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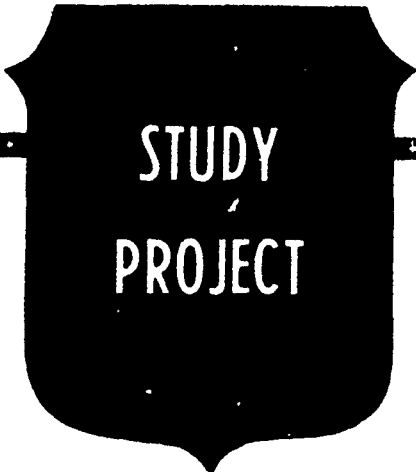
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**A COMPARISON OF PLANNING,
PROGRAMMING, AND BUDGETING SYSTEM
AND ZERO BASED BUDGETING**

BY

**LIEUTENANT COLONEL JOHN R. THOMPSON
United States Army**

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A COMPARISON OF PLANNING, PROGRAMMING, AND
BUDGETING SYSTEM AND ZERO BASED BUDGETING

AN INDIVIDUAL STUDY PROJECT

by

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U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
15 April 1993

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ABSTRACT

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TITLE: A Comparison of Planning, Programming and Budgeting and Zero Based Budgeting

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The Planning, Programming, and Budgeting System (PPBS) is the process used to determine allocation and resource requirements for the Department of Defense. The system was designed to support a multiyear force and financial plan and reconcile the differences between requirements and funds, while providing "due process" for all the services to allocate resources in support of the objectives most critical for carrying out the National Military Strategy. The principal objectives of Zero-Based Budgeting (ZBB) are to involve managers at all levels in the budget process; to justify the resource requirements for existing activities as well as for new initiatives; and to focus the process on decision packages with alternative funding levels--minimum levels, current levels and enhanced levels. This study will compare PPBS and ZBB to show how both systems work.

INTRODUCTION

The budgeting process provides a mechanism for setting goals and objectives, for identifying weaknesses or inadequacies in organizations, and for controlling and integrating the diverse activities carried out by numerous agencies within large organizations, both public and federal. Budgeting requires examination of the organizational resources that have been used in the past, evaluation of, and planning for what is to be accomplished, and programming a course for the future by allocating new resources for the coming budget period.¹

Government has difficulty in evaluating the effectiveness and efficiency of its programs, mainly because it lacks the readily definable profit measures that industry enjoys. Reformers during the sixties and seventies felt the reason for this difficulty was the poor decision-making of top policy makers and the uncoordinated nature of many decision making processes. They believed coordinated and rational decision-making were important, but felt greater use of analysis would improve the decision-making process. Those reformers stressed the importance of analysis, and data; they advocated categorizing the budget to facilitate analysis. Such analysis was stressed in the Programming, Planning and Budgeting System (PPBS) and later in the Zero-Based Budgeting (ZBB).

PPBS is the process used to determine allocation and resource requirements for the Department of Defense. The system was designed to support a multiyear force and financial plan and reconcile the differences between requirements and funds, while providing due process for all services to allocate resources to the

needed objective to support the National Military Strategy. ZBB was introduced to the federal process in 1977. It has significantly increased the level of involvement of the Office of the Secretary of Defense in the development of service programs. The principal objectives of Zero-Based Budgeting are to involve managers at all levels of the budget process; justify the resource requirements for existing activities as well as new initiatives; and focus the process on decision packages with alternative funding levels--minimum levels, current levels, and enhanced levels.

This study will compare PPBS and ZBB to show how both systems work.

THE PLANNING, PROGRAMMING, BUDGETING SYSTEM

Some have traced the beginning of program budgeting to the methods used to allocate scarce materials during World War II, but program budgeting was not widely used in government until Charles Hitch and former Defense Secretary Robert S. McNamara employed a variation of the technique, PPBS, in the Department of Defense in 1961.² By 1965 the system had attracted so much attention because of its incorporation of the services' planning and budgetary operations in a common planning, programming, and budgeting process that President Johnson decided to extend the system to all federal agencies. He announced the decision at a press conference on August 25, 1965:

This morning I have just concluded a breakfast meeting with the cabinet and with heads of Federal agencies and am asking each of them to immediately begin to introduce a very new and very revolutionary system of planning and programming the budgeting throughout the vast Federal Government, so that through the tools of modern

management the full promise of a finer life can be brought to every American at the lowest possible cost.

Under this new system each cabinet and agency head will set up a very special staff of experts who, using the most modern methods of program analysis, will define the goals of their departments for the coming year. And once these goals are established, this system will permit us to find the most effective and the least costly alternative to achieving American goals.

This program is designed to achieve three major objectives: It will help us find new ways to do jobs faster, to do jobs better, and to do jobs less expensively. It will ensure a much sounder judgment through more accurate information, pinpointing those things that we ought to do more, spotlighting those things that we ought to do less. It will make our decision making process as up to date, I think, as our space exploring programs.³

However, what proved to be optimal for the Defense Department was not workable for the entire federal government. Discontent with the PPBS was soon widespread for reasons to be discussed later in this paper. But first, let's see how the system works.

PPBS is an instrument of budgeting designed to alter processes, outcomes, and impacts of government budgeting in significant ways.⁴ As the label implies, it was aimed at improving the planning process in advance of program development and before budgetary allocations were made. It was designed also to allow budget decisions to be made on the basis of previously formulated plans.

PPBS was intended to make programs, not agencies, the central focus of budget making. Incremental budgeting focused on programs to a degree, but there was little demand for choosing one and only one program of a particular type. By budgeting incrementally, it was possible for two or more similar programs to be approved by

Congress.⁵ PPBS was seen as a device for reducing duplicative and overlapping programs, but it was necessary to study programs more or less in isolation from their agency in order to select the optimum program.⁶

PPBS was designed to relate budget decisions to broad national goals. In the words of one observer, "the determination of public objectives and programs became the key budget function."⁷ Interpreted another way, PPBS represented an effort to incorporate rationality in budgetary decision-making and to obviate existing mechanistic incrementalism. The language and logic of systems analysis and budgetary rationality were employed as part of the effort to introduce the PPBS into national budget processes.

The system was designed to facilitate assessments not only of agency resources and activities but also of actual external effects of those activities. To accomplish this, it was necessary to design new information systems and, more important, to obtain new and objective information that would demonstrate on a firm factual basis which programs were most likely to achieve their objectives.⁸ For the most part, this effort was directed toward identifying possible alternatives to existing programs that might be more effective. But systematic evaluation of programs and budgeting for them in terms of their actual consequences had been suggested on occasions previously.

PPBS emphasized economy. Implementation of the system depended on bureaucratic support from the Bureau of Budget (BOB) (and later, Office of Management and Budget (OMB)) where skilled

economics analysts--specifically, cost benefit analysts, could track national programs. Furthermore, in assessing consequences of budget decisions, advocates of PPBS called for examination of their economic impacts on society.⁹

PPBS therefore attempted to identify the goals established through planning, to relate them to the activities required for goal achievement, and to show the mix of resources required. A budget would then be structured to accomplish these ends. The PPBS required:

A definition of goals and subgoals in terms of some general differences to be made in society.

Definition of objectives required to accomplish each subgoal and measurable in terms of a specific impact it makes in society.

Identification of the activities employed to accomplish each objective, measured in outputs.¹⁰

These, of course, are stringent and abstruse requirements. To make matters more confusing, PPBS developed its own terms for describing each of these analytic stages:

Planning, Programming, and Budgeting

1 Goals	=	Programs
2 Subgoals	=	Categories
3 Objectives	=	Subcategories
4 Activities	=	Elements ¹¹

See figure 1 for an illustration which will clarify how such a structure would look. Figure 2 illustrates how goals, subgoals, objectives and activities are measured. Note that several impact and output units are suggested for the measurement of a single objective and activity. What this suggests is that frequently no one single unit of measurement will be entirely satisfactory for

measuring either output or impact. Nevertheless, a preferred measure for each was selected for use in the actual calculation of unit costs.¹²

A primary strength of program budgeting is that it provides a formal systematic method to improve decision-making concerning the allocation of resources. Also, it improves the likelihood that there will be a rational allocation of tax dollars, which will then have maximum impact on attaining stated purposes¹³ This reflects the continuing concern of public executives that public funds should not be allocated merely on the basis of intuition and conventional procedures. Obviously, allocation problems arise because available resource supplies are limited in relation to the demands for them. This leads to a need for making choices among demands in terms of what to do, how much to do and when to do it. So the PPBS was designed to open up debate on these questions and put the discussion on a new basis. This was accomplished by requiring explicit identification of all action--ongoing or new proposals--in terms of programs related to stated objectives.¹⁴ Such systematical data enabled the top decision-makers to act in terms of the total organization, rather than on the basis of competing pleas from individuals or operating units.

A second justification for PPBS was that planning should be carried on with adequate recognition of the costs of proposed programs. When an organization's plans call for more resources than it has, or is likely to have available, planning becomes very important. Resource considerations introduce realism into

planning.¹⁵ Since as many alternative plans as possible should be examined at the planning level, resource considerations should be determined in highly aggregated terms. Through PPBS, the name of the game is "alternatives." It was designed to generate the most relevant ones. When the system identified the most promising plans for that list, analysts then review them in a less aggregative but still not completely detailed form. This is programming.¹⁶ Activities are identified and feasibility is determined in terms of availability of resources, and timing of each one of the alternatives. This selection is linked to a budget like process, because the final budget decisions determine the allocation of resource not only for the next year, but in many cases for many years to come.¹⁷

The formulation of a single program thus required that decisions be made on feasibility, resource demands, and timing. Even so, data used for programming are still not as detailed as next year's budget. A budget is an operating financial document. As such, it must specify great detail for inputs like personnel, supplies, and equipment. That kind of detail overwhelmed decision-makers and made the process for choosing among alternatives unmanageable. PPBS offered a way of assessing alternatives that did not require such budgetary detail.

The third strength of PPBS is that it provides a basis for choosing between available and feasible alternatives, a choice that takes place at the end of programming. At this point decision-makers can exercise their judgment and experience in an appropriate

and informed context, as they determine "what to do."¹⁸ So PPBS certainly did not eliminate the "human" element from decision-making.

PPB was not designed to increase the performance of day-to-day tasks, nor was it designed to improve administrative control over the expenditure of funds. Instead, it acknowledge the fact that more money is wasted by doing the wrong thing efficiently than could be wasted by doing the right thing inefficiently. In short, program budgeting aims at the decision-making process. It abets top-level determination of what to do, how much to do, and when to do it, rather than dictating how to carry on day-to-day operations, decisions which are best made by those who are closest to the activity.¹⁹

Expectations predictably ran high for PPBS in its early stages. Some thought it would reform budgeting in the national government and thus provides greater rationality, less "politics," better and more informed decisions, and so on. But for a variety of reasons PPBS failed to gain a permanent place in national budget making.²⁰ Perhaps expectations were inflated. Perhaps PPBS itself was flawed. Perhaps those responsible for implementing it were not sufficiently knowledgeable and experienced in planning and analysis, or were insufficiently motivated to make it work. Most likely, all these explanations have some validity.

One other major source of resistance to PPBS for much of this period was Congress, especially the Appropriations Committees. Members of Congress--who in some instances had spent years building

up their contacts, understanding, and knowledge of agency budgets-- were not favorably disposed toward a new budgeting system that in their view threatened to disrupt their channels of both information and influence.²¹ Agencies and OMB were told to submit budgets in the old agency format as well as the new program format; they were also directed to indicate where an individual expenditure proposal fit into each. More important, Congress did not change its appropriations practices to accommodate PPBS. Many legislators regarded McNamara and others at the Pentagon--the modern pioneers of PPBS--as "whiz kids," a label not meant to be complimentary.²² Congress also objected to the implication that it was up to the executive branch, by whatever method, to determine what the nation's programmatic goals were and to identify what programs were satisfactorily directed toward achieving those goals. Finally, a Congress where simplifying complex budget choices was a way of life and where consensus and compromise were preferred to direct conflict over choices was not a Congress likely to be very receptive to a budget system stressing economic "rationality."²³

Reaction to PPBS from different groups and coalitions in national politics varied according to its perceived impact on their success in securing budgetary resources. The extent to which PPBS promised to strengthen objective assessment of budgetary requests without as much regard for political strength or weakness in the budgetary process posed something of a threat to those groups that were already strong. Conversely, it held out some hope for agencies and their constituencies that had previously lacked the

strength to win some of their budget battles. One assessment of PPBS's failure to be sustained in the national budget process suggests that "however ineffective, the Planning, Programming and Budgeting System was too effective for the groups presently dominating the budgetary process."²⁴ It is a mark of their political strength that these groups succeeded in sharply limiting the impact and the duration of PPBS.

Budget expert Allen Schick observed in 1973 that PPBS had not worked; he suggested that in fact OMB had signaled its demise by lifting some of its requirements. Schick did not say that PPBS had no impact on national budgeting, but he did say that it had not achieved its primary goal--"to recast budgeting from a repetitive process for financing permanent bureaucracies into an instrument for deciding the purposes and programs of government."²⁵ However, Schick's assessment should not lead to the conclusion that PPBS or its residual effects have totally disappeared. Close scrutiny reveals that much of the PPBS "package" may have been dismantled, but some of its components live on and in some cases are thriving:

1. a basic focus on information
2. concern with the impact of programs
3. emphasis on goal definition
4. a planning perspective²⁶

Furthermore, it has been also suggested that the emphasis on rationality characteristic of PPBS may have provided a healthy counterweight to "less ordered techniques such as confrontation and participation" in policy making and that government has been strengthened by the interaction of both kinds of processes. In short, parts of PPBS are alive and well, though it has new names

and wardrobes.²⁷

ZERO-BASED BUDGETING

The excitement and controversy over PPBS had hardly died down before another budget reform, Zero Based Budgeting (ZBB), came along. This analytical technique was developed in 1969 in a private organization, Texas Instruments. It was first applied to government by Governor Jimmy Carter in the preparation of his fiscal year 1973 budget. Then in 1977 President Carter mandated its use in the federal government.²⁸

The term "zero base" tends to be confusing. It would seem that an agency using zero-based budgeting must start from scratch in developing its whole budget every year. As the U.S. Department of Agriculture found in 1962 when it attempted to employ the zero based concept in this way, it is not so designed. The budget is a political document based on the political, legal and social constraints existing in society or in a given organization.²⁹ Any budget exercise that ignores this fact is doomed to failure. By requesting operating officials to develop budget estimates without reference to legislative mandates, past commitments or existing political alignments, the Department of Agriculture found that it was asking the impossible. So to make sense, a budget must be constructed in the context of a real legal and political environment.

But Zero-based budgeting was designed to ignore such "pressures" and to arrive at budgetary decisions in a more ideal, artificial environment. It was viewed as a means of systematically

deciding how activities and resources should be allocated to accomplish agreed upon goals.

There are two basic steps of zero-base budgeting:

Developing "decision packages." This step involves analyzing and describing each discrete activity--current as well as new, in one or more decision packages.

Ranking "decision packages." This step involves evaluating and ranking these packages in order of importance through cost/benefit analysis or subjective evaluation.³⁰

Once decision packages are developed and ranked, management can allocate resources accordingly--funding the most important activities (or decision packages), whether they are current or new. The final budget is produced by taking packages that are approved for funding, sorting them into their appropriate budget units, and adding up the costs identified on each package to produce the budget for each unit.

First, analysts try to identify the originating units of the process, called the decision units. This is where the organization operating officials "make significant decisions on the amount of spending and the scope and quality of work to be performed."³¹ Each decision unit prepares one or more sets of decision packages to reflect alternative efforts directed to the accomplishment of a single goal. The decision packages must provide management with the information needed to evaluate and rank each decision unit against all other units competing for funding and to decide whether to approve or disapprove the unit's request.³²

To accomplish these ends, information packages may consist of:

- o Major goal to be accomplished
- o Immediate objective to be accomplished

- o Resources required
- o Organization of activity effort
- o Evaluation measures (efficiency and effectiveness)
- o Different levels of effort possible³³

The above list may vary slightly among different organizations; however, the key to ZBB lies in the identification and evaluation of alternatives for each activity. Two types of alternatives should be considered when developing decision packages:

- 1 Identify alternative methods of accomplishing the goal or performing the operation. All meaningful (politically, economically, and organizationally feasible) alternatives should be developed and evaluated. If an alternative to the current method of performing the work is selected, both methods should be shown in the decision packages.
- 2 Set forth different levels of effort for performing the operations required for the method selected, arranging levels (packages) in hierarchical order according to how essential each is to the accomplishment of the objective.³⁴

The decision unit is then requested to identify three different levels of effort possible to accomplish a given objective: a minimal level, the current level (required for continuance of effort at present standards), an improvement level (an increase over the current level of expenditures). The minimum level decision package is shown in Figure 3, which illustrates the one-page decision package format used by Texas Instruments.³⁵ The basic format was established to force each manager to perform a detailed analysis of his function(s)--including alternatives, cost trends, and operating ratios--in order to show work loads and effectiveness. Then the manager would display his analysis and make recommendations on these forms.³⁶

The current level is the funding and performance level that would be reflected in the decision packages if the proposed budgeted activities would be carried on at the current operating level without major policy changes. The minimum level of performance was identified below the current level, unless it was clearly not feasible to operate below the current level. The decision package set also included, when appropriate, a level or levels between the minimum and current levels and any additional improvement increments above the current level. Each decision package displayed different performance levels with associated funding requirements.

Decision packages are formulated at the "gut" level of each organization. They are formulated at this level to promote detailed identification of activities and alternatives and to generate interest in and participation of the managers most familiar with each activity, who would be operationally responsible for the approved budget. Figure 4 shows the basic formulation process.³⁷

In order to begin developing packages, each manager should logically start by identifying the current year's activities and operation. At this stage, the manager should simply identify each activity at its current level and method of operation and not try to identify different ways of performing the function or different levels of effort. Then the manager could start looking at his requirements for the coming year. At this point it would be extremely helpful if upper management provided a formal set of

planning assumptions to aid each manager in determining next year's requirements.³⁸ A formalized set of planning assumption serves several purposes:

- 1 It forces top level managers to do some detailed planning and goal setting for the coming budget period early in the budget cycle.
- 2 It provides all managers with a uniform basis for viewing the coming year and estimating requirements.
- 3 It provides a focal point for reviewing and revising planning assumptions, which in turn requires the revision of decision packages affected by those assumptions. The number of revisions in assumptions can be controlled to reduce both confusion and the cycling of budget inputs in rapidly changing environments.
- 4 It allows managers to readily identify the actual expenditure variances during the operating year that are created by inaccurate assumptions provided during the budgeting process.

At this point the manager can then identify his business-as-usual levels of effort for each activity--which merely extends the current year's costs and requirements, with no change in the method of operations. Or he simply adjusts the costs for changes in activity levels and for annualizing expenses not incurred in the current budget year.

Upon conclusion of the formulation stage, the manager should have identified all his proposed activities for the coming year in decision packages that fall into one of three categories:

- 1 Different ways of and/or different levels of effort for performing the activity
- 2 "Business-as-usual" where there are no logical alternatives, or the present method and level of effort is required.
- 3 New activities and programs.³⁹

Once the decision packages are developed, they are ranked in order of priority by management. This really provides management with a technique for allocating its limited resources by making it concentrate on these questions: "How much should we spend?" "Where should we spend it?"⁴⁰ Management answers these questions by listing all packages identified in order of decreasing benefits or importance. The initial ranking should of course occur at the organization level where the packages are developed, so that each manager can evaluate the importance of his own.⁴¹ Then the manager at the next level up the ladder reviews rankings for all the packages presented to him from below.⁴² This ranking process is shown in Figure 5. The ranking process itself should be relatively simple, but it seems to have confused many managers. Managers seem to have conceptual difficulty in ranking packages they consider "requirements" and may express concern over their ability to judge the relative importance of dissimilar activities. The review process is illustrated in Figure 6. Manger X, evaluates the packages submitted by Decision Units A, B, and C. For Decision Unit A he disagrees with the way that manager has ranked his packages, concluding that package A2 is less important than packages A3 and A4. He has to reconsider the priorities assigned to these packages; after reviewing the program packages by Decision Units A, B, and C, he proceeds to rank each package against all others, thereby establishing a composite rank ordering of all packages.⁴³ This process is repeated a number of times. Theoretically, this rather complex procedure gives the decision-

maker at each level some control over the substantive mix of programs that are eventually funded in the agency's budget proposal.

In practice, according to Allen Schick, ZBZ was "more a form of marginal analysis than a requirement that the budget be built up from scratch each year."⁴⁴ It was a device for shifting some budget attention from increments above the base to decrements below the base.⁴⁵ This suggests that zero-based budgeting, though regarded by some as a rational-comprehensive budgetary tool, was essentially a form of incremental budgeting.⁴⁶ Other critics may reasonably differ, basing their judgments on particular applications of zero-based budgeting. However, the general evidence seems to support the conclusion that ZBZ continues, and perhaps refines, the practice of incremental budgeting.

A comparison of the two systems shows how ZBZ can fill some of the gaps in the PPBS:

- 1 PPBS focuses on what will be done, not how to do it. ZBZ focuses on how to achieve a given objective.
- 2 As defined by PPBS, budgeting is a cost calculation based on the decisions made in the planning and programming steps (or long range planning phase), whereas there are in reality many policy decisions and alternatives to be evaluated during the actual budget preparation. On the other hand, ZBZ offers a detailed evaluation of policy and alternatives in each of the many activities and operations within the program element for which the objective and general policy has been defined.
- 3 PPBS does not provide an operating tool for the managers who implement the policy and program decisions, but ZBZ provides an operating tool for the line managers to evaluate their operations, make recommendations concerning the most efficient and effective means to achieve their operational objectives, and identify the effect of various funding levels on their operations.

- 4 PPBS does not provide a mechanism to evaluate the impact of various funding levels on each program and program element or to establish priorities among the programs and varying levels of program effort. But ZZB does provide the mechanism to evaluate the impact of various funding levels on program and program elements. This summary evaluation of each element produced by the ZZB analysis can lead to the evaluations and trade-offs among elements to produce similar evaluations at the program level and can thus provide a better basis for determining funding levels among programs.
- 5 PPBS focuses primarily on new programs or major increases in ongoing programs and does not force the continual evaluation of ongoing programs activities and operations, but ZZB forces managers to review in detail the efficiency and effectiveness of all plans and budgets.

In conclusion, PPBS provides the macroeconomic tool for centralized decision making on major policy issues and basic fund allocations. ZZB provides the microeconomic tool to transform these objectives into an efficient operating plan and budget; it then allows managers to evaluate the effect of various funding levels on programs and program elements so that limited resources can be more effectively allocated.

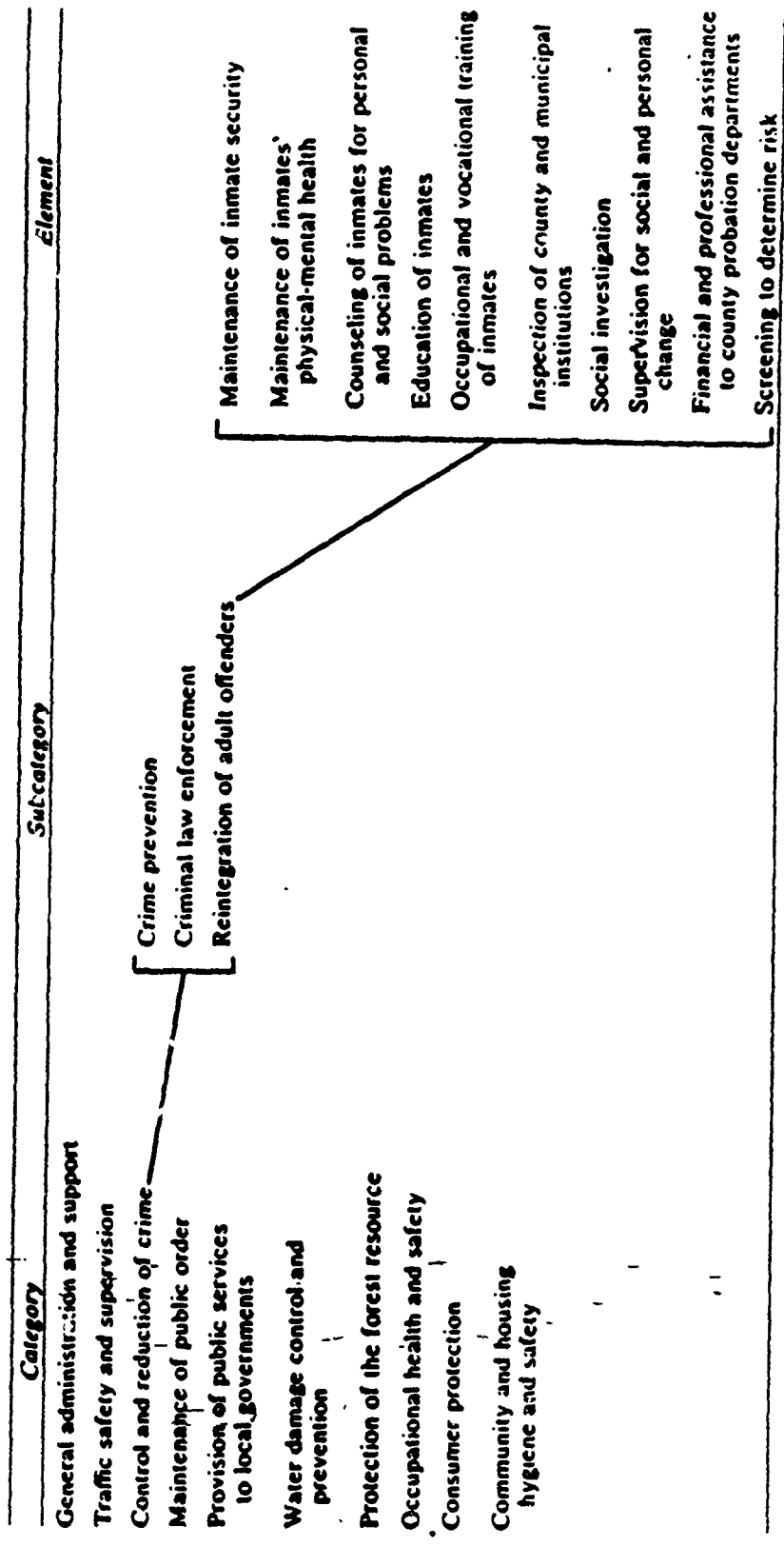


FIGURE 5.2 Sample Program Structure: Commonwealth Program II -- Protection of Persons and Property. (From Robert J. Mowitz, The Design and Implementation of Pennsylvania's Planning, Programming, Budgeting System, University Park: Pennsylvania State University, Institute of Public Administration, p. 52)

FIGURE 1

TABLE S.1. Sample Program Structure Statements and Program Plan Logic Robert J. Mourtz, *The Design and Implementation of Pennsylvania's Planning, Programming, Budgeting System*. (University Park: Pennsylvania State University, Institute of Public Administration, n.d.), p. 53.

Commonwealth program—protection of persons and property	
Goal:	To provide an environment and social system in which the lives of individuals, and the property of individuals and organizations are protected from natural and man-made disasters, and from illegal and unfair action.
Program category—control and reduction of crime	
Subgoal:	To provide a high degree of protection against bodily injury, loss of life, and loss of property resulting from unlawful or unfair actions by individuals or organizations; to provide a sufficiently secure setting for offenders in order to safeguard the community and provide for their health and well being; and to cure or alleviate the socially aberrant behavior of the offender and to assist the offender to function to the best of his potential upon release from an institution or while on probation.
Program subcategory—reintegration of offenders	
Objective:	To decrease the recurrence of crime by replacing criminal behavior with socially acceptable behavior
Impacts:	Number and percent of persons released convicted for new crimes Number and percent of evaluations of inmates reflecting gain in social skills and emotional controls Number of releases under supervision of court parole or Pennsylvania Board of Parole Number of admissions who are parole violators
Program element—counseling for personal and social problems	
Outputs:	Number of inmates receiving recommended individual counseling Number of inmates receiving recommended group counseling Number of inmates receiving recommended self improvement group counseling Number of inmates receiving recommended psychiatric treatment
Need and/or demand:	Number of inmates recommended for individual counseling Number of inmates recommended for group counseling Number of inmates recommended for self improvement group counseling Number of inmates recommended for psychiatric treatment
Funds required	Direct state activities Payments to jurisdictions
Manpower required	Man years Funds required
	Program statement
	Financial statement
	Manpower statement

SOURCE: Office of Management and Budget, *Bulletin No. 77-9*, February 14, 1977, p.53.

DECISION PACKAGE [0000] 11-11-1971-1
 PROJECT NAME
 Product X Planning (1 of 3)
 OPERATOR
 John Doe
 PART NUMBER
 2

STATEMENT OF PROGRAM AND GOALS
 Provide minimum level of planning effort for 5 million units of product X.
 Maintain updated production and shipping schedules for two weeks in advance
 (currently maintaining schedules four weeks in advance).
 Provide finished goods inventory level reports daily and in process inventory
 reports every other day (currently being done daily).
 Maintain perpetual inventory system (computerized) on raw material to
 maintain a two weeks supply on hand and a two weeks supply on order.

IMPROVEMENTS INCLUDED
 Reduce overtime and clerical effort due to perpetual inventory system.
 Replace professional with clerk.

BENEFITS

	1970	1971
\$ M NSB/planner	3.75	3.60
Avg inventory/MNSB	10%	12%
Package cost/NSB	.30%	.33%
Package cost/GPM	.90%	1.1%
		.75%

Activity required for minimum maintenance of planning function to deliver products on schedule.

ALTERNATIVES AND CONSEQUENCES
 -Elimination of planners would force line foremen to do their own planning (zero incremental cost for foremen); but excessive inventories, inefficient production runs, and delayed shipments would result in excessive sales loss.
 -Combine production planning for departments X, Y, and Z.
 -Package 2 of 3 (\$15,000): add bar long range planner.
 -Package 3 of 3 (\$15,000): add operations research analyst.

RESOURCES EXPEND/P/PEOPLE	1970				1971				TOTAL
	1 0	2 0	3 0	4 0	1 0	2 0	3 0	4 0	
TOTAL	13	16	16	15	11	11	12	11	45
GROSS	13	16	16	15	11	11	12	11	45
NET	1	1	1	1	2	2	2	2	(1)
NON-EMPTY	3	4	4	4	2	2	2	2	2
EMPTY	3	4	4	4	2	2	2	2	2
ORGANIZATION	Circuits								DATE
CC 205	DTL Planning								

FIGURE 3

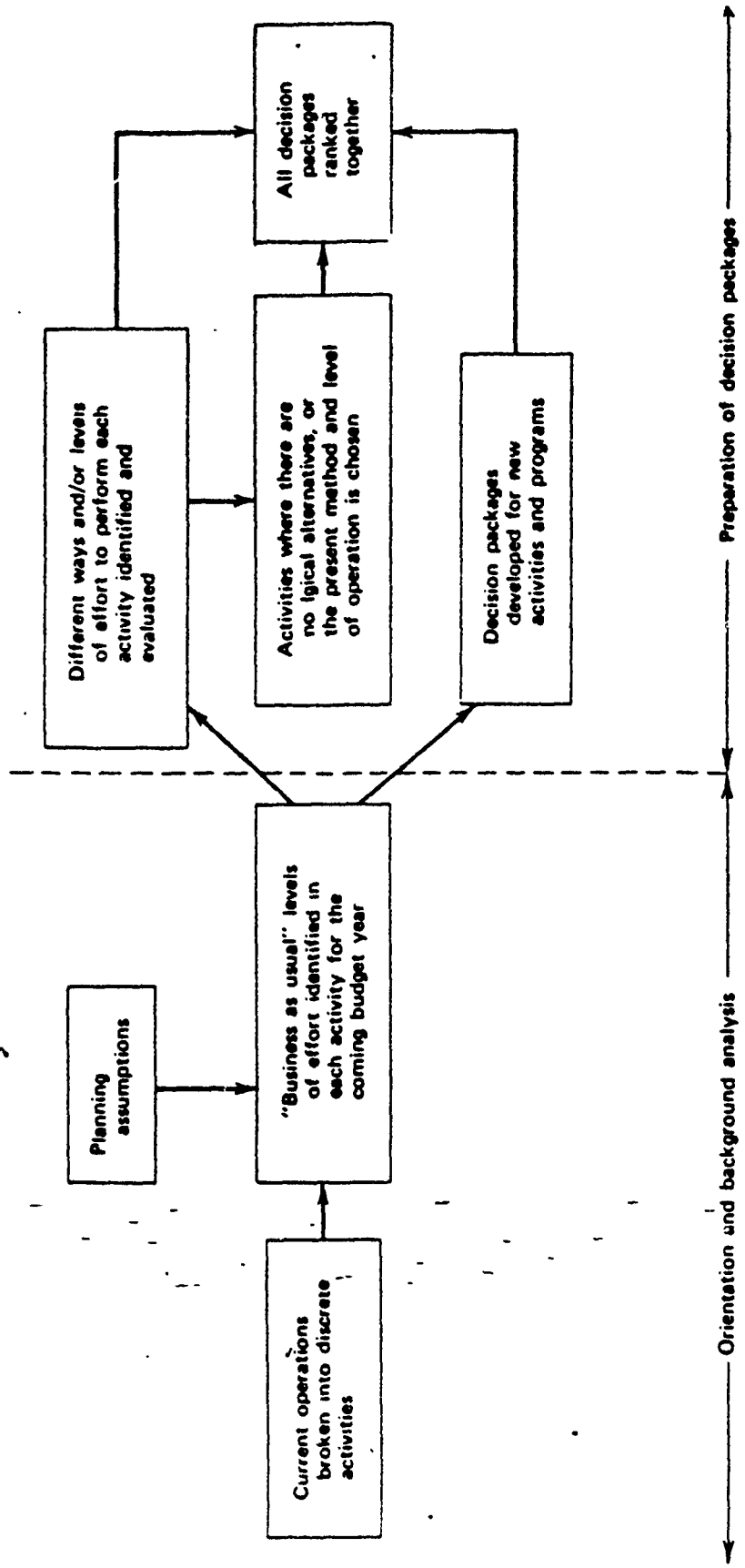


FIGURE 4

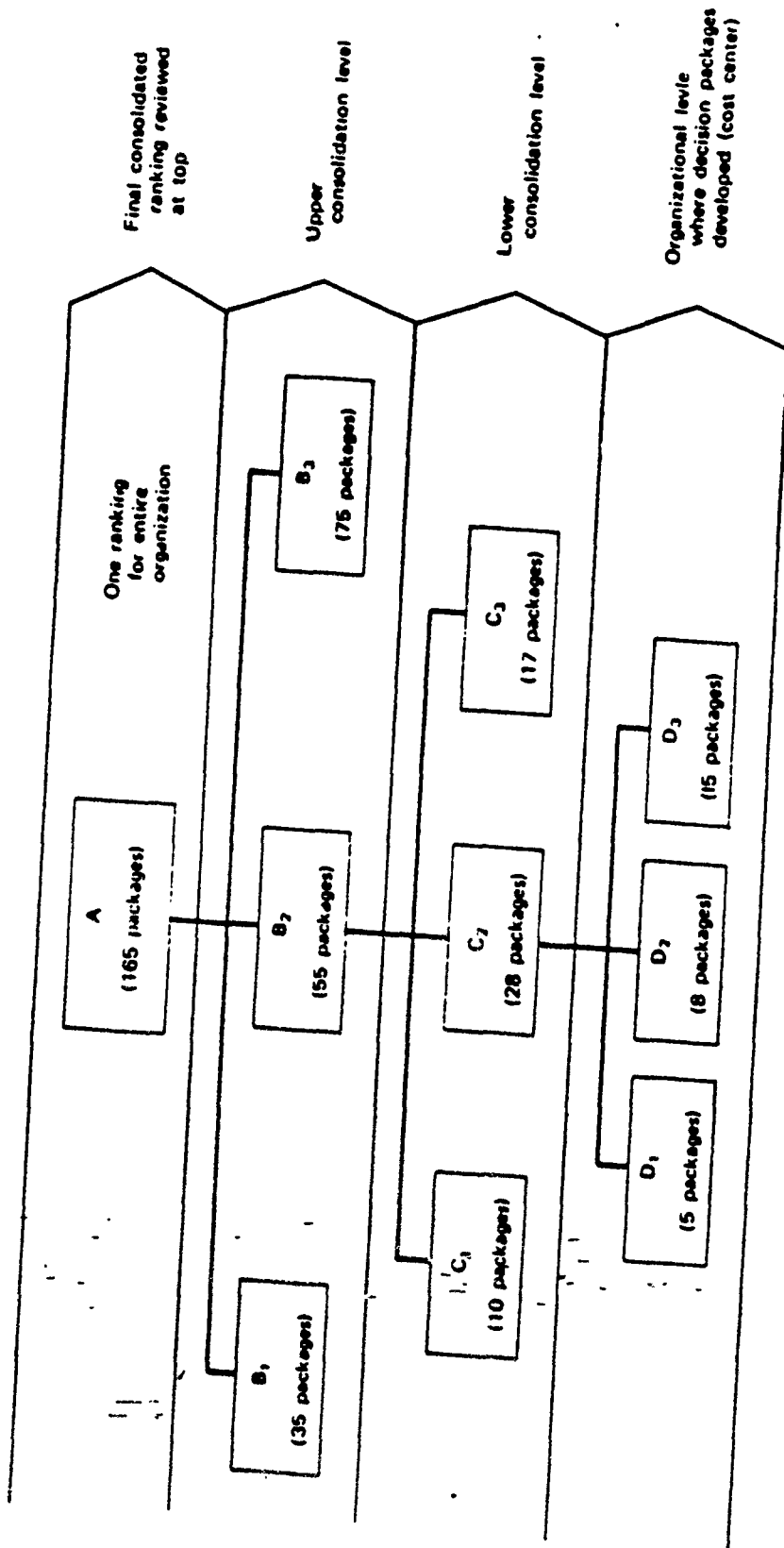


FIGURE 5

ENDNOTES

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3. Fremont Lyden and March Lindenburg, Public Budgeting in Theory and Practice (New York: Longman, 1983), 92.
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15. Kramer, 49.
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17. Ibid., 51.
18. Ibid., 52.
19. Ibid., 53.
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21. Ibid., 65.
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30. Peter Pyhrr, Zero-Based Budgeting: A Practical Management Tool for Evaluating Expenses. (New York: Wiley-Interscience, 1973), 5.

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42. Pyhrr, 15.

43. Ibid., 18-20.

44. Schick, 73.

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46. Ibid., 18.

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