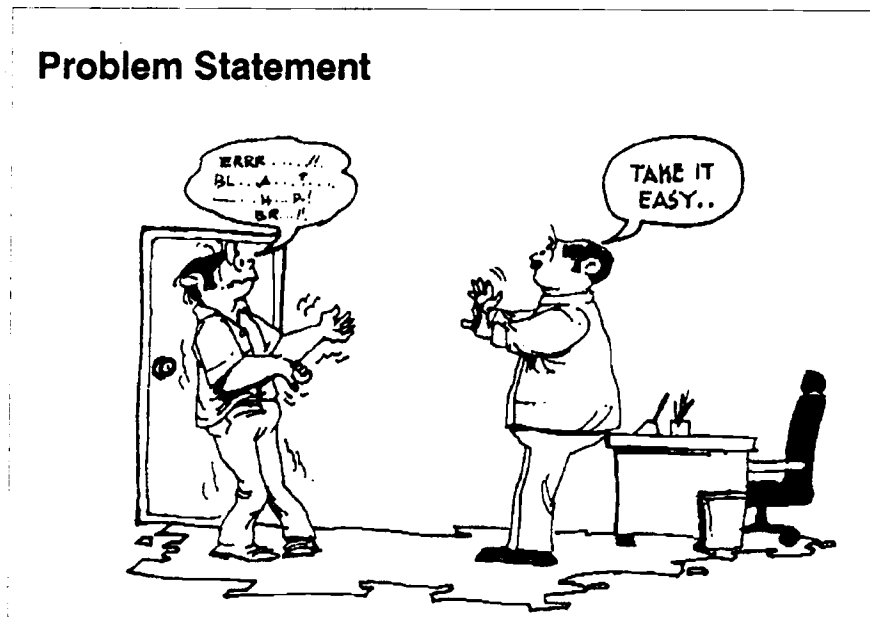
### Problem Identification & Diagnoses



Message:

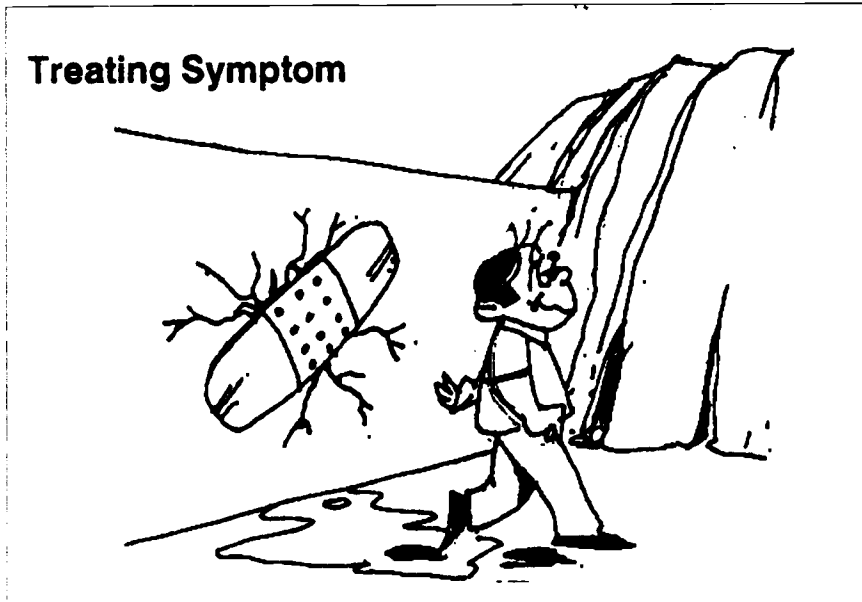
Solving problems starts with identification of what is undesirable, deficient, lacking (problem) and then proceeds to trying to comprehend the nature and cause of such condition. By marking the problem and understanding its nature, solutions can be formulated.

### Problem Statement



Message:

Problems that are not well-defined or specified will cause the problem-solver to be confused, misled and misinformed. Finally, he will fail to solve the problems.



Message:

**Treating symptoms rather than the root cause of the problem or using first aid measures is always not a permanent way to drive the problem away.**



Message:

**Unless the root cause of the problem is traced and well understood, no solution will be good enough to solve the problem permanently.**

## Breeder Problem



Message:

The Queen is the breeder problem producing the ants/soldiers that are doing the damage. Unless the queen is efficiently controlled, no amount of insecticidal spraying will totally eliminate the undesirable situation (problem).

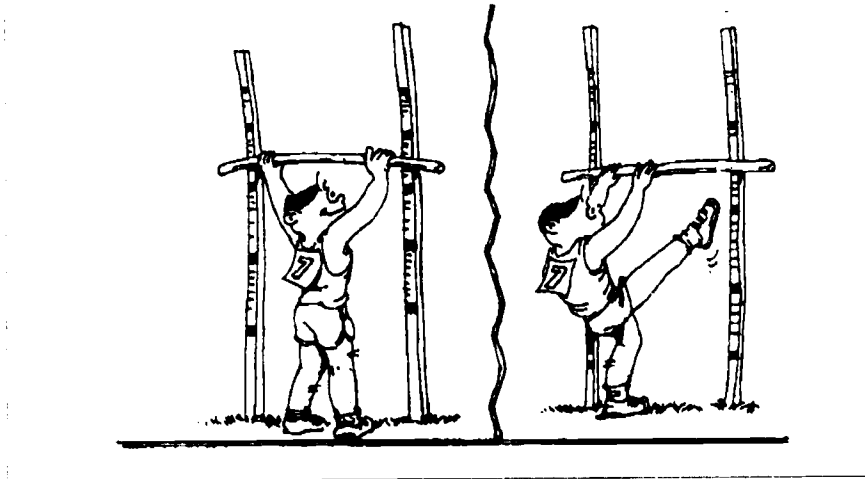
## Problem Appraisal



Message:

Here, the problem-solver has to figure out – shall he move in now and intervene in the problem? Or is it better to just let the problem solve itself and go by? Many questions should be asked and satisfied to justify management intervention.

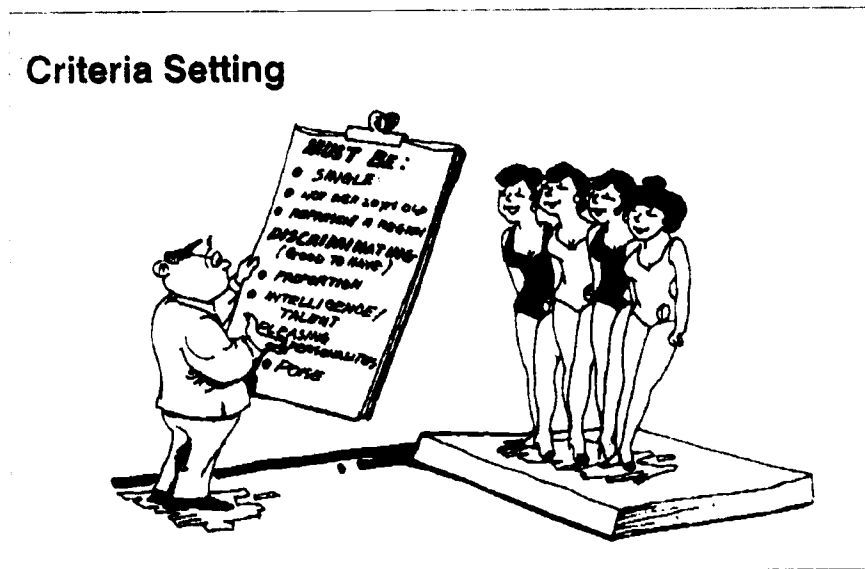
## Goal Setting



Message:

A good target is the desired condition the worker wants to achieve or realize. This he does after considering capabilities, resources, constraints and known technology.

## Criteria Setting



Message:

**Must** criteria are those considered minimum and mandatory. Any option that fails to satisfy any must criterion is automatically eliminated.

**Discriminating** criteria are those that will finally separate the "men" from the "boys"; to be applied only to the finalists after passing the must criterion.

## Quantitative Evaluation

ALTERNATIVE	EXPERIENCE (50%)	CRITERION & WEIGHT POTENTIAL (30%)   EXAM (10%)	INTERVIEW (10%)	TOTAL
A. TOMAS				
B. PEDRO				
C. CARLOS				

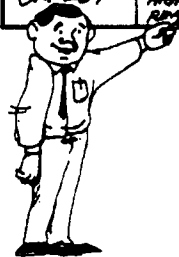


Message:

This is called quantitative evaluation because quantitative weights are assigned to each criterion and the total points that an alternative garners across weighted criteria is the final determining factor.

## Qualitative Evaluation

ALTERNATIVE	STRENGTH	WEAKNESS	POSSIBLE DESIRABLE & UNDESIRABLE CONSEQUENCES	
TOMAS	MORE YEARS OF WORK EXPERIENCE	LOWER IQ	<u>P</u>	<u>U</u>
PEDRO	HIGH IQ	NO WORK EXPERIENCE		
CARLOS	GOOD LEADER HIGH IQ RESPONSIBLE	INEXPERIENCED		



Message:

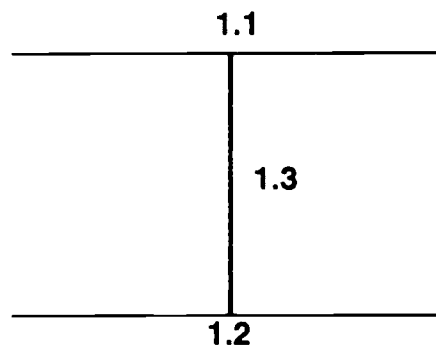
Decision is made on the basis of strength and weakness, possible desirable and undesirable consequences and valuative comparison of the alternatives.

**Table 1. Steps in Systematic Managerial Analysis (SMA) for Problem-Solving and Decision-Making**

- 
- 
- 1. Situation Appraisal**
  - 2. Goal Setting**
  - 3. Decision-Analysis**
  - 4. Potential Problem Analysis**
- 
- 

**Table 2. How to Do Situation Appraisal - I.0**

- 
- 
- I.1 Desired Situation**
  - I.2 Present Situation (Present facts, observations and performance of the system)**
  - I.3 Gap = Problem**
  - I.4 Problem Statement**
    - where
    - extent
    - when
    - who
  - 1.5 Problem Appraisal**
  - 1.6 Problem Analysis/Diagnoses**

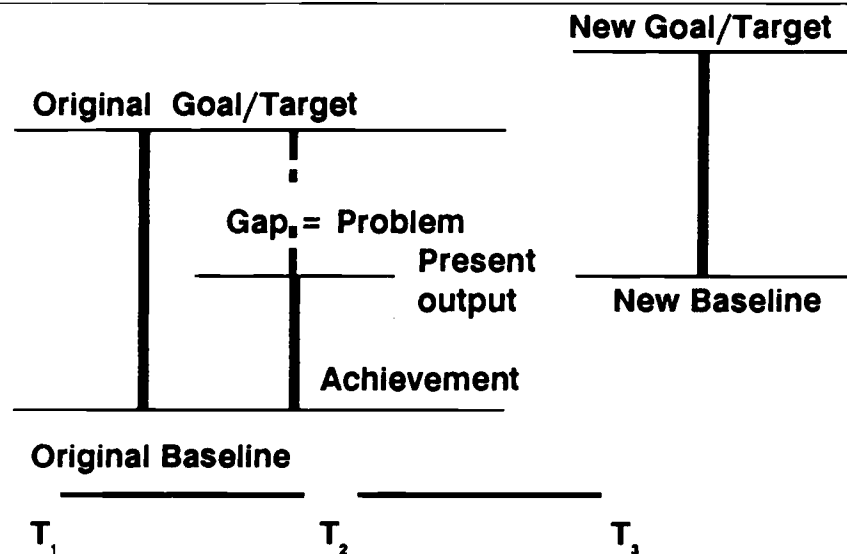




**Table 3. Tests for Problem Appraisal (Shall I intervene or not?)**

- o **Seriousness**
- o **Feasibility**
- o **Urgency**
- o **Trend**

**Table 4. What is Goal/Objective Setting (2.0)**



**Table 5. Decision Analysis (3.0)**

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**STEPS:**

**0 Clear Statement of Objective**

**3.1 Developing Criteria**

    "Must"  
    "Discriminating"

**3.2 Collecting Alternatives**

**3.3 Evaluating Alternatives**

    - Quantitative  
    - Qualitative

**3.4 Choosing Best Alternatives**

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**Table 10. Potential Problem Analysis Worksheet**

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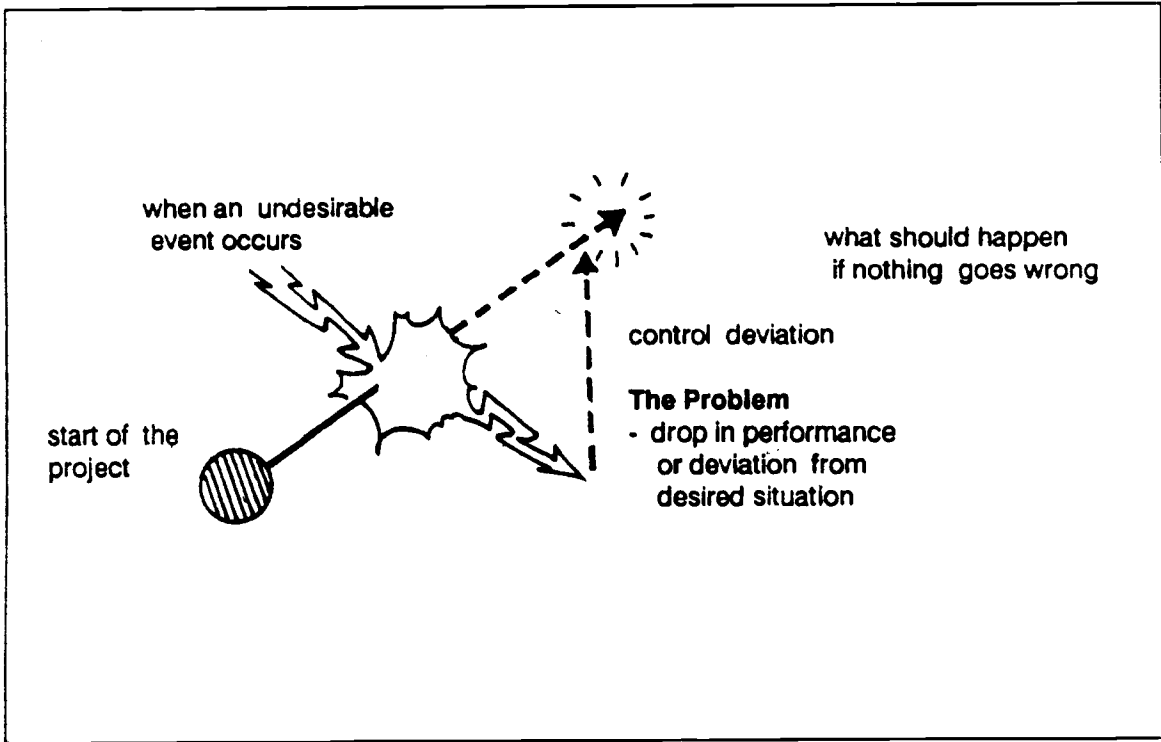
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What could possibly go wrong	: <u>P and S Analysis</u>	: Possible Cause(s)	: Preventive measure(s)	: Contingency
	: <u>Hi Med Lo</u>	: <u>Hi Med Lo</u>	:	:
	: <b>P</b>	: <b>S</b>	:	:
	:	:	:	:
	:	:	:	:
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## SELF-EVALUATION

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### Instructions:

To get the most out of this exercise, it is suggested that you complete the test first before comparing your choices with the suggested correct answers. Answers are provided at the end of this section.

#### A. Put a check mark before the correct answer(s).

1. Which of the following is the correct definition of a management problem?

- a. Presentation of complaints
- b. Gap between desired and actual performance
- c. "Our performance this year is dismally low."
- d. The bottom line

2. When one diagnoses a problem, he is:

- a. prescribing a solution to the problem.
- b. evaluating alternative solutions.
- c. determining the cause of the problem.
- d. in the process of giving up because the problem is too tough to solve.

3. Problem Appraisal means:

- a. to intervene because the problem is serious.
- b. to intervene because the problem is urgent.
- c. to intervene because the problem is new.
- d. to intervene because the problem is interesting.
- e. to intervene because the problem is recurrent.

4. Which of the following goal objective statements is the best stated?

- \_\_\_\_\_ a. To completely eliminate the problem of absenteeism
- \_\_\_\_\_ b. To reduce the number of rejected baby's socks from 10 to five per day
- \_\_\_\_\_ c. To increase output by 30 percent
- \_\_\_\_\_ d. To improve working conditions of the field researchers

**B. Match the statements with the concepts they refer to.**

*Concept*

- \_\_\_\_\_ 1. Quantitative evaluation
- \_\_\_\_\_ 2. Contingency
- \_\_\_\_\_ 3. Scaling evaluation technique
- \_\_\_\_\_ 4. Must criterion
- \_\_\_\_\_ 5. Potential problem analysis

*Statement*

- a. Identify what could go wrong, try to prevent them and prepare fallback plans.
- b. Consider basis of decision as the minimum.
- c. It is an option that can be used if preventive measures don't work.
- d. Decision is made using numerical parameters and process.
- e. Evaluate options using strengths-weaknesses analysis
- f. 1-3; 1-5: poor-excellent
- g. Analyze what happened after an event is completed.
- h. "An ounce of prevention is better than a pound of cure."

**Answers:**

- 1. b    3. a, b, e    B. 1. d    4. b
- 2. c    4. b    2. c    5. a
- 3. f

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Illustrations: Nonoy Alegre



*The whole idea of the series "Research Management Learning Packages" is visualized by the flame, the line graph, the grid and the base.*

*The **flame** symbolizes success in scientific research indicated by outputs in terms of information, knowledge and technology which come out in different stages (dark and light shades).*

*The **line graph** that is progressively pointing up, visualizes the goal of research management - the ever increasing performance of the researchers and the collective system.*

*The **grid** symbolizes the division of labor and level of responsibilities in the research organization. The open lines of the grid represent the system's relationships with the environment.*

*The **base** symbolizes the organizational structure and management system. It is responsible for coordinating, processing environmental inputs and developing programs and strategies.*

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