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**PROJECT DESIGN & EVALUATION CONCEPTS:  
THE LOGICAL FRAMEWORK APPROACH**

**REFERENCE MATERIALS**



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PROJECT DESIGN & EVALUATION CONCEPTS SEMINAR

REFERENCE MATERIALS

- A. THE LOGICAL FRAMEWORK APPROACH: SUMMARY OF KEY CONCEPTS
- B. A MORE COMPLETE MODEL OF THE LOGICAL FRAMEWORK
- C. STEPS FROM A LOGICAL FRAMEWORK TO A SOLID EVALUATION
- D. A GUIDE FOR EVALUATION OF ACTUAL PROGRESS VS PLAN
- E. MALARIA ERADICATION PROJECT
- F. SYNERGY IN GROUP PROCESS
- G. GLOSSARY
- H. SELECTED REFERENCES

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A. THE LOGICAL FRAMEWORK APPROACH & SUMMARY OF KEY CONCEPTS

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THE LOGICAL FRAMEWORK  
APPROACH AND SUMMARY OF KEY CONCEPTS

The conceptual heart of the approach developed by PCI (Practical Concepts Incorporated) is described in the paragraphs that follow. This approach assumes that development projects are instruments of change; that they were selected from among alternative instruments as the most potentially cost-effective approach to achieving a desired, beneficial result. Our approach accepts the uncertainty inherent in all development projects by explicitly identifying the nature of the uncertainty -- the development hypotheses. On the basis of demonstrated application to hundreds of social and economic development projects, we believe that the concept is both tactically and strategically sound.

## THE LOGICAL FRAMEWORK APPROACH TO PROGRAM DESIGN & EVALUATION

The Logical Framework is a way of organizing information and activities so that a number of different points of view can be brought to bear simultaneously and in complement, rather than in opposition. These points of view are:

- Program management--which dictates that we manage for (and hold management accountable for) results.
- Basic scientific method--which dictates that nothing is certain, and all human activity can be viewed as the testing of hypotheses.
- Systems analysis--which dictates that no system is defined until we have defined the larger system of which it is a part.

Given the fundamental character of the above concepts, and the essential simplicity of any tool that can simultaneously support such concepts, it is not surprising that there are many other points of view that can complement the Logical Framework. Most notable in this regard is contract law, for which the Logical Framework sharpens the "meeting of the minds" and orients deliverables to performance specifications.

To simplify programs we first recognize that there are three basic levels of responsibility:

- Inputs: the resources we consume and activities we undertake.
- Outputs: the things we, as good managers, are committed to produce. These must be stated as results. If we fail to produce those results, then the burden of proof is on the manager to "show cause" as to why he failed.
- Purpose: the reason we are producing the outputs. The higher-level objective that causes us to invest in producing outputs. If our outputs are products, then our purpose may be profit. If our outputs are social services, then our purpose might be improvement in the quality of life of a target population.

SUMMARIZING PROJECT DESIGN

Project Title: National Pig Industry for Snortland

MANAGEABLE INTEREST  
 If Inputs, Then Outputs  
 If Outputs, Then Purpose  
 If Purpose, Then Goal  
 DEVELOPMENTS: IT HYPOTHESES

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program Goal: The broader objective to which this project contributes:</p> <p><b>Viable Pig Industry Developed</b></p>	<p>Measures of Goal Achievement:</p> <ol style="list-style-type: none"> <li>Annual slaughter of 100,500 pigs which meet national quality standards from 1979 onwards.</li> </ol>	<ol style="list-style-type: none"> <li>ADC records</li> <li>Marketing statistics</li> <li>Post reports</li> </ol>	<p>Concerning long term value of program/project:</p> <ol style="list-style-type: none"> <li>20% of slaughtered pigs will be exported</li> <li>Local population will be able to obtain meat at lower prices</li> </ol>
<p>Project Purpose:</p> <p><del>To develop a technologically sound pig industry at the level of farm production and marketing</del></p> <p><b>Developed</b></p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p>Production of a national herd of quality and at cost that is internationally competitive:</p> <p>Standards:</p> <p>Backfat thickness 3.2"</p> <p>Age to reach 240 lb market wt. = 190 days</p> <p>feed to meat conversion ratio = 3:5</p> <p>No. of marketable pigs/sow/yr. = 14 to 15</p>	<ol style="list-style-type: none"> <li>Donor country post reports</li> <li>Production records from Ministry of Agriculture</li> </ol>	<p>Affecting purpose-to-goal link:</p> <ol style="list-style-type: none"> <li>Development of stable packing industry</li> <li>Development of training/educational base in meat slaughtering, processing and meat use.</li> <li>Feed availability at competitive prices.</li> <li>Local demand for pig meat maintained.</li> </ol>
<p>Outputs:</p> <ol style="list-style-type: none"> <li>Improved breeding program established</li> <li>An improved extension service</li> <li>Improved methods of marketing developed and being used throughout the country.</li> </ol>	<p>Magnitude of Outputs necessary and sufficient to achieve purpose.</p> <ol style="list-style-type: none"> <li>1,600 litters sired by donor country boars</li> <li>2,850 performance tested pigs produced annually</li> <li>Extension service operating action program by 5/77</li> <li>Nationally operated carcass grading system in place by 5/78.</li> </ol>	<ol style="list-style-type: none"> <li>Project progress reports incorporating Agricultural Development Corporation (ADC) data.</li> <li>Post progress reports.</li> </ol>	<p>Affecting output-to-purpose link:</p> <ol style="list-style-type: none"> <li>Snortland implementation of all programs</li> <li>Responsive farm service personnel.</li> </ol>
<p>Inputs: Activities and Types of Resources</p> <p>Donor Country: 1) Snortlandians trained in a) Performance testing; b) artificial insemination; c) carcass grading and d) Veterinary &amp; health services;</p> <p>2. "genetic counseling and data analysis service provided</p> <p>3. Boars;</p> <p>4. Equipment</p> <p>Snortland: Provide trainees; use of local computer services; project management team.</p>	<p>Level of Effort/Expenditure for each activity.</p> <p>1a - 4 man months                  b - 6 man months                  c. 4 man months                  d. 3 man months</p> <p>2. 4 man months &amp; \$8,000</p> <p>3. 50 @ \$ — each</p> <p>4. \$20,000</p> <p>Total donor expenditure \$330,000.</p> <p>Total host country: \$ 33,900</p>	<ol style="list-style-type: none"> <li>Project progress reports</li> <li>Post reports.</li> <li>Project officer reports.</li> </ol>	<p>Affecting input-to output link:</p> <ol style="list-style-type: none"> <li>Appropriate candidates attracted to program and able to undertake training.</li> </ol>

LOGICAL FRAMEWORK  
FOR  
SUMMARIZING PROJECT DESIGN

Est. Project Completion Date \_\_\_\_\_  
Date of this Summary \_\_\_\_\_

Project Title: \_\_\_\_\_

DEVELOPMENT HYPOTHESES  
 If Purpose, Then Goal  
 If Outputs, Then Purpose  
 If Inputs, Then Outputs  
 MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program Goal: The broader objective to which this project contributes:	Measures of Goal Achievement:		Concerning long term value of program/project:
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status,		Affecting purpose-to-goal link:
Outputs:	Magnitude of Outputs necessary and sufficient to achieve purpose.		Affecting output-to-purpose link:
Inputs: Activities and Types of Resources	Level of Effort/Expenditure for each activity.		Affecting input-to-output link:

Having clarified the basic management hierarchy of objectives, let us introduce basic scientific method:

All human activities are uncertain. Therefore, we view our project as a set of interlocked hypotheses: if inputs, then outputs; if outputs, then purpose.

Note that what varies between levels is the probability of success. It is within the ability of a responsible manager to ensure that inputs result in outputs; we hold him accountable. As noted earlier he must show cause if he fails. On the other hand, the hypothesis--if outputs, then purpose--is problematic. There is enough uncertainty in this hypothesis that the program manager is held accountable to the reasonable man rule--he must do what a reasonable man would do to realize the purpose, but he is not held accountable for that result.

Now, let us add the third viewpoint important to the Logical Framework--a viewpoint too often neglected in both conventional management and operations research approaches: the systems analysis requirement that we have not specified a system until we have specified the relationship our system bears to some larger system.

To do this we add to our three-level management hierarchy a fourth, superior level, called "goal." We define goal as follows:

The higher-level objective immediately above project purpose. That is, the "then" statement for which the project purpose (plus purpose-level assumptions) must provide a plausible "if." Also, higher order objectives beyond the project goal.

Goal thus relates our project or program aspirations to aspirations of those for whom our activities have no intrinsic interest. If our purposes are Agency-level purposes then our goal transcends the Agency and relates our program to truly national objectives--objectives that may be common to multiple agencies.



Given the many uncertainties in the connection between purpose and goal, we also view this final element of our project/program logic as a testable hypothesis (if purpose, then goal).

We call the basic analysis presented above the "vertical logic" of the Logical Framework. To complete the vertical logic we need only identify assumptions--exogenous factors necessary for the success of the project but beyond our ability to control. To complete the Logical Framework paradigm, we add the "horizontal logic"--means of establishing indicators, targets, and means of verification.

Interlocking "logics" of the Logical Framework are explained further in the following paragraphs. Please remember it is not clear, nor does it matter, whether the Logical Framework is a "true innovation" in the sense that it is "different" from what has been done before. Better to view it, as does PCI, as a crystallization of best practices; a simple way to bring to bear a multiplicity of analytic and diagnostic tools: tools that include but are not limited to the four mentioned above: management for results, basic scientific method, systems analysis, and contract law.

A. THE LOGICAL FRAMEWORK: APPROACH TO EVALUATION OF DEVELOPMENT PROGRAMS

To clarify project purpose and provide a framework for planning and evaluation, project designs can be displayed in summary form using the 4 x 4 "Logical Framework" matrix (attached). The framework displays a set of interlocking concepts that clarify why a project is being undertaken and specifically what we will do to achieve the desired result.

It is convenient to think of the Logical Framework in terms of two types of thought processes: (1) A vertical logic that clarifies why a project is undertaken (project design) and (2), A horizontal logic that clarifies what is to be produced and the evidence that will signal success (evaluation).

1. "GPOI:" The Vertical Logic of the Logical Framework

"GPOI" is an acronym for: GOAL - PURPOSE - OUTPUTS - INPUTS, and it characterizes a project as a set of linked hypotheses of the form:

If we provide the following inputs, then we can produce the requisite outputs;

if we produce those outputs, then the purpose will be achieved;

if the purpose is achieved, then the goal will be realized."

Good project design requires that at each level in the vertical logic, the stated conditions be those necessary and sufficient to achieve the next level. That is, the inputs must be necessary and sufficient to produce all of the outputs; outputs must be necessary and sufficient to achieve the purpose, etc.

Recognizing both that the full set of necessary and sufficient conditions must be indicated at each level, and that many things important to project success may be outside the Agency's control or influence, GPOI also requires that the project manager identify the key assumptions he must make to postulate success of his project. That is, he must explicitly identify the factors beyond his influence that will affect success of his project. Assumptions may encompass a full spectrum -- from interest and participation of local community groups or agencies, to the adequacy of existing data in agency files. The important point is to focus attention on factors that are vital to the success of the project but outside the project manager's control. (Thus, the assumptions about a project are often the focus of dialogue between the project manager and next levels of management.)

Having characterized the project as a set of linked hypotheses, it is important to note that there is a qualitative difference between input to output linkage and all higher linkages. We can expect the project manager to appropriately use input resources to produce outputs; he is accountable for results. However, it is his best judgment -- a hypothesis shared by the project manager and his higher levels of management -- that outputs will, in fact, result in purpose. Based on this view, the manager accepts personal accountability for producing outputs; he is a project manager in the contemporary sense of the term. However, in postulating that those outputs will be sufficient to realize the purpose, he is a development scientist. He is held accountable for the quality of his analysis and judgment -- not for the purpose-level results.

By separating the conventional role from that of development scientist -- with the project as an experiment in development -- we set the framework for a candid and objective evaluation. Thus, the Logical Framework not only clarifies why projects are undertaken, but also fosters the objective and analytical sorting of evidence that will be required by later evaluations.

2. Objective Verification: The Horizontal Logic

Having clarified the basic design of a project in terms of inputs, outputs, purpose and goal -- why the effort is being undertaken -- the Logical Framework demands that the project team note the evidence required to demonstrate accomplishment. We use the term "horizontal logic" because experience shows that spelling out the evidence required to demonstrate a given event often clarifies the nature of the event itself.

Specifically, the horizontal logic demands that at each of the GPOI levels the project team specify:

- a. Objectively verifiable indicators that will demonstrate that the desired result has been realized;
- b. Means of verification -- specific mechanisms through which accomplishment will be objectively verified.

It is important to note that objective verification does not demand quantification. In fact, the two-step clarification of evidence -- identifying first the indicator and subsequently the means of verification -- is specifically introduced to encourage project teams to measure that which is important, rather than that which is easily measured.

When dealing with complex change, there may be no single indicator that signals success. For example, is there a single indicator that a university is viable? In most development projects, any single indicator of purpose achievement will be suspect because there will be other plausible explanations for change in the indicator.

Recognizing the limitations of single indicators for measuring complex change, the Logical Framework encourages using multiple indicators to verify success at the purpose level. The framework requires that the project team specify the evidence that will indicate purpose has been achieved.

LOGICAL FRAMEWORK  
FOR  
SUMMARIZING PROJECT DESIGN

Est. Project Completion Date \_\_\_\_\_

Date of this Summary \_\_\_\_\_

Project Title: \_\_\_\_\_

DEVELOPMENT HYPOTHESES  
 If Purpose, Then Goal  
 If Outputs, Then Purpose  
 If Inputs, Then Outputs  
 MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program Goal. The broader objective to which this project contributes.	Measures of Goal Achievement:		Concerning long term value of program/project:
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Affecting purpose-to-goal link:
Outputs:	Magnitude of Outputs necessary and sufficient to achieve purpose.		Affecting output-to-purpose link:
Inputs: Activities and Types of Resources	Level of Effort/Expenditure for each activity.		Affecting input-to-output link:

B. LOGICAL FRAMEWORK CONCEPTS

1. GPOI: Projects are "experiments" in the development science -- Linked hypotheses of the form:  $I \rightarrow O \rightarrow P \rightarrow G$ .\*
2. Manageable interest vs. development hypothesis.
3. Objective verification: (1) Targets, and (2) Means of verification.
4. End-of-project-status: Objective verification of success (purpose level only).
5. EOPS (Purpose level verification) distinct from output verification.
6. Each level of "GPOI" must state the conditions necessary and sufficient to result in next-level achievement.
7. Assumptions are necessary conditions not under Project Manager's control or influence.
8. Concept of "development hypothesis" applies to every level above "manageable interest."

C. TECHNIQUES FOR DESIGN CLARIFICATION

Narrative Summaries

1. Anchor the project by succinctly stating what is clear -- purpose, outputs, or even inputs.

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\* I = Inputs; O = Outputs; P = Purpose; G = Goal.

2. Don't move words around - clarify and "crystallize" the important concepts.
3. Be brief.
4. Eschew "improve," "upgrade," "increase," etc. -- be concrete about how much or what is expected.
5. Management includes influence and persuasion.
6. Are each of the I-O-P-G links plausible? Necessary and sufficient?
7. Means versus ends.

#### Objective Verification of EOPS

1. How will you know it's successfully completed? Kick a tire?
2. All projects must end.
3. EOPS conditions signal success as opposed to outputs, which are conditions necessary to ensure success.

#### Objective Verification of Outputs

1. "When" is a target for verifying a "yes-no" event.
2. Qualitative targets require that performance standards be set in advance.
3. Verify what's important, not what's easily verifiable. Your targets are the necessary conditions not the measurable ones.

4. Artful verification is good science if postulated in advance.  
It is suspect when done post facto.
5. Multiple indicators.

Assumptions

1. Outputs and assumptions equal the necessary and sufficient to achieve purpose.



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B. A MORE COMPLETE MODEL OF THE LOGICAL FRAMEWORK

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A MORE COMPLETE MODEL  
OF THE LOGICAL FRAMEWORK

Science attempts to establish causality of the following type:

$A_1$  and  $A_2$  cause  $B$ ;  $B$  causes  $C$ .

If such causality is established, then the experimenter knows that providing  $A_1$  and  $A_2$  should result in  $C$ . ( $[A_1 \cdot A_2] \rightarrow B$ ,  $B \rightarrow C$ ,  $\therefore [A_1, A_2] \rightarrow C$ ). Unfortunately, social and economic development are too complex for this type of causal postulation. We more often observe that some sets of  $A_j$  tend to be associated with some "C," and we may or may not be aware of the existence of intermediate statements ("B") or of some  $A_j$  that are also necessary. Based on such associations, our judgment as social scientists, and our partial knowledge of causality, we attempt to move from post hoc reasoning to science by postulating and testing hypotheses of the sort "If  $[A_1, A_2]$  then C." This simplification of reality is illustrated in Figure 1.

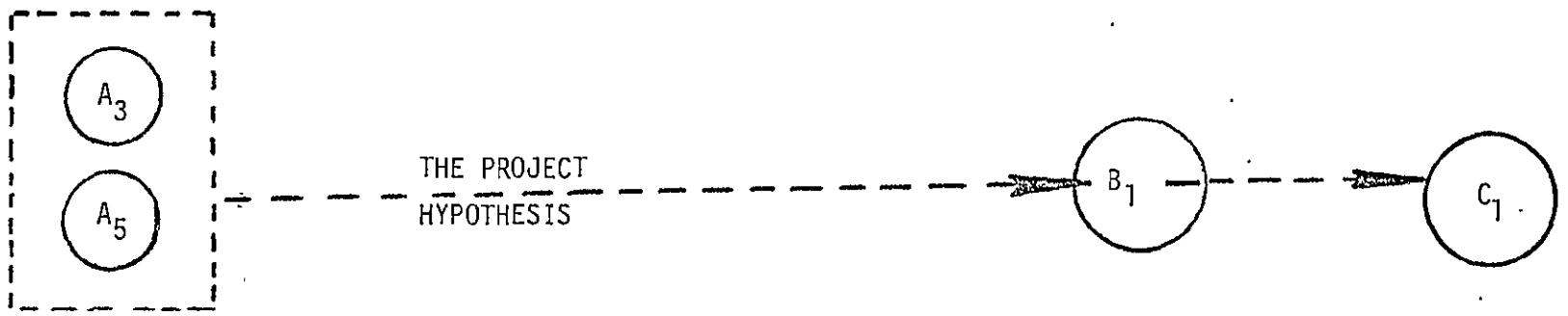
In the abstract example of Figure 1, we assume that some set of events,  $A_1$  through  $A_{12}$ , is necessary and sufficient to cause  $B_1$  and  $B_4$ .  $B_1$  is a necessary and sufficient cause of  $B_2$  and  $B_3$ , which together with  $B_4$  are necessary and sufficient causes of  $C_1$ . (The analogy is a little less abstract if we consider  $C_1$  to be a Goal,  $B_1$  a Project Purpose, and the  $A_j$  as potential Outputs.) This can be expressed as:

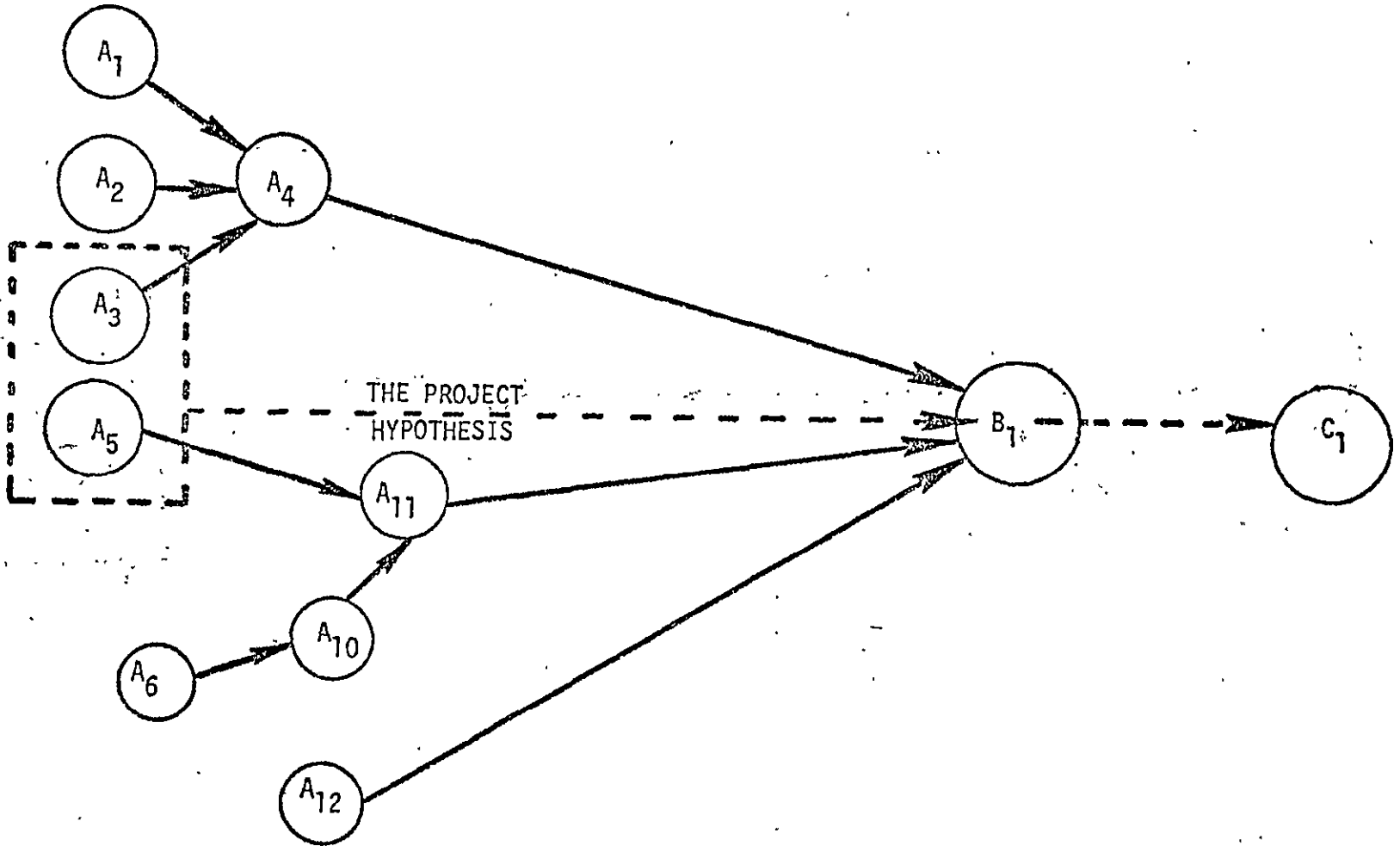
$$\begin{aligned}(A_1, A_2 \text{ --- } A_{12}) &\leftrightarrow (B_1, B_4) \\(B_1) &\leftrightarrow (B_2, B_3) \\(B_2, B_3, B_4) &\leftrightarrow C_1 \\ \therefore (A_1, A_2 \text{ --- } A_{12}) &\leftrightarrow C_1\end{aligned}$$

However, our insight into developmental mechanisms is not usually sufficient for us to predict the full set of causal linkages. We are liable to do as illustrated in Figure 1, and associate some subset of  $A_7$  with the achievement of  $C_7$ . As shown by the heavy dashed lines in Figure 1, the critical variables observed by our experimenter were  $A_3$  and  $A_5$ , leading to the simplified hypothesis:

$$(A_3, A_5) \rightarrow C_7$$

Clearly, there is a good chance that the experiment of providing  $A_3$  and  $A_5$  as outputs will not result in attaining our goal. We have ignored the implicit hypotheses in the chain. If we provide  $A_3$  and  $A_5$  but fail to achieve  $B_7$ , we must look for the implicit connecting events (e.g.,  $A_4$  and  $A_{10}$ ) as well as the assumptions as to the availability of other  $A_7$  (e.g.,  $A_{12}$ ). For testing goal attainment, we must even consider issues not clearly related to the project --  $A_9 \rightarrow B_4$  in the example shown.





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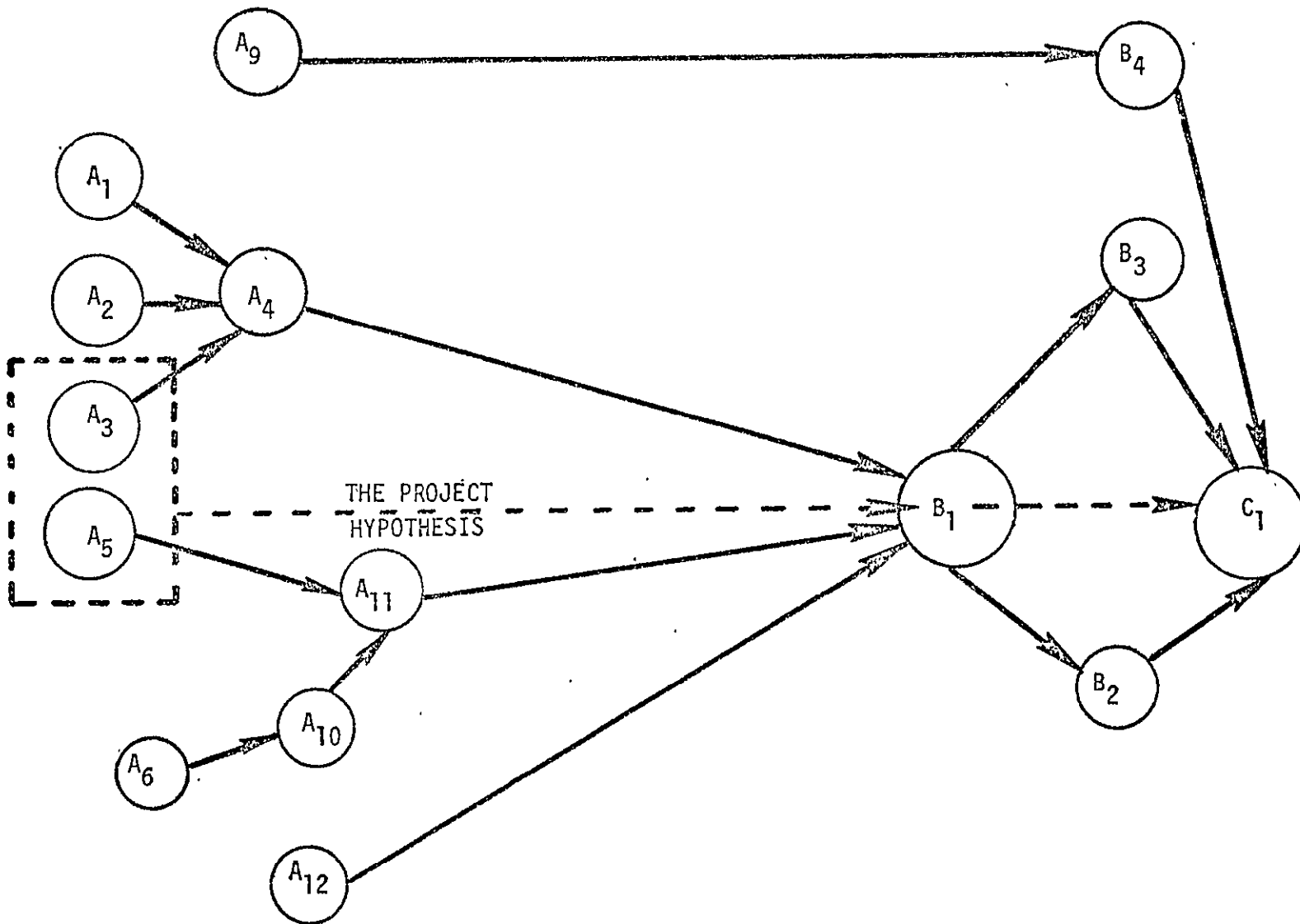


Figure 1. Our Project Hypothesis Imposes Order, and Need Not Fully Comprehend Causality.

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C. STEPS FROM A LOGICAL FRAMEWORK TO A SOLID EVALUATION

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## STEPS FROM "LOGFRAME" TO SOLID EVALUATION

(Excerpted from a PCI Staff paper developed by Molly Hageboeck, to orient PCI trainers.)

(The outputs I would look for in terms of a trainees' ability to conduct a solid evaluation would parallel these steps and would require that we measure competence at each step for any given evaluation training case.)

STEP ZERO:           An agreed upon Logical Framework.

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STEP ONE:            A list of the decisions to be made based on the evaluation.

STEP TWO:            A list of the specific questions which must be answered in order to make the decisions identified above.

STEP THREE:          Selection from the total list of LF indicators that minimum set on which evidence is required to answer the list of evaluation questions.

STEP FOUR:          Identification of the data elements (evidence) which must be collected to verify each of the minimum set of indicators.

STEP FIVE:          Specifications of data collection methods which most cost-effectively develop the required evidence, and development of a data collection plan.



STEP SIX: Development of a rational data analysis plan which will result in a set of findings which provides answers to the evaluation questions.

(STEP SEVEN): Iteration of the data collection methods based on review of the analysis plan, e.g., competent review of the way in which data will be collected and purging of data which is not needed based on the analysis plan.

#### A ROUGH GUIDE TO THE EVALUATION REVIEW

1. Is stated purpose appropriate in view of current priorities?
2. Is EOPS consistent with stated purpose?
3. Does the evidence suggest we are moving toward EOPS?
4. What outputs have been produced to date? Are these consistent with the plan?
5. Is the movement toward EOPS, expressed as percent of total, consistent with output production? Is causality implied, or can we attribute EOPS progress to other causes?
6. Is output production, expressed as a percent of total, the same as input consumption expressed as a percent of total?
7. What steps can be taken to improve the rate or decrease the cost of producing outputs? Are there special problems or actions for which the project team needs help?

8. What alternative outputs would achieve the same purpose? Are these plausible in terms of cost and effectiveness?
9. What alternative inputs would produce the desired outputs? Are these plausible? Why not?
10. What is the total cost of bringing this project to its successful conclusion? (From this point on, not cumulative.) Consider host, donor, contractor, and commodity costs, inclusive. Associate a cost with host and donor management time -- these are often our scarcest resources. Approximate, guess, but do it.
11. Look again at project purpose. Is achieving this purpose worth the total cost (item 10)? Is it worth twice that cost? Four times? Ten? Try to assign a value to the purpose.
12. Assign a probability of success to the project -- in view of the evidence are you 100% sure of accomplishing the purpose? 50%? 80%? etc.
13. Multiply value of achieving purpose by probability of achieving purpose. This "probable value" should be in excess of cost to completion.

Again, look at the project purpose. Is it the best use of the allocated resources, or do other purposes suggest themselves?

14. The answers to the above questions are inputs to reprogramming. Document them in whatever form is appropriate.
15. Now, compose a report to top management. Note actions expected of and problems to be addressed by top management. Note important actions planned by the project team. If substantive issues have been raised without resolution, note these as follows:

- Problem/issue;
- Data to be obtained to resolve the problem/issue;
- Individuals responsible for gathering data;
- Individual responsible for resolution;
- Date of data availability;
- Date of resolution -- this must be in advance of next major decision point;
- Actions implied by pro or con resolution.

IF YOU ANSWER NO TO:

- QUESTION 1: What should the purpose be? List alternatives and save them for later.
- QUESTION 2: Define more appropriate EOPS. If stated EOPS meets an alternative purpose, evaluate project in terms of both stated and alternative purposes.
- QUESTION 3: Are there reasons for lack of progress explained by factors beyond management control? (Implicit Assumptions)
- QUESTION 4: Why not? Project team should show how difficulties can be resolved.
- QUESTION 5: Either decide the situation will change, redesign, or terminate.
- QUESTION 6: Why not? Will it change? If not...
- QUESTION 11: If it is not worth the cost.... Look carefully at your alternative purpose to see if it might be worth the cost.

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D. A GUIDE FOR EVALUATION OF ACTUAL PROGRESS VS PLAN

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## A GUIDE FOR EVALUATION OF ACTUAL PROGRESS vs PLAN

It is sometimes useful to have a list of questions that can be used to "drive" an evaluation process. Such a list of questions is presented in the following, providing a representative, rather than comprehensive, guide to the evaluation process.

### A. CONFIRM THE PURPOSE IS APPROPRIATE

1. Is the stated purpose appropriate in view of current priorities?
2. Is the stated end-of-project-status and means of objective verification (EOPS and OVI at purpose level) consistent with the stated purpose of the project? If not, define a more appropriate EOPS. If the stated EOPS meets an alternative purpose, you may need to evaluate the project in terms of both the stated and the alternative purposes.

### B. PROGRESS ASSESSMENT

3. Purpose Level: What evidence is there describing movement toward end-of-project-status? Based on the available evidence, is the project progressing toward EOPS as planned? If you can, express progress toward EOPS as a percentage completed, e.g., ten percent, fifty percent, etc.
4. Output Level: What outputs have been produced to date? Is production as planned? Assuming production of all scheduled outputs as the 100% level, express the current level of output production, e.g., thirty percent, fifty percent, eighty percent, etc.

C. EXAMINATION OF THE PROJECT DEVELOPMENT HYPOTHESIS (IF OUTPUTS, THEN PURPOSE)

5. Is the project producing the planned outputs which will lead to achieving the project purpose? Is the percent completed on the "EOPS scale" approximately what was planned for when outputs reached the level we have now?

If the answer to the above is "yes," progress toward purpose as planned, then the project-development hypothesis tends to be supported. In this case, look for alternative hypotheses to explain this progress: Were project outputs the cause of the progress? Or must we attribute EOPS progress to some other cause or causes?

If the answer to the above question is "no," progress toward purpose to not as planned, then why not? What implicit assumption or external factor was not taken into account? If we cannot find such an external factor, then confidence in the development hypothesis is weakened. List the external factors that may have inhibited movement toward EOPS.

6. In view of the degree of association between outputs and movement toward EOPS and our identification of key assumptions, how confident are we that producing the planned outputs will, in fact, achieve project purpose? Are we more or less confident than we were last year? If possible, express the level of confidence in the project-development hypothesis by assigning it a probability of success. (That is, if we are absolutely certain that producing the outputs will result in purpose, then our probability of success is 1.0; if we think it is about an even-money bet, then the probability is 50% or 0.5, etc.)

D. REVIEWING OUR MANAGEABLE INTEREST (IF INPUTS, THEN OUTPUTS)

7. Input Level: What percentage of our input resources has been consumed? More specifically, what percentage of the total dollars planned for this project has been expended to date?
8. Compare the percent consumption of resources (step 7, above) to the percent production of outputs. If output production lags input consumption more than planned, what special problems or unforeseen circumstances justify this difference? What plans have been made for improving the situation? Are the inputs being directed to the important outputs?

If actual output production leads or is equal to planned outputs for the actual input consumption, then management is adequately fulfilling its basic management contract.

9. Based on the above data, what actions need to be taken to ensure that we will have input resources sufficient to produce the agreed-upon project outputs? List these actions for attention by the appropriate management levels.

E. IDENTIFICATION OF REPLANNING ALTERNATIVES

10. What are plausible alternative outputs to achieve the same purpose? Are these alternatives worth serious consideration? Examine plausibility in terms of cost, probable effectiveness, and the ability of the project manager to adopt such approaches.
11. What alternative inputs would produce the desired outputs? Are these alternative inputs worth serious consideration in terms of cost, time, and effectiveness? If not, why not? If so, what is the next step in deciding what changes should be made?

F. COST AND BENEFIT (IS THE PROJECT WORTH THE EFFORT?)

12. It is useful for management to compare benefits of a given project to the anticipated cost of that project. Is the project worth continued support?

It can be useful to establish a value for achieving the project purpose. How much should the project funding source be willing to pay to have the project successfully concluded? What would it cost to achieve the purpose by a different approach? Estimating a dollar value for achieving the purpose makes it possible to estimate a benefit-cost ratio which is helpful for programming, even if imprecise.

13. What is the total cost of bringing this project to its successful conclusion (from now on, not cumulative)? To the extent that you can, consider all project associated costs inclusive.
14. We are now going to establish an "expected value" or "expected benefit" of the project. We will do this by multiplying our expected probability of success, defined in Step 6, times the anticipated benefit or value of the project, defined in step 12. (If our anticipated benefit is one million dollars, and we have a 50% probability of success, then our expected value is \$500,000.)
15. Compare expected value of the project to the cost of completion. Expected value (dollars) divided by anticipated cost is a benefit-cost ratio. If the ratio is close to "1", the project is marginal. Development assistance is presumably aimed at high-leverage opportunities. Truly high leverage implies cost is very small relative to benefit (e.g., cost: \$1, value of benefit: \$10). (It is an axiom of engineering that research should not be undertaken unless a times-10 benefit can be expected.)

Jot down this benefit-cost ratio. It is a useful aid to project reprogramming, and an indicator to project management as to whether



or not they should be looking for more efficient means of implementation.

If you cannot put a meaningful money value on achieving the purpose, you still must answer the question: "Is it worth the effort?" Be prepared to respond to that question unambiguously and in a way that makes sense to others.

G. DEVELOPING THE REPORT TO THE EVALUATION REVIEW

16. Now, compose a report to the responsible agency or individual and other interested parties. Note actions requested of them, problems to be addressed by them, and important actions planned by the project team. If substantive issues have been raised without resolution, note these issues, the individual responsible for resolution, and the effective date of resolution. Summarize your project design. Emphasize evidence of progress versus plan. Be prepared to discuss plausible alternatives to the replanning actions you consider most appropriate.

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E. MALARIA ERADICATION PROJECT

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SAMPLE PRESENTATION OF THE LOGICAL  
FRAMEWORK FOR MALARIA ERADICATION

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	NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATOR	IMPORTANT ASSUMPTIONS
<u>Goal</u>	Eliminate mortality caused by Malaria	Death rate for area	
<u>Purpose</u>	Eradicate Malaria	Cases of Malaria reported	<ul style="list-style-type: none"> <li>◦ Malaria is a significant contributor to death rate</li> </ul>
<u>Output</u>	Eliminate Malarious mosquitos in houses	Houses sprayed on the prescribed, regular schedule	<ul style="list-style-type: none"> <li>◦ Incidence of Malaria may be reduced by epidemiological precautions</li> <li>◦ Malaria is indigenous, not imported</li> </ul>
<u>Input</u>	<ul style="list-style-type: none"> <li>-Spray teams</li> <li>-Vehicles</li> <li>-Chemical sprays</li> </ul>	<ul style="list-style-type: none"> <li>-Man-years of spray teams</li> <li>-#Vehicles</li> <li>-Tons of spray</li> </ul>	<ul style="list-style-type: none"> <li>◦ A significant portion of the population will participate on an extended basis</li> </ul>

## SAMPLE PRESENTATION

This project is a Malaria eradication project. It illustrates four important concepts of project design:

1. GPOI
2. Objectively verifiable indicators
3. Development hypothesis
4. Important assumptions

### 1. GPOI

The results expected from the project are stated explicitly at four levels:

The goal is to eliminate mortality caused by Malaria, thus reducing the overall mortality rate, an objective that has a high priority in our country assistance program;

The project purpose is to eradicate Malaria. This is what we want to happen as a result of this specific project. We are convinced that our assistance will lead to achieving this purpose; if we were not convinced the purpose would be achieved, we would either redesign the project or not undertake the project;

The output of this project is the specific elimination of Malarious mosquitoes from sleeping areas. Research studies and other programs have already established this technique as highly effective. This output is the expressly intended result of the project that management is expected to produce with the inputs provided.

The inputs are spray teams, vehicles, and chemicals.

### 2. OBJECTIVELY VERIFIABLE INDICATORS

Objectively verifiable indicators are used to measure the results expected at every level of the Logical Framework. An objectively verifiable indicator is evidence that any observer would accept as a

fact showing that the expected results did or did not occur.

The objectively verifiable indicator of a lower mortality rate (goal level) is the death rate in the malarious zone. Official statistics will be used to estimate deaths.

The objectively verifiable indicator of eradication of Malaria (purpose level) is the number of new cases of Malaria reported.

The ideal objectively verifiable indicator at the output level would be the number of malarious mosquitoes that remain in homes; that is not a very practical measure, but assuming that spraying is directly correlated to viable malarious mosquitoes so the number of homes sprayed on the prescribed, regular schedule will be counted as an output indicator. The records of the spray teams will contain this information; monthly summaries will be requested. It will cost very little to collect the information.

The inputs are easy to measure in objectively verifiable terms. The man-years of spray teams, the number of vehicles, and tons of spray are purchased by the AID Mission directly. The data is already available within the Mission.

### 3. DEVELOPMENT HYPOTHESIS

A development hypothesis is a statement that if we produce the expected results at one level (of the GPOI Logical Framework), then the results at the next higher level will also be achieved.

If USAID provides \_\_\_\_ man-years of spray teams, \_\_\_\_ vehicles, and \_\_\_\_ tons of spray, and the population cooperates in the program, then \_\_\_\_ houses will be sprayed the prescribed, regular schedule.

The first development hypothesis is "IF OUTPUTS, THEN PURPOSE." In this project that means:

If houses are sprayed on the prescribed, regular schedule, then the cases of Malaria reported will decrease by \_\_\_\_\_.

The second development hypothesis is "IF PURPOSE, THEN GOAL." In this project that means:

If the new cases of Malaria reported decrease as expected, then mortality from Malaria will also decrease resulting in a lower overall mortality in the area of concern as expected.

These hypotheses are used as simple tests to decide whether the project design is complete and convincing. If the development hypotheses are not convincing, it suggests that something else must be done to make the project successful. There is not much point in supporting a project unless we are convinced that the things that we can do are going to result in what we want to happen.

#### 4. IMPORTANT ASSUMPTIONS

Sometimes there are conditions we cannot control that influence the probability of achieving the project objective. The planner must identify the most important assumptions explicitly to reassure himself that the project depends only on factors that he is convinced will permit achieving the purpose.

At the level of development hypothesis #2, as a planner I realize I am assuming Malaria is a significant cause of death. If I knew Malaria was a trivial cause of death, I would consider working to reduce the mortality rate (goal) in a completely different way. As a minimum, I will investigate the frequency of death from Malaria and from other causes before starting the project.

In development hypothesis #1, I assume that Malaria is indigenous to the area we are spraying, not imported from other areas. If the Malaria cases reported are imported, spraying homes is not an efficient method to deal with Malaria. I would probably try to control immigration of carriers from infected areas or to diagnose and treat Malaria cases promptly. Just recognizing the possibility that Malaria may be imported makes me want to learn about Malaria incidence in neighboring areas and how I might control carriers. I will watch to see if later we hit a level of Malaria that could all be imported. Since this program requires cooperation from an overwhelming majority of the population, it is assumed that government cooperation will have been assured before the program was instituted, with the promise of or the actual provision of legislative support as indicated.

This project design is a good one if we are convinced that providing the selected inputs will produce the outputs and thereby achieve the purpose.

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F. SYNERGY IN GROUP PROCESS

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THE PLACE OF SYNERGISM IN HUMAN INTERACTIONS

INTERACTION TYPES	OBSERVER'S INTERPRETATION	FAMILY EXAMPLES	GOVERNMENT EXAMPLES	BUSINESS EXAMPLES
Transcends Human Behavior				
Miracle ( $1 + 1 \gg 2$ )	What happens cannot be explained by known natural laws	Eve from Adam's rib	The Covenant	The successful Alchemist
Superior Human Behavior				
Synergism ( $1 + 1 > 2$ )	More gets done than would be expected	Swiss Family Robinson, Kennedy family	NASA's moon shots	Old Standard Oil, Xerox, Polaroid
Normal Human Behavior				
Cooperation ( $1 + 1 = 2$ )	Group expectations are met	Working wife, baby-sitting husband	"United" States	Trade Associations
Coexistence ( $1 + 1 = 1 + 1$ )	Individual expectations are met	Teenager & parent	West Berlin & East Germany	Constituent parts of most conglomerates
Antienergism ( $1 + 1 < 2$ )	Less gets done than expected	Tired husband & nagging wife	United Nations Security Council	Most research & marketing departments
Opposition ( $1 + 1 = 0$ )	Nothing gets done	Husband & wife stop speaking, separate	The filibuster	Strikes
Inferior Human Behavior				
Destruction ( $1 + 1 < 0$ )	That which has been done is destroyed	Divorce, family feuds (Hatfields & McCoys; Wars of the Roses)	French Revolution	Rolls-Royce, Lockheed
Transcends Human Behavior				
Diablerie ( $1 + 1 \ll 0$ )	What happens cannot be explained by known natural laws	Manson family	Auschwitz	Slave trade

Practical Concepts Incorporated

FACTORS THAT INFLUENCE A SYNERGISM'S GROWTH AND DECLINE

Stage	Cohesive Factors	Disruptive Factors
<u>FORMATIVE</u>	Formulation of a common cause Supportive organizational environment Clearly stated incentives for all Over-utilization of people Smallness Dollars	Extraneous decision makers Multiple, ill-defined goals Weak relation to corporate objectives Self-aggrandizing participants Inadequate resources
<u>PROSPERING</u>	Ascendancy over organizational environment in planning its own future Rapid rewarding, coaching, and punishing of synergistic, anti-energetic, and destructive acts, respectively Realistic goals and yardsticks Dollars	Declining influence of synergism within organizational environment Slow response to synergistic, anti-energetic, and destructive acts Unfulfilled promises Underutilization of generalists Forced specialization of participants Increasing size
<u>DECLINING</u>	Remnants of original group spirit Strong associations within synergism Dollars	Continued presence of generalists not in policy-making group Increasingly hostile organizational environment Changed interests of participants Know-it-all attitudes

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G. GLOSSARY

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## GLOSSARY OF TERMS

### ACHIEVEMENT REPORTING

Reporting from one level of management to the next higher level on the accomplishment (in terms of quality, quantity, and timeliness) of previously determined performance targets.

### ACTIVITY (Represented by )

Tasks or actions that must be undertaken to reach project objectives. Activities require resources (money, Manpower, Materials) and consume time. An Activity begins at a specific point in time, is preceded by an event, ends at a later point in time, and terminates in the occurrence of an event. If more than one activity occurs at the same time, they are said to be in parallel.

### ASSUMPTIONS

Something that must happen if the project is to succeed, but which is not directly controlled by the Project Team. (For example, if our purpose is to increase agricultural productivity and our goal is to increase farm income, then we must assume that there are sufficient roads, markets, etc., to translate agricultural produce into real income.) At each level in the project design (GPOI), the sum of the objective(s) and the assumptions represent the necessary and sufficient set of conditions to achieve the next higher level.

### CONSTRAINTS

Factors that limit or otherwise adversely affect the achievement of an event or objective. For example, the supply of trainers may constrain achievement or delay start of a training seminar. Constraints on project success should be assessed before a project is executed and may require explication as an Assumption.

COSTS

Those things that are consumed in the completion of project activities (time, money, manpower, and materials) together with any adverse effects (social disruption, lost earnings of trainees who fail to return to their country, pollution, etc.).

BASELINE DATA

Indicates the prevailing pre-conditions in the area of the project, prior to or at the starting point of the project against which the amount of change (if any) and caused by the project can be measured.

CRITICAL PATH

The critical path is the minimum time required to reach an objective or complete a set of activities given the level of effort or amount of resources devoted to these activities. The sequence of activities that consumes the most time from the beginning to the end of the project. A delay in any activity along the critical path will result in at least an equal delay in the completion date of the project.

DECISION POINTS  
(Represented by



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Pre-determined points in time in the life of a project. At these points, key decisions that affect the future course of the project must be made.

DEPENDENCY

A logical relationship which is indicated by a causal or temporal precedence (e.g., if an activity cannot begin until an event occurs, which is the result of one or more preceding activities, then it is dependent on those pre-conditions).

DEVELOPMENT HYPOTHESIS

A project or program hypothesis where the expected result is impact on development. "If outputs, then purpose" is called the project hypothesis. The hypothesis that purpose will lead to goal is called the program hypothesis. These are hypotheses because we are not certain of the causal relationship between the "if" statement and the "then" statement. Projects should be supported only if informed judgment, based on the best available evidence, provides reasonable confidence that the "then" statement will be achieved. The degree of confidence required should be a function of the value of achieving the intended purpose.

DUMMY ACTIVITY  
(Represented by ----▶)

The dummy activity arrow indicates dependence of one activity on the completion of another when the two cannot be otherwise linked on a network. Dummy activities consume neither time nor resources.

ELAPSED TIME

The minimum amount of time required to complete an activity given the level of effort and the amount of resources devoted to the activity.

END-OF-PROJECT STATUS  
(EOPS)

The minimum set of objectively verifiable indicators that will signal the successful completion of the project purpose. Indicators, to be objectively verifiable, must be targeted (time, quantity, quality).

EPISODIC REPORTING

Reporting on the level of achievement of pre-determined key events in the life of a project. The timing of the reports is keyed to project events or dates rather than a priori periods or dates.

EXCEPTION REPORTING

Reporting to the next higher level of management that a planned event did not occur or is in danger of not occurring on time and/or in the same manner as was planned (i.e., with respect to the quantity and quality of performance). Reports are action oriented giving higher management an assessment of the problem and recommending corrective action.

EVALUATION

An orderly examination of progress at each level of objectives (GPOI). Examines validity of hypotheses, challenges relevance of objectives, assesses project design, and results in redesign and replanning actions. Evaluation is oriented more to the output-to-purpose and purpose-to-goal linkages, in contrast to monitoring which is oriented more to the input-to-output linkage.

EVENT  
(Represented by ○ )

A condition, state, or point in time which represents the end of one or more activities or the beginning of one or more activities. An event consumes no time or resources.

FOCUS

Concentrating on the "main thrust" or truly important issues and avoiding the less important. Focus is particularly relevant when considering project purpose. Project purpose should be limited to the single "main thrust" of the project, stated as concisely as possible.

GOAL

The higher level objective immediately above project purpose. That is, the "then" statement for which the project purpose (plus purpose-level assumptions) must provide a plausible "if." Also, higher order objectives beyond the project goal.

GPOI

An acronym for: Goal, Purpose, Outputs, Inputs -- the vertical logic of the LogFrame (see Logical Framework).

HYPOTHESIS

A predictive statement based on a causal relationship involving a degree of uncertainty.

INDICATOR

Conditions that are so strictly associated with certain other conditions that presence of or variation in the former indicates presence of or variation in the latter. Indicators demonstrate results; they are not conditions necessary to achieve those results. For example, a meter deflection of 2 cm may indicate, but is not itself, one volt. A good indicator makes the bridge between important intent and means of verifying that the intent has been realized. Indicators are targeted by measures of quantity and/or quality and include a time frame for achievement. (See Objectively Verifiable Indicators.)

INPUTS

The activities to be undertaken and resources available in order to produce the outputs. The project manager commits himself and is held accountable to produce the outputs by effective management of the inputs.

INTERFACE EVENTS (Represented by )

An event that occurs in one network upon which the commencement of an activity in one or more other networks is dependent.

KEY EVENTS

Events which are crucial to the successful implementation of the project and of interest to higher management but not necessarily on the critical path.

LEADING INDICATORS

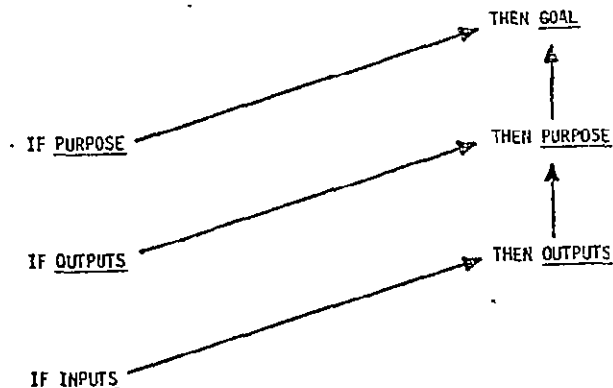
Indicators that are observable now and are useful predictors of future success. A statement of intent is a leading indicator of behavior, etc.

LEVELS OF MANAGEMENT

A system of arranging objectives in a functional hierarchy in which "top management" characteristically is responsible for determining policy (Level Alpha), Program Management is responsible for program planning and steering projects toward the accomplishment of program objectives (Level One), the "Project Manager" is responsible for the successful execution of the project (Level Two), "Field Operators" mobilize and put to use the project resources to achieve the planned outputs (Level Three). "Contractors and Consultants" normally monitor at Level Three but occasionally monitor at an even greater level of detail (Level Four).

LINKED HYPOTHESES

Represent a prediction that if the expected results at each level of the GPOI hierarchy are achieved and if the assumptions at each level are valid, then the expected results at the next higher level will be achieved. This is illustrated as follows:





LOGICAL FRAMEWORK

A set of interlocking concepts which help project teams clearly, logically, and explicitly state why a project is undertaken, how the project will be undertaken, what exogenous factors make project success uncertain, and what the project will look like when it has been successfully completed. The concepts are summarized in a 4 by 4 matrix, also called the LogFrame.

MANAGEABLE INTEREST

Defines the area of concern--and responsibility--of the Project Manager. The Project Manager commits to deliver outputs if the requested inputs are put at his disposal. It is within his "Manageable Interest" to reallocate or otherwise modify inputs and do whatever else is necessary to produce outputs aimed at achieving an agreed-upon purpose.

MATRIX FOR THE LOGICAL FRAMEWORK (LOGFRAME)

A 4 by 4 matrix that displays the interrelationships of the design and evaluation components of a development project. The matrix is displayed on a worksheet divided into four rows (for goal, purpose, outputs, and inputs) and four columns (for narrative, objectively verifiable indicators, means of verification, and important assumptions).

MEANS OF VERIFICATION

The actual type and source of data which will be used to verify an indicator (e.g., analysis of birth records from Ministry of Health or a family planning survey in target area conducted by University of X). The usefulness of an indicator is limited by the availability of data.

MILESTONE EVENTS

Events which correspond to outputs on the Logical Framework or to major occurrences which contribute to these outputs. Milestones are almost always of interest and reported to the next higher level of management.

MONITORING

The management function of following the progress and overseeing the operations of a project from its inception to its completion. Monitoring is oriented more to the input-to-output linkage of GPOI in contrast to evaluation which is oriented more to the output-to-purpose and purpose-to-goal linkages. Monitoring is concerned with work activities and the procurement and use of resources.

NETWORK

A graphic representation of the sequence of activities and events required to reach a specified objective.

OBJECTIVELY VERIFIABLE INDICATORS

Indicators (see definition) that have quantity, quality, and time targets and are stated in terms such that both an informed skeptic and a proponent of the project would agree that progress has or has not been as planned. Objectively verifiable indicators, initially established during the design phase of a project, focus discussion on evidence rather than opinions.

OUTPUTS

The specifically intended results that can be expected from good management of the inputs provided. A project manager is accountable for producing outputs; the project manager, line supervisors, and program staff share responsibility for the judgment that producing these outputs will result in achieving purpose.

PARALLEL ACTIVITIES

Two or more activities in a network that are undertaken at the same time.

PERIODIC REPORTING

Reporting on the degree of achievement of activities and events from one level of management to the next higher level based on a pre-defined time schedule.

POINTER  
(Represented by



) A symbol that cross-references two events in a network (or between networks) which are inter-dependent. The pointer can be used to replace dummy activities which represent only a time dependency (but consume no time or resources) or to replace a normal activity. In the latter case, the pointer should be carefully labeled in addition to being coded. In both cases, the pointer is used only to avoid over-complicated crossing of arrows.

PROJECT

A planned undertaking that clearly specifies what will be accomplished, over what period of time, and at what cost.

PURPOSE

What is hoped to be achieved by undertaking the project. The result aspired to if the required outputs are produced.

PROJECT DESIGN

A summary of what the project is expected to achieve (purpose) and how it will be achieved with the inputs and time available. The key elements of project design may be summarized in the Logical Framework format.

PROJECT MANAGER

The individual who holds himself personally accountable for the success of a project. More specifically, the individual who is charged with producing the agreed-upon outputs within the specified time and cost constraints.

REPORTING

Providing the necessary information to appropriate people for timely decision-making regarding the successful implementation of projects. Includes both formal and informal communications; i.e., a formal (fixed format) report may be the stimulus for personal discussions.

SLACK

The time that an activity can be delayed without delaying the targeted completion of a project.

TARGET

The specific quantity, quality, and time measures of an indicator that give detailed definition to an objective.

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